January/February 2020

Vol. 11 No.1

Roofing

THE INDUSTRY'S VOICE

Island Dreams

Timbers Kauai

+ More Hospitality & Entertainment Projects

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The ABC's of Fall Prevention

→ **ENVIRONMENTAL TRENDS**
Surprising States for Solar Power

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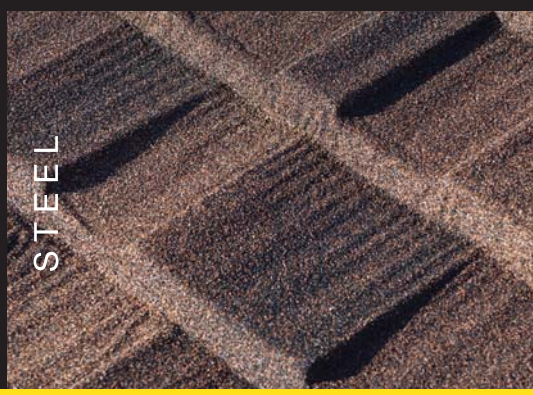

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Craig Ranch Phase III, McKinney, TX Installing contractor: StazOn Roofing Architect: JHP Architecture
Material distributor: Roofing Supply Group General contractor: Amicus Construction Owner: Lincoln Property Co. Photographer: Tom Coplen
Material: Steel coil Colors: Weathered Steel, Zinc

Weathered Steel Finish

"We really liked the Petersen product. It has a weathered steel look to it and yet it's affordable. We could get the color palette we wanted in a material that we could fabricate in whatever manner fit our design."

-J. Mark Wolf, AIA, Vice President, JHP Architecture

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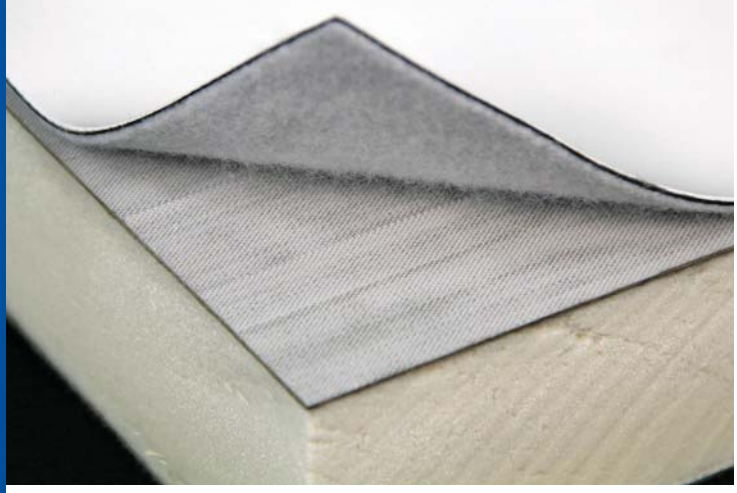

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Roofing
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ON THE COVER

Located on Kauai's picturesque southeast coast, Timbers Kauai is inspired by the naturally distinct Hawaiian paradise surrounding it. All materials and finishes were deliberately selected for the richness and longevity they provide, including the high-performance concrete roofing system that replicates the look of real slate.

Photo: Timbers Kauai

Rosie Says...

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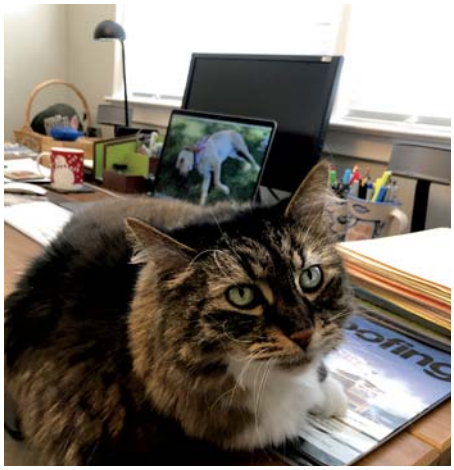
RAISE THE ROOF

WRITTEN BY **CHRIS KING**

Everything's Bigger in Texas

This issue spotlights hospitality and entertainment projects, so when Susan Miller of 5MetaCom contacted me about a story on the new Dickies Arena in Fort Worth, Texas, I was excited for several reasons — including the fact that the project was close to the site of the 2020 International Roofing Expo, which will be held in Dallas February 4-6. But the more I dug into the story, the more complicated it looked. There was a domed roof on the main arena, which was surrounded by flat roofs. There were metal roof systems on the arena's towers, and below was a pavilion with a standing seam metal roof system on it.



Susan wasn't talking about any of those roofs, however; she proposed an article focusing on the plaza deck, the area that extends around every side of the 140,000-square-foot main arena and covers event space below. The plaza itself serves as an outdoor event space, and at the rodeo, attendees can look down through windows in the pavilion to view the warm-up area for animals during the event.

It was a lot of information to cover, so you'll see articles on both the Dickies Arena roof systems and the plaza deck in this issue, beginning on page 86. If you need another Texas-sized project, you'll also see an article on page 104 about The Star, a complex located on 91 acres in Frisco, Texas, that includes the Dallas Cowboys indoor practice facility. That project serves as the basis for the Roofing Alliance's sixth annual Construction Management Student Competition, where teams will present their bids to the judges like actual companies offering a proposal to a general contractor. KPost Roofing & Waterproofing, the Dallas-based roofing contractor that installed the roof on the practice facility, will be working closely with the Roofing Alliance to prepare documents for the competition.

I hope to get a look at these projects and take in the student competition when I'm in Texas for the IRE. I hope to see you there. I also hope it will be a record-setting show. After all, they say everything is bigger in Texas.

Find us on 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

Caroline Trautman is an attorney with Oak City Law, LLP, based in Durham, North Carolina. In "Business Sense," page 40, she explains how state sales taxes can pose administrative challenges for contractors.

Marci Britt is an attorney at Cotney Construction Law who practices primarily in labor and employment law. In "Construction Law," page 46, she details how to recognize and respond to age discrimination in the workplace.

Dr. Tanya Brown-Giammanco is the Managing Director of Research at the Insurance Institute for Business & Home Safety (IBHS). In "Tech Point," page 52, she examines recent updates to the IBHS hail testing protocol.

Lindsey E. Powell is an attorney with Anderson Jones, PLLC, practicing in North Carolina and Georgia. In "Business Sense," page 60, she offers advice on how companies can prepare for an ICE audit.

Andy Baker is vice president of Baker Roofing, headquartered in Raleigh, North Carolina. In "Details," page 66, he explores questions about the regulatory compliance of edge metal systems in commercial applications.

Diane Helbig is a leadership and business development advisor and the author of *Succeed Without 'Selling.'* In "Business Sense," page 70, she offers networking tips that can help you create advocates for your company.

Martin DeBono is the president of GAF Energy. In "Environmental Trends," page 74, he points to surprising growth areas for solar power to argue that roofing contractors are the key to the solar revolution.

John R. Crookston is a roofing contractor and consultant located in Kalamazoo, Michigan. In "Steep Slope," page 78, he offers tips on improving ventilation on residential re-roofing projects.

David Ivey is a Fall Protection Engineer for Malta Dynamics, where he oversees the engineering and installation of all custom fall protection systems. In "Safety," page 112, he examines the basics of fall protection.

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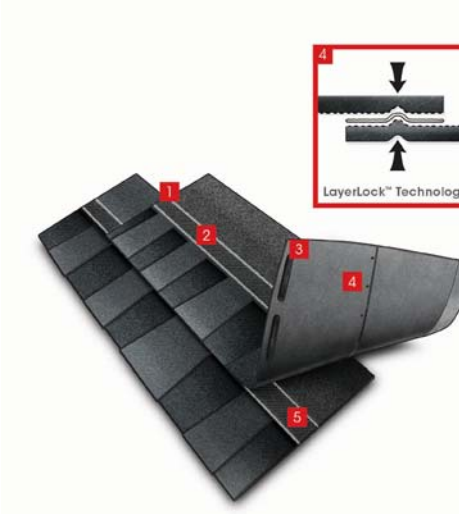
GAF Introduces Roofing Shingle Warranty With No Wind Limit

On January 10, GAF officially announced the nationwide launch of Timberline HDZ shingles featuring LayerLock technology, which mechanically fuses the common bond in to offer a larger nailing area. The company also announced that roofing contractors can now also offer homeowners a GAF WindProven limited wind warranty, the first wind warranty for roofing shingles with no maximum wind speed limit, when installing GAF shingles with LayerLock technology and four qualifying GAF accessories.

"Roofing contractors have been asking for new ways to help accelerate and grow their business, and we're excited to introduce technology that can make their jobs faster and easier with Timberline HDZ shingles," said Jim Schnepper, president of GAF. "This represents some of the most exciting innovation in the roofing industry today, backed by the quality and reliability homeowners have trusted for more than 130 years with GAF."

According to the company, LayerLock technology mechanically fuses the common bond to offer a new StrikeZone nailing area is up to 600 percent larger than that of Timberline HD shingles, resulting in increased nailing accuracy and faster installation versus Timberline HD. Timberline HDZ offers dual-phase shingle-to-shingle seal with Dura Grip sealant and an asphalt-to-asphalt monolithic bond for durability, strength and powerful wind uplift performance. The product is also fully compatible with Timberline HD roofing shingles.



1. Alignment Guide
2. StrikeZone™ Nailing Area
3. Dura Grip™ Adhesive
4. LayerLock™ Technology
5. Smooth Micrograniule Surface

According to David Ellis, Vice President of Residential at GAF, third-party time and motion studies comparing HD and HDZ installation show that HDZ installs 30 percent faster with up to 99.9 percent nailing accuracy. "The takeaways here are accuracy and productivity," Ellis noted. "Those are the two things that contractors care about the most. With the WindProven warranty, it speaks to the homeowner about the things they care most about: strength, durability and wind performance. You put those things together and you have a great product that contractors and homeowners are going to love."

According to Ellis, the product has been installed since March in a pilot market in the Southeast, and feedback has been overwhelmingly positive. "HDZ and LayerLock are engineered for performance, and we have done it in a very elegant way," Ellis said. "It makes sense to the contractors. They get it, and they now have a different value proposition in the home with LayerLock and the WindProven warranty that others can't offer."

GAF Timberline HDZ shingles will be on display for a national audience for the first time at the 2020 International Roofing Expo from February 4-6 in Dallas, Texas. For more information, visit www.gaf.com/layerlock.

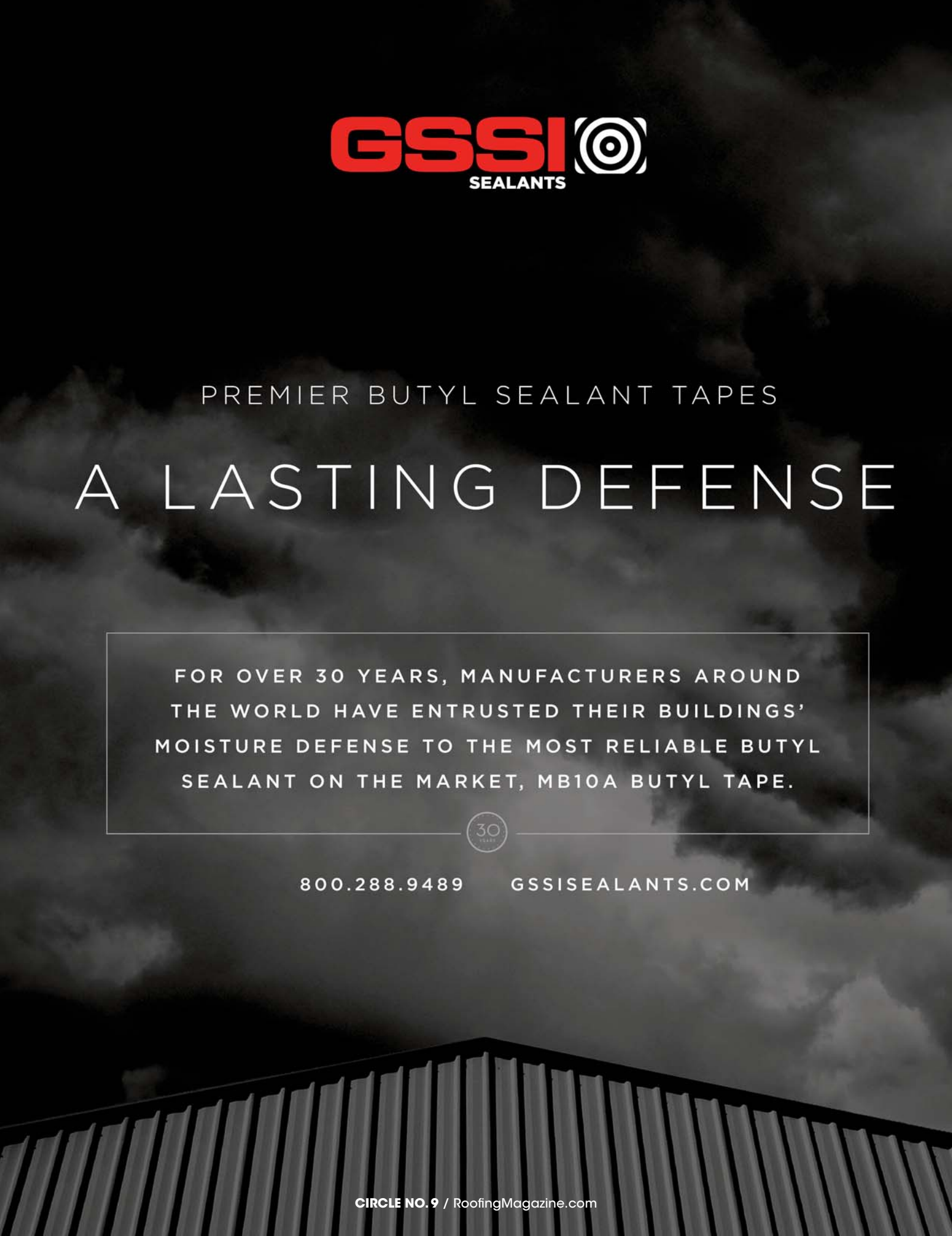
Trent Cotney Named NRCA General Counsel

Cotney Construction Law announced the appointment of Trent Cotney as General Counsel for the National Roofing Contractors Association (NRCA). Cotney and the team at CCL will provide ongoing NRCA member benefits of legal consultation that will include a strong emphasis on proactive support surrounding construction, employment, immigration and OSHA law.

With the appointment of Trent Cotney as General Counsel, the roofing industry will benefit from Cotney Construction Law's national reach since it is a law firm that employs almost 40 lawyers with 14 offices across the country, all focused on representing the construction industry. Cotney has represented the roofing industry for more than 20 years, and he has built a law firm dedicated to giving back to the construction industries they serve. "Representing roofing contractors and helping their businesses both proactively and reactively is our focus," said Trent Cotney. "We understand the law and we know construction so we can help contractors avoid getting into legal troubles in the first place."

The CCL team serves as General Counsel or as an affinity partner for Florida Roofing and Sheet Metal Association and several of its affiliates, Western States Roofing Contractors Association, Chicago Roofing Contractors Association, Tennessee Association of Roofing Contractors, National Women in Roofing, Roofing Technology Think Tank, Tile Roofing Institute, IIBEC Florida and the National Slate Association.

For more information, visit www.cotneycl.com.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Atlas Roofing Product Receives Excellent Overall Rating for Hail Resistance From IBHS

ATLAS ROOFING announced that its StormMaster Shake shingles received an excellent overall rating from the Insurance Institute for Business & Home Safety (IBHS). The performance rating is based on 2019 results from a new test standard for impact resistance developed by the IBHS.

Severe weather can displace families, disrupting their lives and impacting finances. To prevent these avoidable issues, IBHS conducts top-tier scientific research, the results of which help manufacturers engineer better materials, ultimately saving both the insurance industry and homeowners significant time and money.

The IBHS impact-resistance rating factors in how well shingles hold up to specific damage caused by hail. Out of the 10 products tested, Atlas StormMaster Shake shingles received a good rating for dents/ridges and an excellent rating for tears and granule loss. In addition, StormMaster Shake is the only product to receive an excellent overall rating.

"We're thrilled that StormMaster Shake outranked the competition," said Paul Casseri, product manager for Atlas Roofing. "The secret is in our Core4 Enhanced Polymer Technology — the most innovative development in asphalt shingle manufacturing today."

IBHS tests are designed to replicate real-world conditions on a variety of widely purchased shingles labeled as "impact resistant."

"Hail causes billions of dollars in property damage every year," said Tanya Brown-Giammanco, managing director of research for IBHS. "Consumers deserve to have confidence that shingles labeled as impact resistant live up to expectations. Our research serves to empower manufacturers to develop better products."

For more information about IBHS, visit www.IBHS.org. For more information about Atlas Roofing, visit www.AtlasRoofing.com.

Huntsman Announces the Acquisition of Icynene-Lapolla

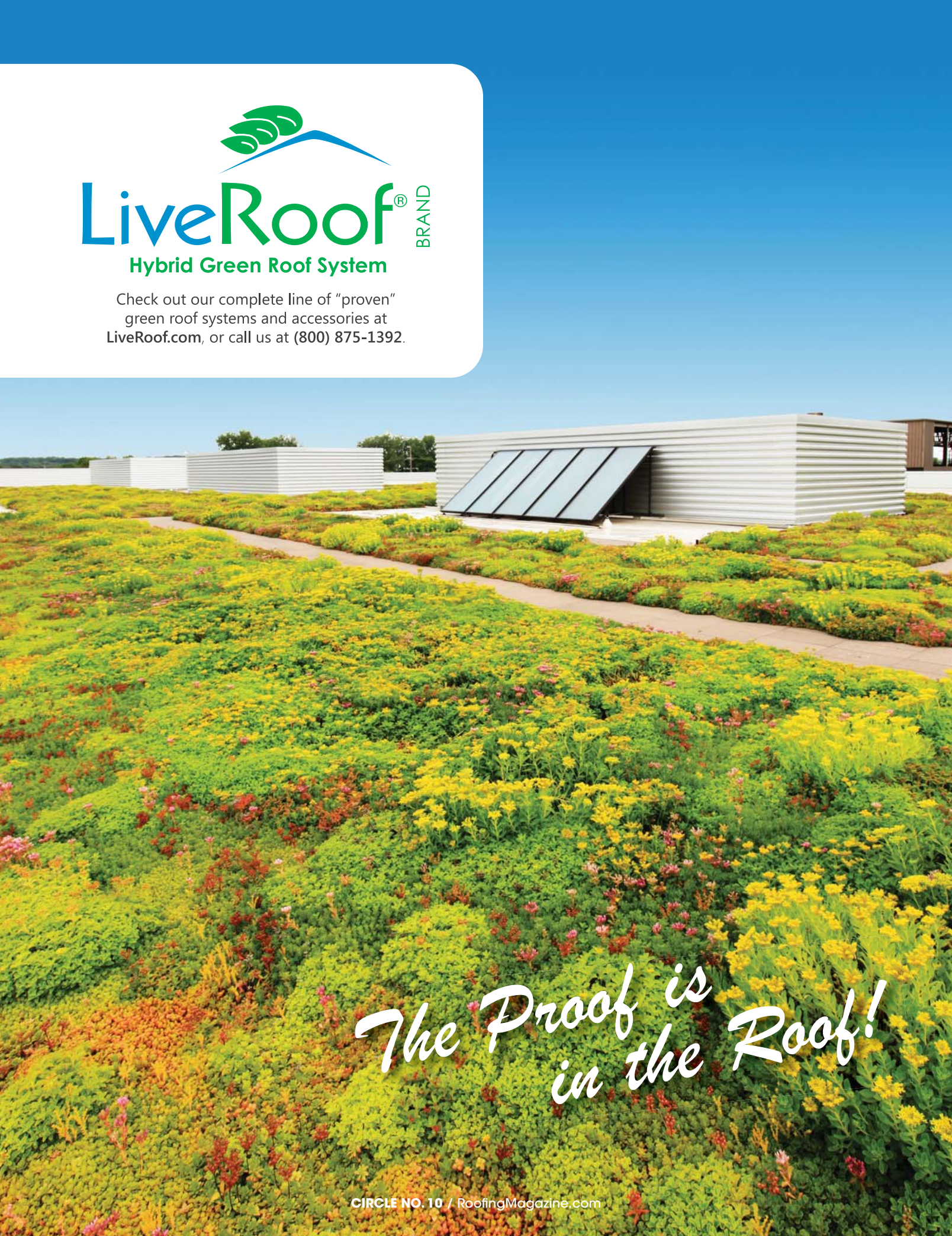
Huntsman Corporation announced its agreement to acquire Icynene-Lapolla, a North American manufacturer and distributor of spray polyurethane foam (SPF) insulation systems for residential and commercial applications, from an affiliate of FFL Partners, LLC.

Commenting on the acquisition, Tony Hankins, president of Huntsman's Polyurethanes division, said, "Icynene-Lapolla is well recognized by architects, builders and contractors as a market leader in the manufacture and supply of high-performance, energy-efficient building envelope solutions. Almost half of all energy consumption is used in the heating and cooling of buildings, making the choice of insulation critical. SPF is the most effective insulant available in the market. The combination of Icynene-Lapolla, with its SPF product range and reflective roof coatings, with Demilec, the SPF business we acquired in 2018, will significantly strengthen our energy-saving insulation business and provide customers with an unmatched offering of choice while accelerating the globalization of our spray foam technology."

Huntsman Corporation is a publicly traded global manufacturer and marketer of differentiated and specialty chemicals with 2018 revenues of more than $9 billion. For more information about Huntsman, please visit www.huntsman.com.

MFM Building Products Hires New Sales Representation For Northern Texas

MFM Building Products, a manufacturer of a full envelope of waterproofing and weather barrier products for the building industry, announced that the firm has reached an agreement with Summit Sales & Marketing to represent MFM in North Texas. Summit Sales & Marketing was founded in 2010 and will serve one-step and two-step building products and roofing distributors, with support through customer promotions, training and marketing support. Mike Scott, Principal, brings 25 years of experience as an independent sales representative. For more information, visit www.mfmbp.com.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Roofing Alliance Construction Management Student Competition Scheduled for 2020 IRE

THE ROOFING Alliance, the foundation of the National Roofing Contractors Association (NRCA), announced its 2020 Construction Management Student Competition participating schools. Celebrating its sixth year, the competition had nine schools submit their intent to participate. The finalist teams will be selected and announced in January and will give their oral presentations on February 5 at the 2020 International Roofing Expo (IRE) in Dallas, Texas. The winning team will be recognized on February 5 at the NRCA Industry Awards Ceremony and Cocktail Reception.

The student competition is part of the overall Roofing Alliance Construction Management Schools Initiative, which is focused on the mentorship of young construction management students, sharing with them the opportunities and challenges of a roofing career.

The competition is designed to test the students on their roofing knowledge, project management capabilities and presentation skills. For 2020, the teams are tasked with submitting a qualified bid package for a new roof system on the Ford Center, the indoor practice facility of the Dallas Cowboys. The Ford Center is part of the Dallas Cowboys World Headquarters in Frisco, Texas. The project was originally roofed by KPost Roofing & Waterproofing, Dallas, who has been working with the Roofing Alliance to prepare documents for the competition.

The schools who have indicated their intent to participate are:

- Auburn University
- Bradley University
- Clemson University
- Colorado State University
- Kennesaw State University
- Minnesota State University – Mankato
- Ohio State University
- Texas A&M University
- University of Florida

The Roofing Alliance invites those at IRE to attend these exciting events and support the future workforce of the industry. To learn more about the Roofing Alliance Construction Management Student Competition and how to attend, visit www.roofingalliance.net or contact Bennett Judson, the Roofing Alliance's executive director, at bjudson@nrca.net. To register for the 2020 International Roofing Expo visit www.theroofingexpo.com.

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S-5! Receives 2019 Industry Advocate Award From MBMA

S-5! RECEIVED the 2019 Gold Level Industry Advocate Award for outstanding service, participation and support of the Metal Building Manufacturers Association (MBMA).

Accepting on behalf of the S-5! team was CEO and Founder Rob Haddock. Haddock, a well-known metal roof consultant, author, speaker and inventor of the non-invasive clamps for fastening accessories to standing seam metal roofs, was awarded for his time, expertise and advocacy of MBMA and the entire metal building industry.

Among the seven companies who were presented with gold, silver and bronze level awards, S-5! Attachment Solutions earned gold recognition and was recognized for exceptional commitment to promoting and enhancing MBMA initiatives, including participation in MBMA committees, advocacy efforts to enhance the metal building systems industry, attendance at MBMA educational and promotional events, and safety program participation.

"I am honored to receive this award and to be part of such a great community of industry specialists and an organization that provides incredible resources to those who work in metal building systems," said Haddock. "I am a big believer in participating in industry associations like MBMA where you can meet others who will mentor and encourage you along the way."

For more information, visit www.S-5.com and www.mbma.com.

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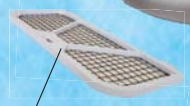

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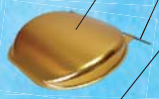

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Patents Pending

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Hartford Green

Matte Black

Slate Gray

Colonial Red

Dark Bronze

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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 inform 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 www.NRCA.net.

NRCA Opens Registration for Diversity + Inclusion Forum 2020

THE NRCA and National Women in Roofing (NWIR) announce the inaugural Diversity + Inclusion Forum 2020. Diversity + Inclusion Forum 2020 will be held in Washington, D.C., on Tuesday, April 21, preceding Roofing Day in D.C. 2020, which will be held April 21-22. The forum will help attendees identify ways to engage underrepresented groups, develop resources to increase cultural competency, and explore why supporting diversity and fostering a culture of inclusion is a business imperative to strengthen the workforce.

During the event, dynamic industry leaders and stakeholders will discuss sustainable strategies for advancing diversity and inclusion. Attendees will have the opportunity to meet and network with fellow roofing and industry professionals from across the U.S. who are striving to achieve inclusive, culturally diverse and competent workforces.

To view the schedule and register for Diversity + Inclusion Forum 2020, visit http://nrca.net/diversity-inclusion.

Legal Resource Center Offers New Conference: LegalCon 2020

THE NATIONAL Roofing Contractors Association Legal Resource Center announces its newest conference, LegalCon 2020. LegalCon 2020 will be held Thursday, March 12, 2020, from 10 a.m. to 4 p.m. at NRCA's headquarters in Rosemont, Illinois. The conference will focus on three topics — contract law, employment law and technical issues — to increase legal knowledge, improve work processes and offer effective business tools.

"We encourage CEOs, owners, COOs, human resources professionals, safety directors, training directors, on-staff legal counsel, office managers and project managers to attend and learn from some of the best and brightest legal and technical experts in the roofing industry," said Alison LaValley, a vice president of NRCA.

To ensure participants benefit from interaction and a small group setting, attendance is limited to 40. Registrations will be accepted on a first-come, first-served basis at nrca.net/legalcon.

For more information about LegalCon 2020, visit nrca.net/legalcon.

NRCA Releases Training for Roof Application Careers

The NRCA has released Training for Roof Application Careers. TRAC blends online and hands-on training companies can use to equip new field workers with information and skills to help them become quality roof system installers. TRAC, which includes English and Spanish content, is designed to provide inexperienced employees with "conversational competence."

NRCA currently offers the TRAC Thermoplastic Roof Membrane Installation Package and TRAC Asphalt Shingle Installation Package. The TRAC Thermoplastic Roof Membrane Installation package consists of Essentials: Onboarding for Roof System Installers; Low-slope Core; and Thermoplastic Roof Membrane Installation and includes online content and activities that provide hands-on experience.

The TRAC Asphalt Shingle Installation package consists of Essentials: Onboarding for Roof System Installers; Steep-slope Core; and Asphalt Shingle Installation and includes online content and activities that provide hands-on experience.

A one-time TRAC purchase includes unlimited use of the training materials so employers can train an unlimited number of employees all at a pace and time that works for them.

For more information about TRAC, visit www.nrca.net/trac.

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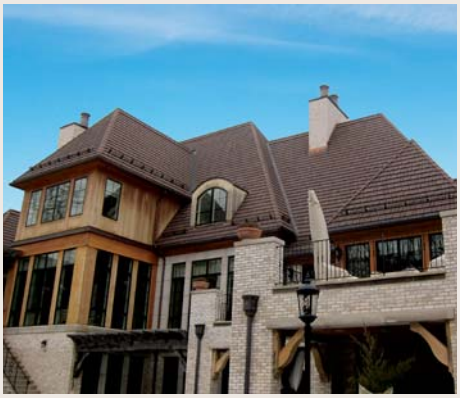


Alpine SnowGuards Upgrades Online Project Calculator

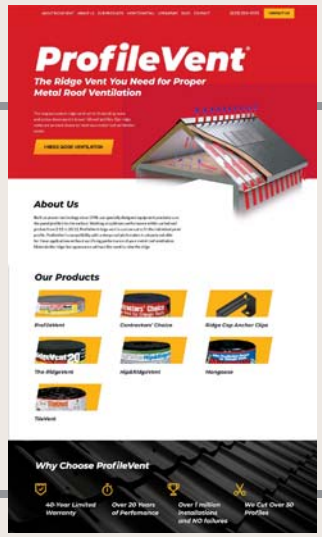
Alpine SnowGuards has announced Phase III upgrades to its Online Project Calculator are now live, fully functional and available for use on www.AlpineSnowGuards.com. The upgrades include online ordering. Snow guard orders can be placed directly through the Online Project Calculator. Ice flags can now be added to all roof sections, all at once. Side-by-side BoM/price comparisons are available in a printable table, and added explanations are available throughout for varying conditions. Alpine SnowGuards' Online Project Calculator also provides free recommended layouts, system comparisons and printable estimates.

ABC Supply Launches myABCsupply to Help Contractors Manage Their Businesses

ABC Supply Co. Inc. launched myABCsupply, a new online platform that gives ABC Supply customers 24/7 access to view the status of their orders and deliveries, including delivery photos. In addition to checking the status of their orders and deliveries in real time, ABC Supply customers can also view product descriptions and quantities; filter orders by date range, order type and order status; and view a map of the day's delivery locations. MyABCsupply is the latest offering in the company's continued focus on information technology services and tools that connect ABC Supply with its customers. ABC Supply customers can access their accounts at myABCsupply.com or download the ABC Supply app for their iOS or Android devices.

Ventco Updates ProfileVent.com Website for Easier Navigation

Ventco relaunched its website, www.ProfileVent.com, with a fresh, uncluttered design, improved navigation and greater accessibility. The Products page contains up-to-date information about the wide range of equipment manufactured by Ventco, including brochures, technical specifications and videos. The site also contains blogs featuring company news and useful information and an FAQs page. Visitors can also find all the contact information in one place and a contact form for questions or comments.



TAMKO Announces Strategic Relationship With JobNimbus

TAMKO announced a new strategic relationship with JobNimbus. TAMKO Pro Certified Contractors can now benefit from excusive discounts for JobNimbus' Customer Relationship Management platform designed specifically for contractors. JobNimbus allows contractors to assign tasks to crew members, email status updates to homeowners, save photos of each project, build and convert estimates for orders, and send invoices to clients. The platform also follows up with homeowners after completed work and encourages homeowners to leave a review. It also allows collection of payments directly from the app. For more information, visit www.TAMKOPro.com.

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EVENTS

JANUARY 2020

13-15

MCA WINTER MEETING
Indian Wells, California
www.metalconstruction.org

14-16

CAROLINAS MID-WINTER ROOFING EXPO
Greenville, South Carolina
Carolinas Roofing and Sheet Metal Contractors Association
www.crsmca.org

15-17

CRCA SHOW
Oakbrook Terrace, Illinois
Chicago Roofing Contractors Association
www.crca.org

16-17

NRCA'S QUALIFIED TRAINER CONFERENCE R. ADAMS ROOFING
Indianapolis, Indiana
National Roofing Contractors Association
www.nrca.net

21-23

NAHB INTERNATIONAL BUILDER'S SHOW
Las Vegas, Nevada
NAHB International
www.buildersshow.com

23

COLORADO ROOFING ASSOCIATION TRADE SHOW
Denver, Colorado
Colorado Roofing Association
www.coloradoroofing.org

25-31

2020 ROOF + TIMBER STUDY TOUR
Copenhagen, Denmark, and Stuttgart, Germany
National Roofing Contractors Association
www.nrca.net

MORE...

VIEW MORE INDUSTRY EVENTS ONLINE AT WWW.ROOFINGMAGAZINE.COM/EVENTS. IF YOU HAVE AN EVENT TO SHARE, EMAIL IT TO CHRIS@ROOFINGMAGAZINE.COM.

28-29

NRCA'S QUALIFIED TRAINER CONFERENCE COLORADO ROOFING ASSOCIATION
Aurora, Colorado
National Roofing Contractors Association
www.nrca.net

FEBRUARY

2

NWIR DAY 2020
Dallas
National Women in Roofing
www.nationalwomeninroofing.org

3-4

FUTURE EXECUTIVES INSTITUTE — CLASS 9
Dallas, Texas
National Roofing Contractors Association
www.nrca.net

4-6

INTERNATIONAL ROOFING EXPO AND NRCA'S 133RD ANNUAL CONVENTION
Dallas, Texas
www.theroofingexpo.com
www.nrca.net

6

FOREMAN LEADERSHIP TRAINING LEVEL 1 (ENGLISH AND SPANISH)
Dallas, Texas
National Roofing Contractors Association
www.nrca.net

7-8

NRCA'S QUALIFIED TRAINER CONFERENCE OWENS CORNING
Irving, Texas
National Roofing Contractors Association
www.nrca.net

11-14

SPRAYFOAM CONVENTION & EXPO
Pasadena, California
Spray Polyurethane Foam Alliance
www.spfa.org

MATERIALS & GADGETS

Shingles Feature Mechanically Fused Common Bond

GAF launches Timberline HDZ shingles, powered by new LayerLock technology. According to the company, LayerLock technology mechanically fuses the common bond in Timberline HDZ shingles to offer the new StrikeZone nailing area — up to 600 percent larger than Timberline HD shingles. According to the company, the shingles are designed for strength and powerful wind uplift performance. Contractors can offer homeowners a GAF WindProven limited wind warranty with no maximum wind speed limit when installing GAF shingles with LayerLock technology and four qualifying GAF accessories.

www.GAF.com | **Circle No. 19**

Safety Device Locks Ladders in Place

The **Ladder Lock Pro** allows roofing contractors to lock ladders in place to perform work on the roof. The product attaches directly to the roof itself when a new roof is being installed. The Ladder Lock Pro is made of lightweight aluminum and installs in minutes by attaching the upper ladder step to the rooftop using three screws. The products can be purchased in angled or flat configurations to accommodate different types of roofs. The device attaches to any upright ladder using a locking pin. Once the locking pin is in place, it can be attached to the roof using three screws.

www.LadderLockPro.com | **Circle No. 20**

Metal Roofing Panel Captures the Appearance of Slate

EDCO Products introduces Generations Slate. This new panel combines the company's popular ArrowLine Slate Roofing panel with its advanced HD coating technology to produce an authentic slate appearance. Launching in early 2020, Generations Slate will be available in 4 HD colors. Manufactured with the strength of steel and a multilayered PVDF cool chemistry finish, Generations Slate can reduce energy bills and does not support mold and algae growth, according to the company. The product offers the beauty of slate at a fraction of the cost and weight, and is backed by a lifetime warranty.

www.EDCOproducts.com | **Circle No. 21**

Insulated Box Heaters for Temperature-Sensitive Adhesives

OMG Roofing Products offers Powerblanket foam box heaters to extend the season for using OlyBond500 Canister Adhesives. Insulated Powerblanket foam box heaters are designed to provide uniform heat to minimize waste with temperature-sensitive insulation adhesives such as OlyBond500 during cold temperature applications. Powerblankets operate on standard 120 volt current and come with a 6-foot cord. Each black vinyl foam blanket is 16 inches square, heats 2.37 cubic feet of space, and accommodates one carton containing an OlyBond500 Canister.

www.OMGRoofing.com. | **Circle No. 22**

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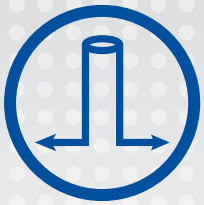

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Carlisle Roof Foam and Coatings (CRFC) is a part of the Carlisle Construction Materials (CCM) family of companies. CRFC offers a broad range of acrylic and silicone roof coatings and spray polyurethane foam (SPF) insulations for commercial roofing applications. CRFC's SPF roofing systems provide a long-term, sustainable solution and are seamless, watertight, and virtually maintenance-free. Acrylic and silicone coatings are used as a component of SPF roofing systems and can also be used as standalone products to restore existing aged roofs.

For more information about Carlisle Roof Foam and Coatings, please visit www.carlislerfc.com.

Visit us at IRE in booth #3604 and at SPFA in booth #406.

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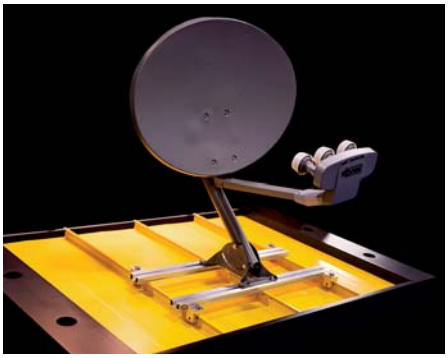
www.CarlisleRFC.com

MATERIALS & GADGETS

Lead-Free Roof Flashing Membrane Designed for Versatility

MFM Building Products offers a new innovative roof flashing membrane – GreenWeld PVB. GreenWeld PVB armored flashing system is a high-performance PolyVinyl Butyral (PVB) membrane enhanced with an aluminum scrim for superior flexibility, strength and weathering. The membrane is comprised of recycled PVB and can be used in residential and commercial roofing applications. Typical applications include flashing for pipe penetrations and support beams, liner for valleys of shingle, tile and aluminum metal roofs, and through-wall flashings. According to the manufacturer, it is easy to cut and use, heat-weldable, non-toxic, sustainable, flexible, lightweight, and comes with a 20-year warranty.

www.MFMBP.com | **Circle No. 24**



Utility Mounting System for Metal Roof Systems

S-5! introduces the universal GripperFix utility system for standing seam, exposed-fastened, and trapezoidal metal roof profiles. Mount almost anything with this safe and cost-effective system that uses only struts, S-5! clamps or brackets and tabs. Install HVAC, satellite dishes, inverters, conduit, communication equipment, service walkways, light fixtures, and more without using improper materials that can compromise both the equipment and the integrity of the roof itself. Using concrete blocks for ballast is unsafe and causes destructive corrosion. According to the manufacturer, this all-aluminum and stainless system will last the life of the roof.

www.S-5.com | **Circle No. 25**

Perimeter Safety System Features Stainless Steel Adjustable Threaded Parts

The **FallBan Cableguard System** is designed to provide a temporary or permanent safety barrier around the perimeter of the roof. Horizontal steel cables are anchored to the roof and attached to vertical steel stanchions spaced at 20-foot intervals and then tightened to form a barrier to protect anyone on the roof from accidental falls. According to the company, the addition of stainless steel adjustable threaded parts has made the FallBan Cableguard System even easier to install. FallBan is made in the United States in Jefferson City, Missouri, and patented in both the United States and Canada.

www.FallBan.com | **Circle No. 26**

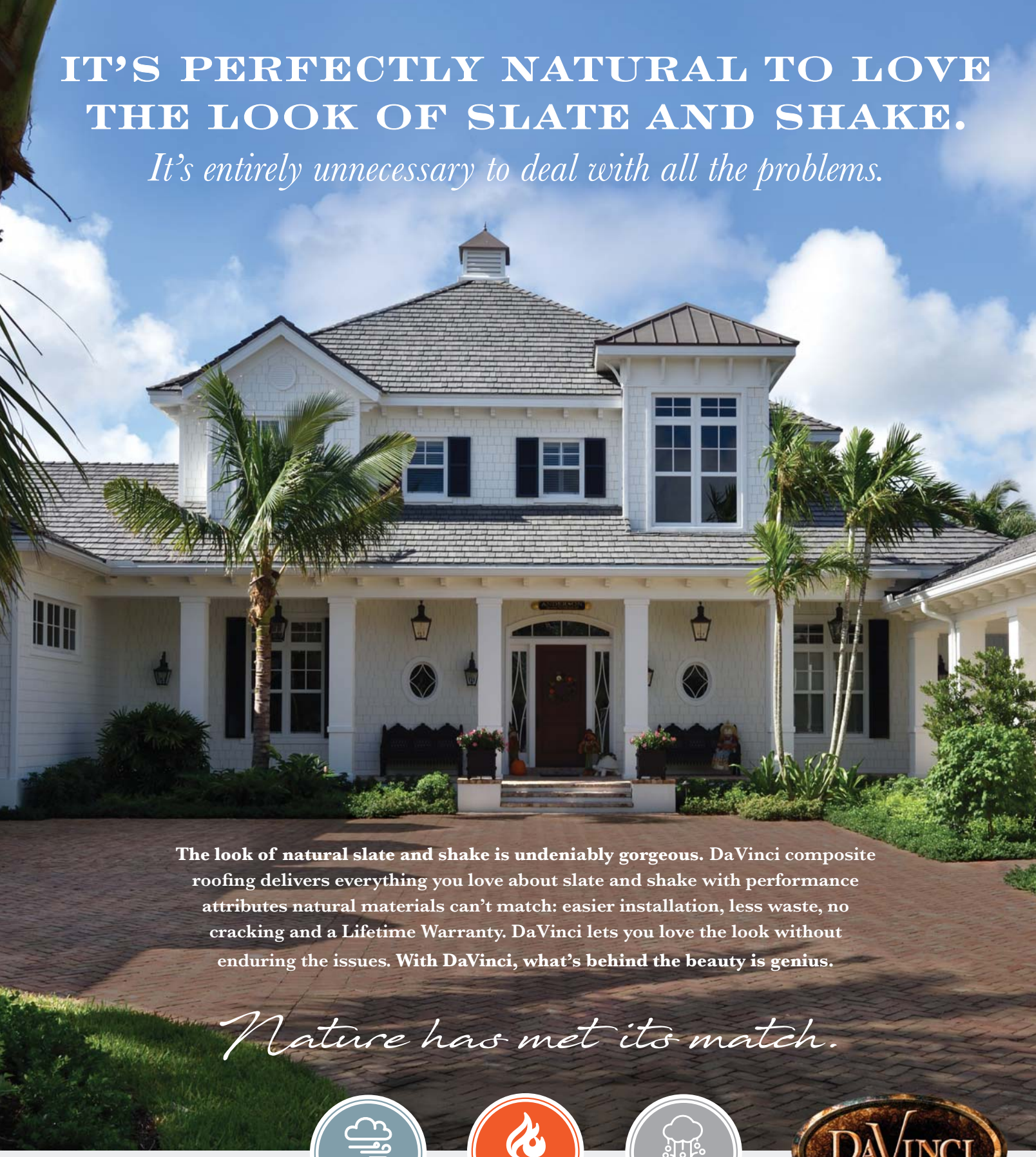
New Low-Rise Adhesive Offers Greater Elongation and Tensile Strength

Mule-Hide Products Co. introduces Helix Max Low-Rise Adhesive, a two-component, construction-grade polyurethane foam adhesive designed to bond approved roof insulations, thermal barriers, cover boards and fleece-back single-ply membranes (TPO, PVC and PVC KEE) to a wide variety of roofing substrates. It replaces Mule-Hide Helix Low-Rise Adhesive. Helix Max can be applied in colder temperatures; the substrate and ambient temperature must be above 25 degrees Fahrenheit when applying Helix Max. The product is available in 5-gallon jug sets, twin-pack cartridges, tanks, and 15- and 50-gallon drums.

www.MuleHide.com | **Circle No. 27**

IT'S PERFECTLY NATURAL TO LOVE THE LOOK OF SLATE AND SHAKE.

It's entirely unnecessary to deal with all the problems.



The look of natural slate and shake is undeniably gorgeous. DaVinci composite roofing delivers everything you love about slate and shake with performance attributes natural materials can't match: easier installation, less waste, no cracking and a Lifetime Warranty. DaVinci lets you love the look without enduring the issues. **With DaVinci, what's behind the beauty is genius.**

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MATERIALS & GADGETS

Bath and Dryer Vent Designed for Shingle Roofs

Lifetime Tool introduces the Lifetime Bath-Dryer Vent for shingle roofs. The proprietary design enables the housing structure to mount to the plate without rivets, fasteners and sealants — common leak points in existing vents. The vent assembly is crimped into the seamless deep-drawn plate with an EPDM gasket, and the shingle vent plate is 24-gauge galvanized Kynar with 4 inches of flashing on the sides, 6 inches at the top and 3.5 inches at the bottom. According to the manufacturer, in independent laboratory testing the Lifetime Bath-Dryer Vent exceeded 90 mph in the ASTM T166-18 - Wind Driven Rain Test.

www.LifetimeTool.com | **Circle No. 29**

Lead-Free Roof Flashing Approved as Permanent Flashing by IAPMO UES

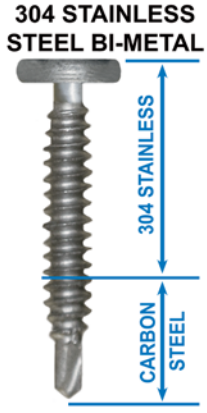
Boral Roofing LLC announces that Wakaflex, the company's versatile lead-free flashing solution, is now listed through IAPMO UES as a permanent flashing (ER-579). The product earned the distinction by undergoing and passing an extremely rigorous 2,000-hour UV exposure test. According to the manufacturer, Wakaflex contains an internal aluminum mesh, making it extremely flexible and easy to shape and form to virtually any surface. Wakaflex chemically seals to itself, and its Polyisobutylene material composition makes the flashing extremely resistant to all weather conditions. The flashing may be used for a variety of applications.

www.BoralRoof.com | **Circle No. 30**

Self-Retracting Lifelines Meet Both Class A and Class B Guidelines

Malta Dynamics introduces the Hybrid Hog, the new Dual Class Self-Retracting Lifeline that provides the advantages of both Class A and Class B retractables. The Hybrid Hog comes in both a 20-foot Dual Class SRL and a 30-foot Dual Class SRL. Class A SRLs are defined as devices that provide a maximum arrest distance of 24 inches and an average arresting force not exceeding 1350 pounds. Class B SRLs are devices that provide a maximum arrest distance of 54 inches and an average arresting force not exceeding 900 pounds. The new Hybrid Hog combines the advantages of each class into a single device that meets the standards for both classes.

www.MaltaDynamics.com | **Circle No. 31**



New Stainless Steel Bi-Metal Screws

Concealor 304 Stainless Steel Bi-Metal Screws from **Triangle Fastener Corporation** are manufactured from 304 stainless steel for superior corrosion resistance and exceptional ductility. According to the company, the buttress thread increases pullout loads and resistance to back-out compared to ordinary roofing screws. The screws are TRI-SEAL top-coated to improve tapping and reduce thread roll-over and feature a #2 square recess for optimal stability during installation. The screws attach to metal, wood, and concrete. They can drill and tap up to 16-gauge steel, and the buttress thread is specified in many metal roofing systems to attach SSR clips over rigid insulation into metal deck.

www.TriangleFastener.com | **Circle No. 32**

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FROM START TO FINISH

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MATERIALS & GADGETS

Single-Component, Solvent-Free Flashing

Kemper System America Inc. introduces Kemperol 1K-LF Flashing, designed for quick, durable roof repairs. According to the manufacturer, it is a solvent-free, low-odor system that adheres to most substrates without a primer, and is fully reinforced for more durable waterproofing protection. The product can be applied at temperatures above 41 degrees Fahrenheit, even in humid conditions. The liquid flashing fully adheres to roofing materials including most single-ply membrane roofing systems. The reinforced flashing system is rain-fast in about two hours and walkable after about 16 hours. Any unused resin can be stored for later use.

www.KemperSystem.net | **Circle No. 34**

Non-Halogenated Polyiso Roof and Wall Insulation

Atlas Roofing Corporation adds ACFoam NH and EnergyShield NH to the company's current product lines. These new non-halogenated polyiso roof and wall insulation products contain no halogenated flame retardants, providing additional environmentally friendly options to their product offerings of sustainable roofing and wall insulations for architects, designers and builders. According to the company, ACFoam NH and EnergyShield NH product offerings are an ideal building envelope solution for projects that must meet strict specific environmental specification and customers seeking non-halogenated options. All literature and product packaging of Atlas NH products will be marked with a non-hal icon for easy and visible distinction.

www.AtlasRWI.com | **Circle No. 35**

Coil Coatings Available in New Color Palette

Sherwin-Williams unveils a new architect-inspired color palette, Fluropon Architect Series, created by architects who attended the company's "Color Mixology" event during the AIA Conference on Architecture 2019 in Las Vegas. The private event brought together hundreds of architects who helped to create 10 newly developed colors of Fluropon 70 percent PVDF architectural metal coatings. Sherwin-Williams selected 10 unique colors of the hundreds created by architects during Color Mixology and matched them in various Fluropon 70 percent PVDF systems for exterior metal architecture. This special edition color series incorporates a wide range of colors, textures and effects.

www.Coil.Sherwin.com | **Circle No. 36**

Redesigned PVC Drain Kit Is Easy to Install

Marathon Roofing Products offers the Economy Enpoco Pak, the assembled kit of the ULRD Roof Drain with all the components for easy installation. Available in 2-inch, 3-inch and 4-inch sizes, the Economy Enpoco Pak provides the essential features of more expensive drains at an affordable price. This drain offers versatility and easy installation on new and existing roofs. According to the company, the product features a newly designed injection-molded PVC body with stronger gussets and an overflow option; a molded polyethylene dome strainer; and ABS clamping collar (metal standard) with gravel stop.

www.MarathonDrains.com | **Circle No. 37**

Flex PVC and Elvaloy KEE Roofing Systems

The Roofing Systems that stand the test of time

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For over a quarter of a century Flex has been the first choice for building owners, architects, contractors and specifiers who won't settle for anything but the highest quality PVC and Elvaloy KEE roofing systems.

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IIBEC, Houston, TX, March 28-29, Booth #441

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MATERIALS & GADGETS

New 7-Inch Gutter Guards Are Designed for Durability

Leaf Solution adds 7-inch Xtreme Gutter Guards to the company's product mix of 5-inch and 6-inch gutter guards for residential or commercial installation. According to the manufacturer, Xtreme features .42 stainless-steel mesh to block debris including leaves, pine needles, oak tassels, shingle grit and pollen, yet allows water to flow freely into the gutter. A durable substrate backing reinforces the mesh, horizontally and vertically, from stretching or sagging and simplifies installation. he product is available for fascia or under-shingle mount in mill silver or black. Leaf Solution Xtreme is made in the USA.

LeafSolutionUSA.com | **Circle No. 39**

Self-Sealing Snow Guard Designed for Metal Roofs

National Nail introduces the Stinger Mini SnowGuard for halting dangerous sliding ice and snow on metal roofs. The Mini SnowGuard features a self-sealing gasket system that requires no silicone, eliminating the mess and cleanup associated with sealants. According to the company, the product is easy to install, and the patented weathertight gasket system allows for installation at any temperature. Mini SnowGuards are made in the USA and are available in 12 colors and a clear finish.

www.STINGERWORLD.com | **Circle No. 40**

Aluminum-Framed, Monumental Glass Skylight System

EXTECH/Exterior Technologies Inc. expands its skylight product offering with a new SKYGARD 2500 Series aluminum-framed, monumental glass skylight system. Available in pyramid, single slope and ridge configurations, EXTECH's new skylight complements commercial, institutional and industrial building designs. The SKYGARD 2500 skylight system accepts glass up to 1-5/16 inches thick, including monolithic or insulated glass units. The new skylight system has passed industry-standard testing for air infiltration per ASTM E-283 to 12 psf and water infiltration per ASTM D-331 to 15 psf.

www.ExtechInc.com | **Circle No. 41**

Expanded and Enhanced Flashing Tapes Available in New Sizes

Huber Engineered Woods offers ZIP System sheathing and tape, which eliminate the need for felt with an integrated underlayment that protects against water penetration as an all-in-one continuous water and air barrier. Panel seams are taped with advanced acrylic ZIP System flashing tape for a strong sealed roof deck. The ZIP System line of sealing solutions was expanded and includes an enhancement to ZIP System straight flashing tapes to include three new sizes of ZIP System flashing tape and three new sizes of ZIP System stretch tape. The enhanced formula can be applied between 0 degrees and 120 degrees Fahrenheit.

www.ZipSystemSealingSolutions.com | **Circle No. 42**

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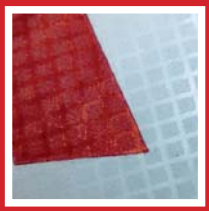
NON-SLIP SURFACE



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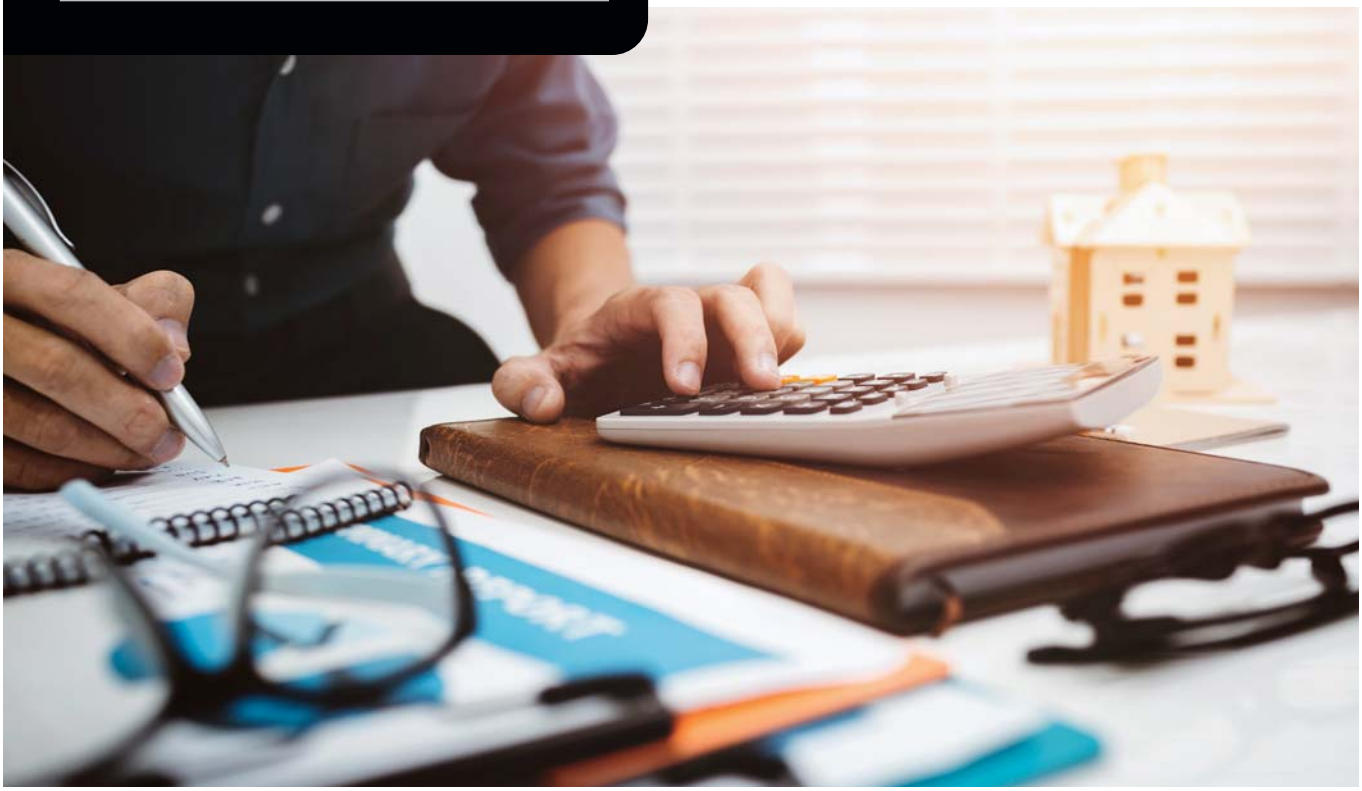

Taxing Questions

State Sales Taxes Create Administrative Challenges for Contractors

AS MOST OF US KNOW, taxes are among the few certainties we can expect in life.

And a look at state laws nationwide indicates that sales and use taxes in particular are having a moment, especially laws imposing sales tax on certain types of real property improvements and services. According to a 2015 publication by tax software provider Avalara, at least 18 states impose a sales tax on at least some services that are considered improvements to real property. These states include Connecticut, Florida, Hawaii, Iowa, Maryland, Minnesota, Mississippi, Missouri, Nebraska, New Jersey, New Mexico, New York, North Carolina, Ohio, Pennsylvania, South Dakota, Texas, and Wisconsin. States appear to be trending toward collecting sales taxes from end customers on materials, labor, repairs, and services associated with real property improvements.

The impact is not only an increase in construction costs for consumers, but will also push contractors to overcome administrative challenges and to keep their prices competitive in spite of additional tax costs they must impose on customers. As discussed below, this is especially true for contractors who do both taxable and non-taxable improvements. Anyone unsure of how their state's law applies to their activities should consult with a CPA, tax attorney, or their state's department of revenue.

WHAT SERVICES ARE TAXABLE IN MY STATE?

Generally, most states have long imposed a sales tax on purchases of goods both on consumers and on businesses. The growing trend appears to be that some states are also imposing sales tax on certain services that may or may not be related to taxable goods. In at least a few states, the distinction between capital improvement projects and repair, installation and/or maintenance work is important. Often, contractors who perform work in both categories — work subject to sales tax and work that isn't — can submit some type of affidavit or other paperwork in order to be excused from sales tax liability or from the responsibility to pass it to others. However, in many cases, the distinctions between taxable and non-taxable services is highly technical and can depend on the circumstances of the transaction in question.

In Florida, the distinction between "tangible personal property" and "real property" determines when contractors

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must charge sales tax to the end customer. Under the Florida Department of Revenue Rule 12A-1.006, if contractors furnish parts directly to customers, they must charge sales tax to customers both for the parts and for "adjusting, applying, installing, maintaining, remodeling, or repairing" tangible personal property. Section 192.001(11)(d) of the Florida statutes defines tangible personal property as "goods, chattels, and other articles of value … capable of manual possession and whose chief value is intrinsic to the article itself." The statute defines "real property" to include "land, buildings, fixtures, and all other improvements to land." Contractors performing labor to install permanent fixtures that constitute "real property" do not have to charge sales tax to their customers; contractors who will eventually charge their customers sales tax are entitled to purchase the materials as tax-exempt.

A Florida Department of Revenue online guide cites permanent carpeting, roofing, tile, and landscaping as example of "real property" improvements that are not subject to sales tax. However, the same guide states that "carpet" constitutes tangible personal property unless it becomes real property; this provision seems potentially confusing and likely requires flooring contractors to impose sales tax on some of their services but not others. Similarly, the guide states that "stepping stones" constitute tangible personal property; it would therefore seem that landscaping contractors are tasked with taxing some of their services but not others, as the guide generally lists landscaping work as a "real property" improvement.

In Ohio, contractors need to understand the legal distinction between "construction contracts," which are not subject to customer sales tax, and "tangible personal property" contracts, which are. According to the Ohio Department of Revenue, tangible personal property becomes real property when it is permanently installed or affixed upon the real property pursuant to a construction contract. The Department specifically lists carpet, carpeting materials, and landscaping materials as tangible personal property. The Department advises that for transactions that are not construction contracts and that include the sale of tangible personal property (TPP) for sales tax purposes, contractors should present their vendors with a direct pay permit that will allow them to buy the materials tax free, charge customers sales tax, and then pay the sales tax to the state on a monthly basis.

Contractors also need to comply with the requirements and, when applicable, take the administrative measures needed in order to avoid what is effectively double payment.

New York and North Carolina require contractors and other service providers to charge customers sales taxes on the sales price of "repair, installation, and maintenance" work (commonly referred to as RIM), whereas "capital improvements" are not subject to sales tax. The New York Department of Taxation and Finance's Publication 862 purports to give guidance to contractors and property owners on New York's sales tax rules. It explains that "repair" and "maintenance" work — work done to keep real property in good working order, safe, or to restore it to a good and safe condition — is subject to sales tax. Publication 862 cites replacing damaged roof shingles, repairing a broken railing, and replacing a faucet as examples of RIM services that, along with the materials, are subject to sales tax. It goes on to discuss taxable installation services and provides that "freestanding appliances" like washing machines, dryers, dishwashers, and refrigerators are among items that, although installed, do not become a permanent part of the real property under New York law.

North Carolina law similarly sets forth particular activities that constitute RIM services — like "floor refinishing and the installation of carpet, flooring, floor coverings, windows, doors, cabinets, countertops, and other installations where the item being installed may replace a similar existing item … ." The repair or replacement of roofing, gutters, and flashing appears to fall squarely within North Carolina's definition of RIM services for which contractors must charge their customers sales tax. North Carolina's law — N.C. Gen. Stat. § 105-164.3(33l) — goes on to say that RIM services that are part of a real property contracts for capital improvements are exempt from the sales tax.

"Capital improvements," on the other hand, are not subject to sales tax in New York and North Carolina. In New York, whether a project constitutes capital improvement work appears to depend heavily on the particular circumstances; even the method of installation can affect how the work is taxed. For example, some projects that ordinarily would qualify as capital improvements are not considered capital improvements if a commercial tenant installs items as trade fixtures. Whether they are taxable depends on whether the intent is for the improvements to remain permanent. In North Carolina, capital improvements include new construction; work that requires a permit (with some exceptions); installation of equipment or fixtures that is "capitalized and depreciated"; paint or wallpaper not incidental to RIM services; landscaping; and HVAC unit or system installation or replacement.

HOW IS THE INDUSTRY BEING IMPACTED?

For many contractors performing RIM or other sales taxable work in one or more of these states, distinguishing which services are and aren't subject to sales tax is only the first step. Contractors also need to comply with the requirements and, when applicable, take the administrative measures needed in

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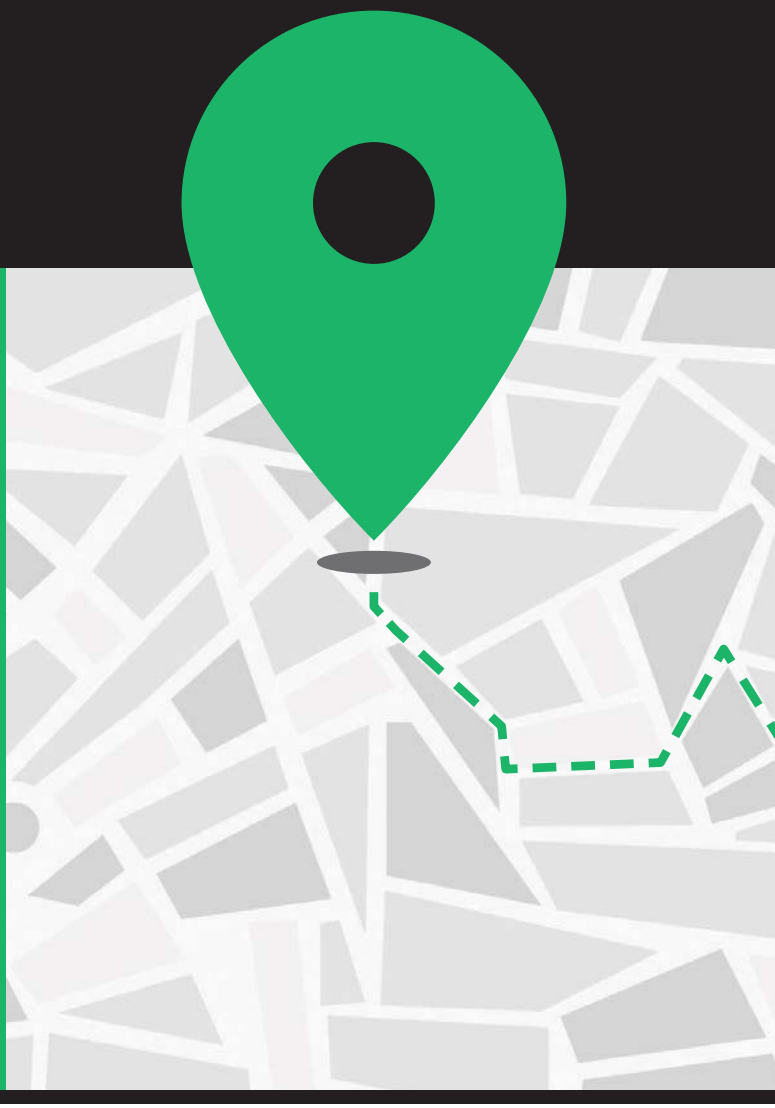

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order to avoid what is effectively double payment. When contractors buy goods and materials from wholesalers, they are generally responsible for paying sales tax at that time. Typically, though, the states that impose sales tax on RIM or other similar services don't require contractors to pay sales tax on materials that will be used in transactions where the end customer will have to pay sales tax. In many states, including North Carolina and Ohio, contractors can submit a form E-595E and potentially be exempt from paying sales tax on goods they will eventually resell and assess taxes upon. But for those contractors who buy goods and materials to be used both for RIM and capital improvements – for example, roofers who perform both new construction and repair work in North Carolina – the logistics of keeping the purchases separate (and keeping two sets of books, essentially) might be too administratively costly to justify the tax savings.

Mike Tenoever is the president and owner of The Century Slate Company, a roofing construction company in Durham, North Carolina, and he also is a member of the *Roofing* Editorial Board. Tenoever stated that even though the new sales and use tax laws took effect in North Carolina in 2016, some general contractors don't seem familiar with North Carolina's affidavit of capital improvement form when he submits it – something that indicates that not everyone is complying with or aware of the new law yet. If that's the case, then it would appear that contractors who aren't complying with the law and charging sales tax to end customers would be gaining a competitive edge over contractors who are following the law and charging sales tax on projects that constitute RIM under N.C. Gen. Stat. § 105-164.3(33l).

Furthermore, requiring contractors to determine what materials and supplies for which they should pay sales tax versus for which ones to tax customers is burdensome and, at least in Tenoever's case, has effectively resulted in double tax payment because purchasing capital-improvement materials and RIM materials separately from the same vendors has been too administratively burdensome for his company. R

ABOUT THE AUTHOR: *Caroline Trautman is an attorney with Oak City Law, LLP, based in Durham, North Carolina. Questions about this article can be directed to her at caroline@oakcitylaw.com.*

AUTHOR'S NOTE

This article does not constitute, and should not be construed as, legal advice on any particular scenario. For specific advice, consult with an attorney licensed in your state.

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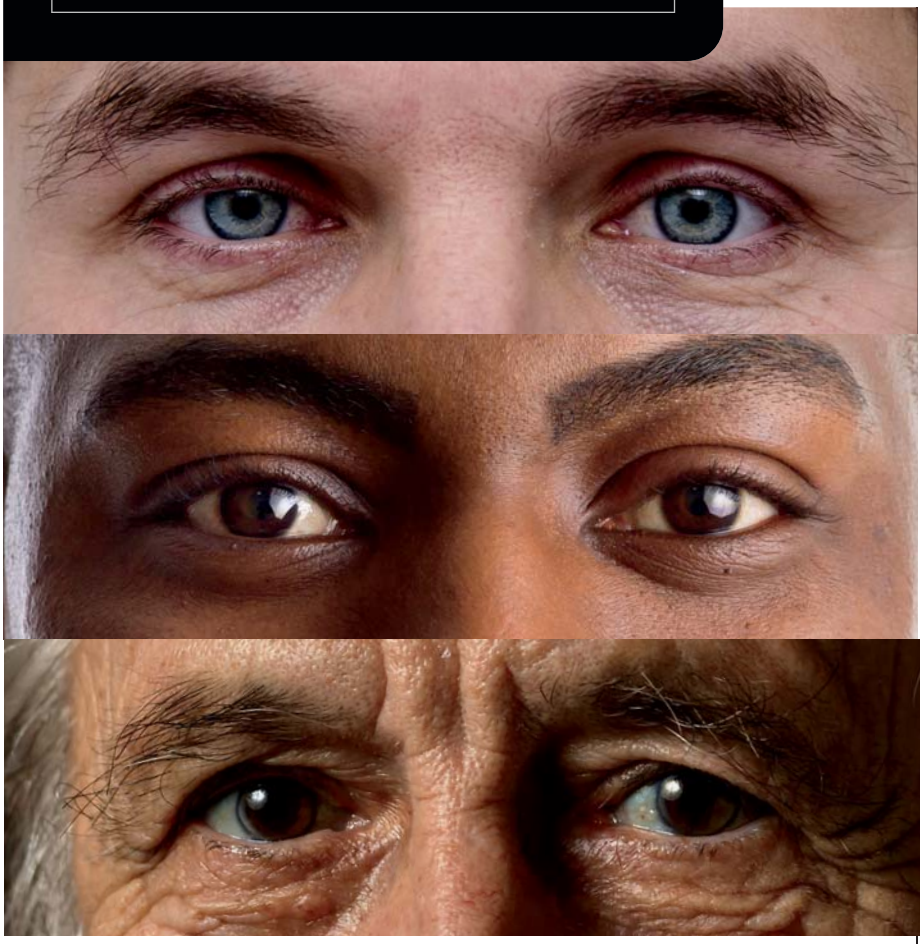

Age Discrimination

What Are Your Rights, How to Recognize it, and What to Do if it Happens to You?

ACCORDING TO A 2017 AARP survey of 3,900 workers over the age of 45, more than 61 percent reported having experienced or having seen age discrimination in the workplace, with 40 percent describing the practice as "very common." While the detrimental effects of age discrimination are not hard to imagine in regard to the older workers who experience it, age discrimination can also have many negative effects on the companies where it occurs, including depriving the company and younger workers of needed mentoring, leadership, expertise, and experience in the workplace. Age discrimination can also decrease productivity and production by the victims of such discrimination and, consequently, increase employee turnover and preventable hiring and training costs. Claims of discrimination can also cause significant harm to a company's reputation and to employee morale, and can potentially subject the company to expensive age discrimination claims and lawsuits. Based on this troubling backdrop, coupled with the ongoing skilled labor shortage in the roofing industry, it is important for companies to understand their obligations to older employees in their workforce, as well as for employees to know and understand their rights and remedies against unlawful age discrimination that they may experience in their workplaces.

The Age Discrimination in Employment Act of 1967 (ADEA) bans employers with 20 or more employees from engaging in age discrimination against applicants and employees who are 40 years of age or older. Additionally, the ADEA actually allows employers to favor workers based on age even when doing so adversely affects younger workers who are under 40. However, most states and many municipalities also have statutes or ordinances in place that prohibit discrimination based on age, and many expand those protections to workers of any age (i.e., prohibiting discrimination against workers for being too young) and to employers with fewer than 20 employees. Thus, besides understanding the federal legal framework concerning age discrimination, it is important to also know and take into account the state and local laws where your company is situated to make sure your company is complying with all of the anti-discrimination laws that may apply to it.

RECOGNIZING AGE DISCRIMINATION

Age discrimination occurs when an employee or applicant is harassed or discriminated against because of his/her age in regards to hiring, firing, salaries, raises, promotions, demotions, discipline, assignments, training, job postings, job descriptions, interviews, benefits and/or other terms and conditions of employment. Examples of age discrimination against people over 40 include, but certainly are not limited to:

- Firing an employee whom the employer believes has become too old to perform the job
- Setting age limitations or preferences as a job prerequisite
- Not interviewing or hiring someone because they are viewed as "too old" to fit in with the company's culture or other employees
- Advertising for someone to join a "dynamic, young team"
- Not hiring older workers because it's assumed they will soon retire
- Paying for training for younger

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employees but requiring older employees to pay for the same training out-of-pocket
- Not providing training to older employees because "it's not worth it"
- Giving younger associates better assignments because they will be there longer than the older employees
- Turning down older workers for promotions and promoting less qualified younger workers
- Laying off older employees or forcing older employees to retire because they require higher salaries than younger employees
- Giving younger employees better health insurance coverage than older employees in order to cut costs
- Giving unfair discipline or harsher criticism to older employees than that given to younger employees
- Making or allowing derogatory or offensive comments or remarks in the workplace about someone's age
- Engaging in or allowing harassment based on age

In states or municipalities that prohibit discrimination against employees of any age, additional examples of age discrimination include, but are not limited to:

- Not interviewing or hiring someone because they are viewed as "too young" to fit in with the company's culture or other employees
- Advertising for a "mature, older" worker
- Not hiring younger workers because it's assumed they will quickly move on to another job
- Paying for training for older employees but requiring younger employees to pay for the same training out-of-pocket
- Not providing training to younger employees because "it's not worth it"
- Turning down younger workers for promotions or assignments and giving them to less qualified older workers because the younger worker "hasn't earned it yet" or "still has plenty of time" to receive other promotions or assignments
- Giving unfair discipline or harsher criticism to younger employees than that given to older employees
- Deeming younger workers' reasons or need for requesting time off as less "worthy" than older workers' requests for time off

FILING A CHARGE OF DISCRIMINATION

An employee who believes that they have been discriminated against because of their age cannot go straight to filing a lawsuit against their employer in court. Instead, the employee must first file a Charge of Discrimination with the federal Equal Employment Opportunity Commission (EEOC) or with their state (and sometimes local) counterparts, called Fair Employment Practice Agencies (FEPA). A Charge of Discrimination is a signed statement alleging that the employee or applicant was discriminated against or harassed by an employer or its employees because of their age. If the employee is worried about revealing their identity, the law permits another person to file an EEOC Charge of Discrimination on their behalf. Charges of Discrimination can be filled with the EEOC online through its public portal after submitting an online inquiry and being interviewed by EEOC staff.

In states that have their own anti-discrimination laws and a FEPA agency responsible for enforcing those laws, an individual can file a Charge of Discrimination with their state FEPA which will automatically be deemed as "dual-filed" with the EEOC if federal laws apply to the type of discrimination alleged. An individual does not need to file a Charge of Discrimination with both agencies.

Filing a timely Charge of Discrimination is a statutory prerequisite to bringing an age discrimination lawsuit. If an employee files an age discrimination lawsuit in court without first filing a Charge of Discrimination with the EEOC or the appropriate state FEMA, the lawsuit will most likely be quickly dismissed based on the employee's failure to file a Charge of Discrimination before filing suit.

Age discrimination continues to be a problem in the workplace despite longstanding federal regulations that specifically prohibit this form of unlawful discrimination, as well as similar anti-discrimination counterparts enacted at the state and local levels throughout the country.

It is also imperative that the employee's Charge of Discrimination be timely filed as there are specific deadlines that must be met in order to successfully file a Charge. Specifically, under federal law, an individual has 180 calendar days from the day the alleged discriminatory act or conduct took place to file a Charge of Discrimination based on those acts or conduct. This deadline is extended from 180 days to 300 days in states where there is a state law that bans age discrimination and a state FEPA that enforces the law. Unlike discrimination based on other protected characteristics, the deadline is not extended from 180 days to 300 days if only a local law (and not a state law) prohibits age discrimination.

If more than one discriminatory event took place, the deadline usually applies separately to each event. For example, if an employee was discriminatorily demoted because of her age and then over a year later was fired also because of her age, and the next day files a charge of discrimination, only the claim of discriminatory discharge will be timely because the employee did not

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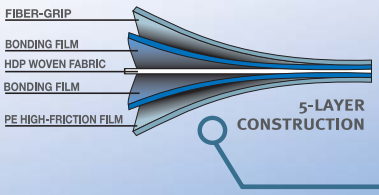

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file a charge based on the demotion within 180 (or 300 if applicable) days of the demotion occurring. The exception to this rule is for claims of ongoing harassment which must be filed within 180/300 days of the last incident of harassment.

Age discrimination continues to be a problem in the workplace despite long-standing federal regulations that specifically prohibit this form of unlawful discrimination, as well as similar anti-discrimination counterparts enacted at the state and local levels throughout the country. Studies show that older workers are healthier and living longer than their predecessors, are more educated, and, often by necessity, are staying in the workforce longer than previous generations. Yet outdated stereotypes and assumptions about older workers and their professional abilities continue to persist despite research proving time and again that age does not predict overall ability or performance, causing harm not only to older workers and applicants but also to a discriminating company's bottom line.

To turn this tide, employees must be aware of their rights and how to enforce them and employers must become more cognizant of the significant detrimental effects of age discrimination. Employers must conscientiously assess their policies, practices, and workplace culture, and make changes where needed, in order to create and maintain a workplace culture that embraces diversity and inclusivity and prohibits unlawful discrimination of any kind. Doing this will benefit not just older employees but also the workforce as a whole. It will help companies thrive by creating a healthier, more inclusive workplace culture, generating happier and more productive employees, and preventing costly EEOC charges or lawsuits, which ultimately will lead to a better, more productive work environment for all. R

ABOUT THE AUTHOR: *Marci Britt is an attorney at Cotney Construction Law who practices primarily in labor and employment law. Cotney Construction Law is an advocate for the roofing industry and serves as General Counsel for NRCA, FRSA, RT3, NWIR, TARC, WSRCA and several other roofing associations. For more information, visit www.cotneycl.com.*

AUTHOR'S NOTE

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WRITTEN BY **DR. TANYA BROWN-GIAMMANCO**

Innovations in Hail Testing

New Test Protocol Provides Deeper Insight Into Performance of IR Shingles Against Hail

CONSUMERS DESERVE to have confidence that shingles labeled as impact resistant live up to their resilient expectations. The Insurance Institute for Business & Home Safety (IBHS) has dedicated years to collecting data and identifying unprecedented insights into the performance of impact resistant-labeled shingles.

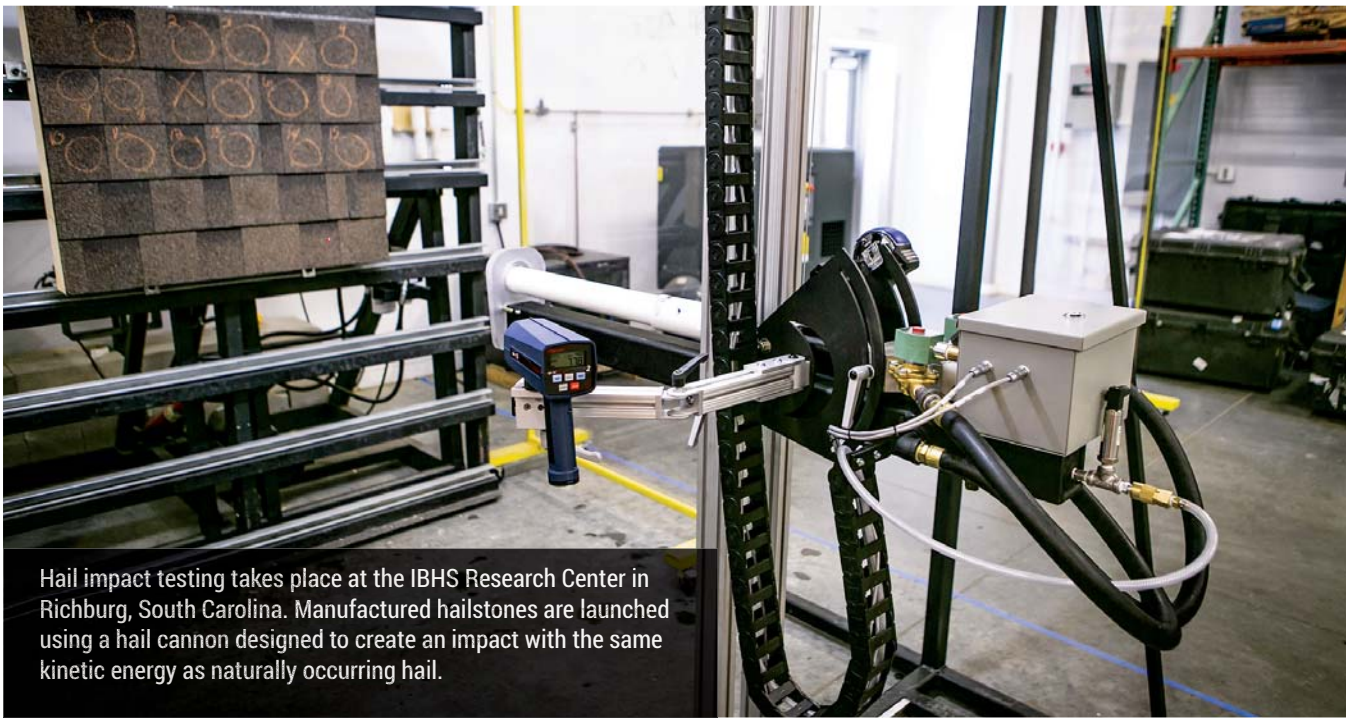
IBHS is a non-profit, scientific research organization funded by the property insurance industry as a tangible demonstration of its commitment to resilience. Charged with advancing building science, influencing residential and commercial construction and creating more resilient communities, IBHS recreates real-world severe weather conditions to test buildings and building components, including asphalt shingles.

BACKGROUND

Hail poses a threat to roofs across the country. It routinely causes more than $10 billion in insured losses each year according to a 2017 WillisRe study, and those losses have been growing. Yet, hail is not well accounted for in typical construction processes because hail-resistant products are not typically required by building codes.

Impact-resistant (IR) asphalt shingles are marketed to consumers to perform better in hailstorms. Currently, those products are tested according to Underwriter's Lab UL 2218 test or FM Approvals FM 4473 test, which use steel balls and pure water ice balls, respectively. They are based on diameter to kinetic energy relationships from the 1930s, and both tests launch projectiles at the roofing products and assume the damage severity is directly tied to the kinetic energy of the projectile. These tests evaluate products on a pass or fail basis using human evaluation to judge whether a crack has occurred, and in the case of the UL test, the damage is viewed from the backside — the side of a shingle a homeowner, roofer or insurance adjuster can't see. Neither test, however, accurately replicates both the type and severity of damage found on rooftops after hailstorms.

Missing in the development of these test standards was an understanding of the material properties of natural hail. Historical studies had quantitative data on mass, diameter, and density, but qualitatively described the strength



Hail impact testing takes place at the IBHS Research Center in Richburg, South Carolina. Manufactured hailstones are launched using a hail cannon designed to create an impact with the same kinetic energy as naturally occurring hail.

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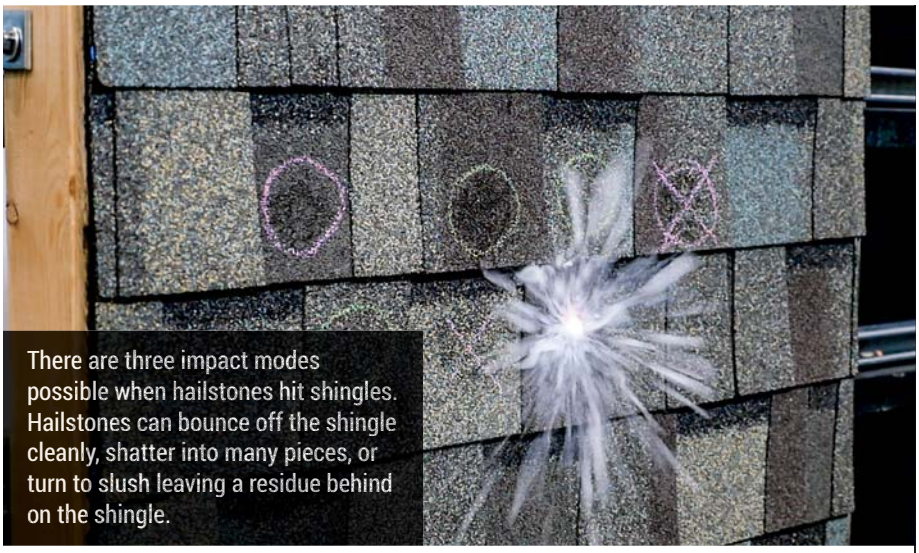
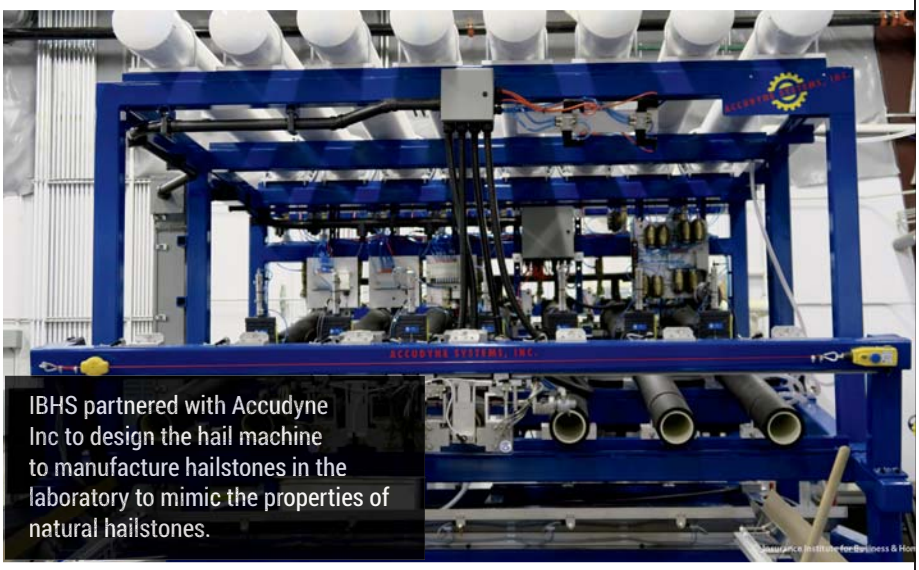


There are three impact modes possible when hailstones hit shingles. Hailstones can bounce off the shingle cleanly, shatter into many pieces, or turn to slush leaving a residue behind on the shingle.



IBHS partnered with Accudyne Inc to design the hail machine to manufacture hailstones in the laboratory to mimic the properties of natural hailstones.

or hardness of hailstones. There were no quantitative hailstone strength data from which to base a laboratory test.

FILLING A KNOWLEDGE GAP

IBHS began laying the foundation for what would become the IBHS Impact Resistance Test Protocol for Asphalt Shingles by collecting quantitative data on hailstone properties to expand understanding of the phenomenon itself in 2012. Researchers in the field have followed severe thunderstorms and collected hailstones to measure their mass, diameters, and strength. These data provided a deeper understanding of the kinetic energy with which hailstones fall, their mass to diameter relationship, and the strength of the hail itself.

After collecting thousands of data points, IBHS was able to fill the gap in the fundamental properties of hail that would affect damage. The data revealed that natural hail is slightly stronger than pure ice and current test methods overestimate the mass, fall speed and impact energy of hail. This was a significant breakthrough in hail science.

RECREATING HAIL IN THE LAB

Armed with these new insights, IBHS researchers could begin to replicate the properties of natural hail and achieve the right impact energies in the laboratory to develop a new test for impact resistance that would produce damage representative of natural hailstorms. Seltzer water was initially used to create the density observed in natural hail. Later, IBHS and Accudyne Systems Inc. developed and patented a hail machine to mass-produce manufactured hailstones for testing. The hail machine allows researchers to configure the density and strength of hailstones to mimic the variety that occurs in natural hail.

Variations in strength and density led to the identification of three impact modes, or types of impacts, that occur when manufactured hailstones are launched at asphalt shingles. The hailstones may result in a "hard bounce" off the shingle remaining nearly intact, a "hard shatter" with the hailstone fracturing into numerous small pieces leaving no ice residue behind, or a "soft" impact where the hailstone turns to "slush" on the surface of the shingle.

The hard impacts typically caused granule loss and deformed the shingles, leaving dents and creating breaches. The soft, slushy impacts produced a larger area of granule loss, but left less noticeable deformations. These damages are reflective of damages observed on real roofs after hailstorms and may diminish a shingle's water-shedding capabilities. Deformations to shingles can allow water to penetrate and get into the roof, which may damage the interior of a home. Loss of granules on shingles exposes the asphalt to UV radiation, which can cause them to become more brittle and prone to further damage and shorten the service life of the roof.

THE TEST PROTOCOL

The IBHS Impact Resistance Test Protocol for Asphalt Shingles uses a hail cannon to launch 1.5- and 2-inch manufactured hailstones at roofing test panels. Unlike existing test methods, IBHS requires the shingles be purchased from distribution channels as a roofer or contractor would purchase the product.

The test panel follows the UL 2218 method with a 3-foot by 3-foot frame with a middle structural member to simulate the presence of a roof truss. The panel has a plywood roof deck and

Figure 1. Hail causes three distinct types of damage to shingles. Hail can deform a shingle with dents, dislodge the protective granules on the surface of the shingle, and cause cracks or tears that breach the material.

underlayment. Shingles are installed according to each manufacturer's instructions. Impacts are focused on the main portion of the shingles avoiding edges, joints, corners, the outer frame and the middle structural member.

When testing three-tab shingles, 20 impacts per hailstone size are required. When testing architectural shingles, 40 impacts per size are required — 20 on the single layer portion of the product and 20 on the multiple layer portion of the product. For each hailstone size, an equal number of hard and soft impacts are required. However, some variation is allowed between hard shatter and hard bounce.

DAMAGE ASSESSMENT AND RATINGS

As part of the new test protocol, IBHS needed an objective tool to assess damages and improve upon the human judged pass/fail ratings of the existing test methods. IBHS partnered with Nemesis Inc. to create a cloud computing tool to measure the volume of deformations and the area of granule loss. The application runs on a computer or mobile device and uses at least 13 photos to generate gridded 3D data of the impacts. The 3D mesh allows the application to precisely measure deformations, including both the depth of dents and the height of the ridge surrounding each dent, as well as granule loss individually and in patches. The quantitative data allows for the severity of the damage to be evaluated, rather than treating all damage as equal. The third mode of damage, breach, is assessed by expert judgement to visually determine the severity level.

The damage severities for each of the 20 impacts for three-tab shingles or 40 impacts for architectural shingles are used to calculate the overall performance evaluation rating of a product for a given test size. IBHS publicly released results of the initial testing in June 2019. The published ratings provide the overall performance evaluation rating in addition to performance ratings by damage category.

The initial release included eight of the most widely-sold IR shingle products on the market. As part of the release, IBHS committed to retest the products every two years and to test new products introduced to the marketplace within six months of release. In October 2019, IBHS issued an update to the performance evaluation ratings, adding three newly released products to the list.

SUMMARY

The IBHS Test Protocol differentiates the performance of widely-sold IR shingles currently on the market by replicating the properties of natural hailstones and providing a quantitative evaluation of performance. Moving beyond pass/fail testing provides more detailed performance information for consumers looking to purchase a better performing product, roofers looking to sell a better product and manufacturers who wish to improve their products.

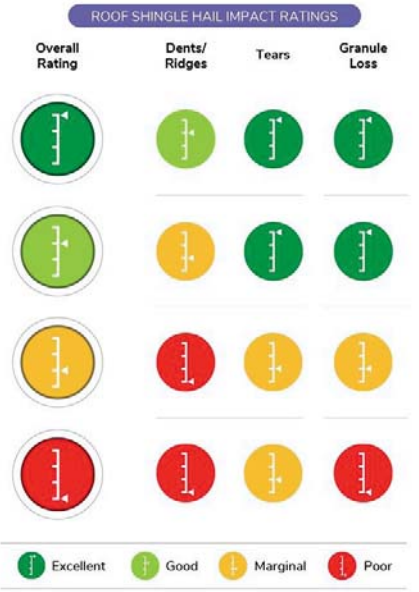


Figure 2. An example of the Roof Shingle Hail Impact Ratings chart found on IBHS.org. Each product recieves an overall rating in addition to a rating by damage type ranging from excellent to poor performance.

As hail-related losses continue to rise, the IBHS Impact Resistance Test Protocol for Asphalt Shingles and its ability to more effectively determine which shingles may be more resilient to hail will help raise the level of performance and arm consumers in hail-prone regions with more information when selecting a roofing product.

To view the latest shingle performance ratings, visit www.ibhs.org/hail/shingle-performance-ratings.

ABOUT THE AUTHOR: *Dr. Tanya Brown-Giammanco is the Managing Director of Research at the Insurance Institute for Business & Home Safety (IBHS) and has overseen the IBHS hail program since its inception in 2010. For more information on hail research, please visit ibhs.org.*

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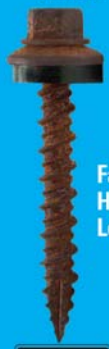

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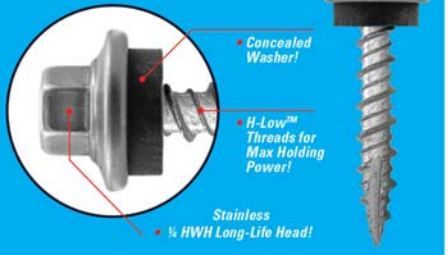

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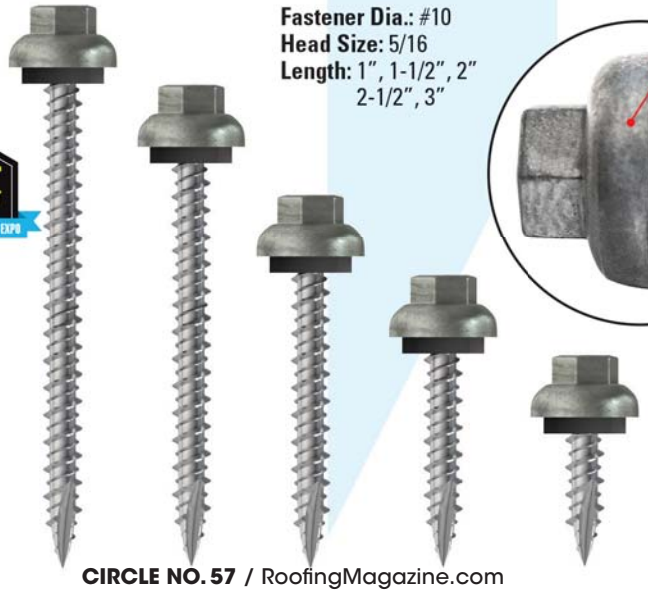

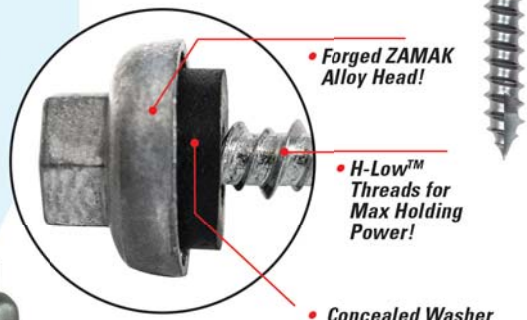

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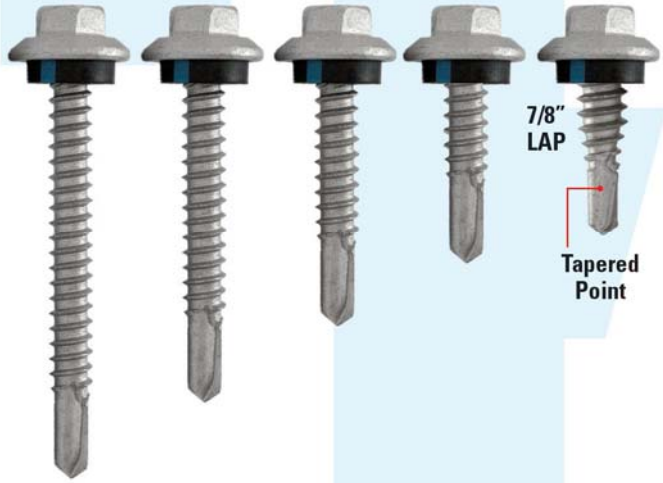

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Fastener Dia.: #10
Head Type: #2 Mod. Phil. Combo

Length: 1", 1-1/2", 2"

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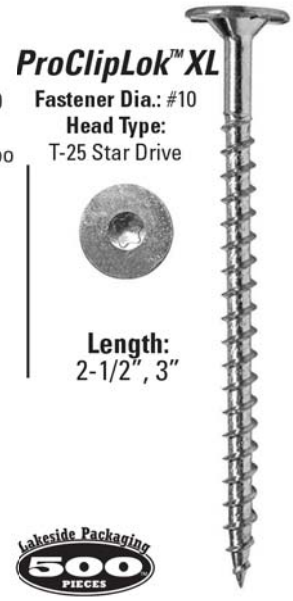
Fastener Dia.: #10
Head Type: T-25 Star Drive



Length: 2-1/2", 3"

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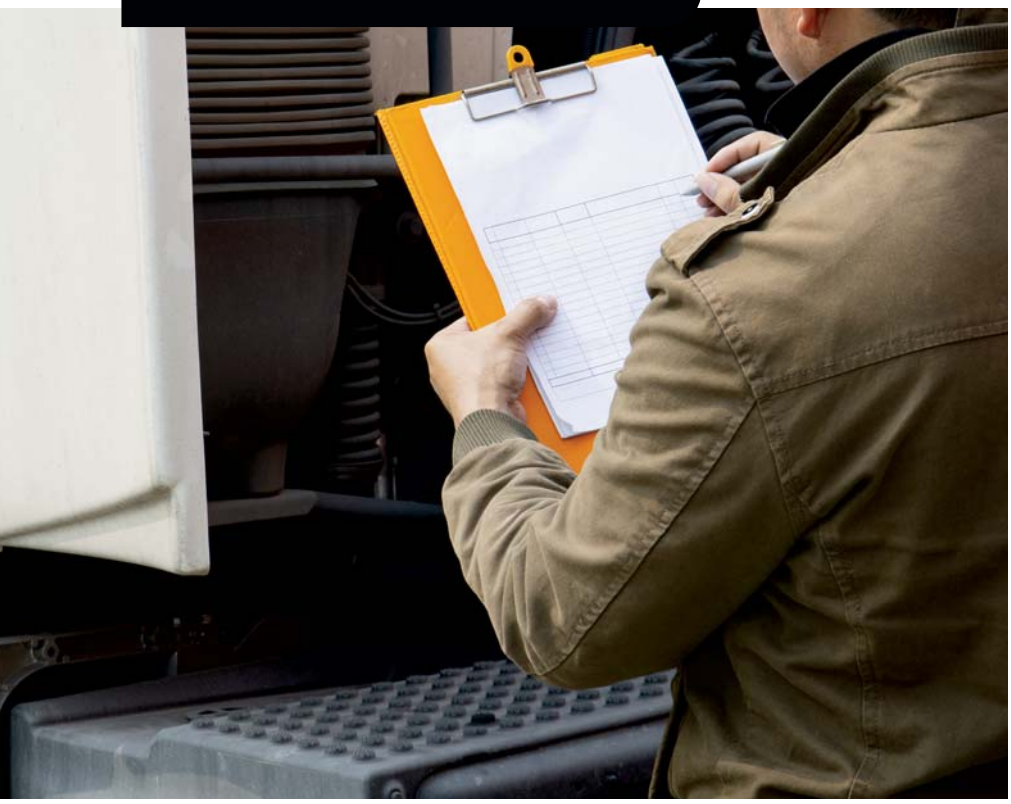
WRITTEN BY **LINDSEY E. POWELL**



When ICE Comes Knocking ...

How to Prepare Your Company for an Immigration and Customs Enforcement Audit

ALTHOUGH PRESIDENT Trump's attempts to pass sweeping immigration reform have been largely unsuccessful, since his inauguration there has been a sharp increase in enforcement of current immigration policies in the workplace. One such policy is that employers verify that all employees are authorized to work in the United States. Since 1986, the Immigration Reform and Control Act (IRCA) requires employers to verify work authorization by reviewing each employee's identification documents and completing (and retaining) Employment Eligibility Verification Forms (Forms I-9).

Enforcement of IRCA is largely accomplished through the initiation of I-9 audits conducted by Immigration and Customs Enforcement (ICE), an agency within the Department of Homeland Security (DHS). According to the National Law Review, in 2018, the number of audits conducted increased by more than 400 percent, from 1,360 in 2017 to 5,981 in 2018.

WHAT IS AN ICE AUDIT?

During an ICE audit, ICE officials are legally permitted to examine Forms I-9 for compliance and determination of fines or other criminal penalties for violations. ICE audits may be initiated based on tips from various sources, but companies are also subject to being randomly selected from a national database of employers.

In most circumstances, an ICE audit begins when an ICE agent arrives at the workplace and delivers a Notice of Inspection (NOI). Upon receipt of a NOI, the company is provided with three days to respond. In some circumstances, with good reason, an extension to respond may be granted. After the three-day period, or any extension, the employer is required to produce for inspection Forms I-9 for all active employees and any employees terminated within the retention period. (Forms I-9 must be retained for certain periods even after an employee is terminated or leaves a position.) ICE officials may arrive on site to conduct an inspection or investigation. While on site, ICE officials cannot enter non-public areas of a building or speak with employees on the premises unless the officers have a warrant or the employer's consent, unless certain circumstances exist to permit further investigation without a warrant, subpoena, or the employer's consent.

PREPARING FOR AN AUDIT

The key to preparing for a potential ICE audit is to be proactive. One of the most effective ways for an employer to prepare for an ICE audit is to conduct an independent self-audit to ensure they are in order and in compliance with all requirements. An employer may choose to perform the internal audit or hire counsel to do so. Hiring independent counsel that specializes in this area of the law to perform the audit provides the employer with several benefits. Counsel can walk the employer through the audit process, determine any deficiencies that exist, and prevent the possibility of any deficiencies being covered up by staff members or other employees. Performing self-audits not only gives employers an opportunity to identify errors, omissions, or other deficiencies, but is also evidence of a good faith effort on the part of the employer to make all reasonable efforts

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Introducing a systematic approach to records maintenance will make it simpler for internal audits and shield employers from the significant penalties IRCA imposes.

to comply with the requirements.

Employers should prepare to take immediate action to correct any deficiencies a self-audit reveals. Forms I-9 should never be backdated, as that evidences an attempt to willfully and intentionally deceive government officials. Deficiencies should be corrected in a conspicuous manner. Use a different color ink to indicate a correction and have the person making the correction initial it. In addition, the internal audit process should be adequately documented. For example, attach a memorandum to the deficient Form I-9 identifying the deficiency discovered and the steps taken by the employer to correct it.

In addition to performing an internal self-audit, employers should always review or establish sound policies and procedures for completing Forms I-9 and maintaining adequate records. Employers should always exercise due diligence when making employment decisions to ensure that each employee is compliant.

Here are a few quick methods to avoid or reduce exposure:

- Ensure that there is a Form I-9 on file for every active employee.
- Ensure all reverifications are completed where an employee's work authorization has expired and form a schedule for ensuring that reverification is completed timely.
- Maintain copies of identity and work eligibility documents.

In any event, hiring independent legal counsel will prepare employers for any potential ICE audits and provide employers with an additional layer of protection should the employer receive a NOI. Introducing a systematic approach to records maintenance will make it simpler for internal audits and shield employers from the significant penalties IRCA imposes. Technical violations, those which are inadvertent or procedural, can carry fines between $230 to $2,292 for first-time violators. Fines for knowingly hiring, employing, or continuing to employ unauthorized workers are between $573 to $6,878 for first-time violators and can reach up to $20,130 for the third (or later) violation. In addition to civil penalties imposed for failing to comply with the provisions of IRCA, employers should be aware of potential criminal liability if ICE determines that the employer engaged in a pattern of hiring or recruiting undocumented workers.

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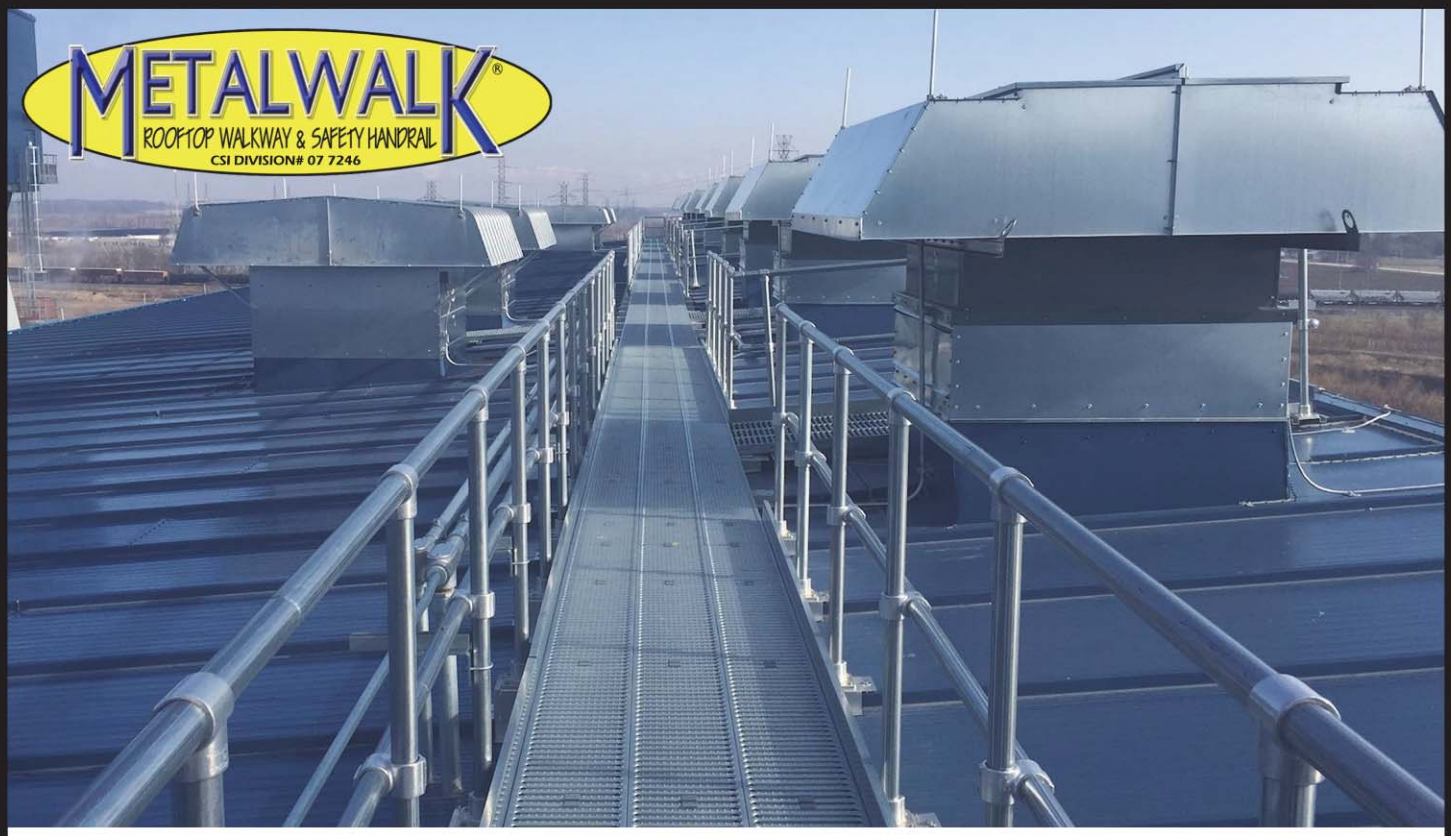

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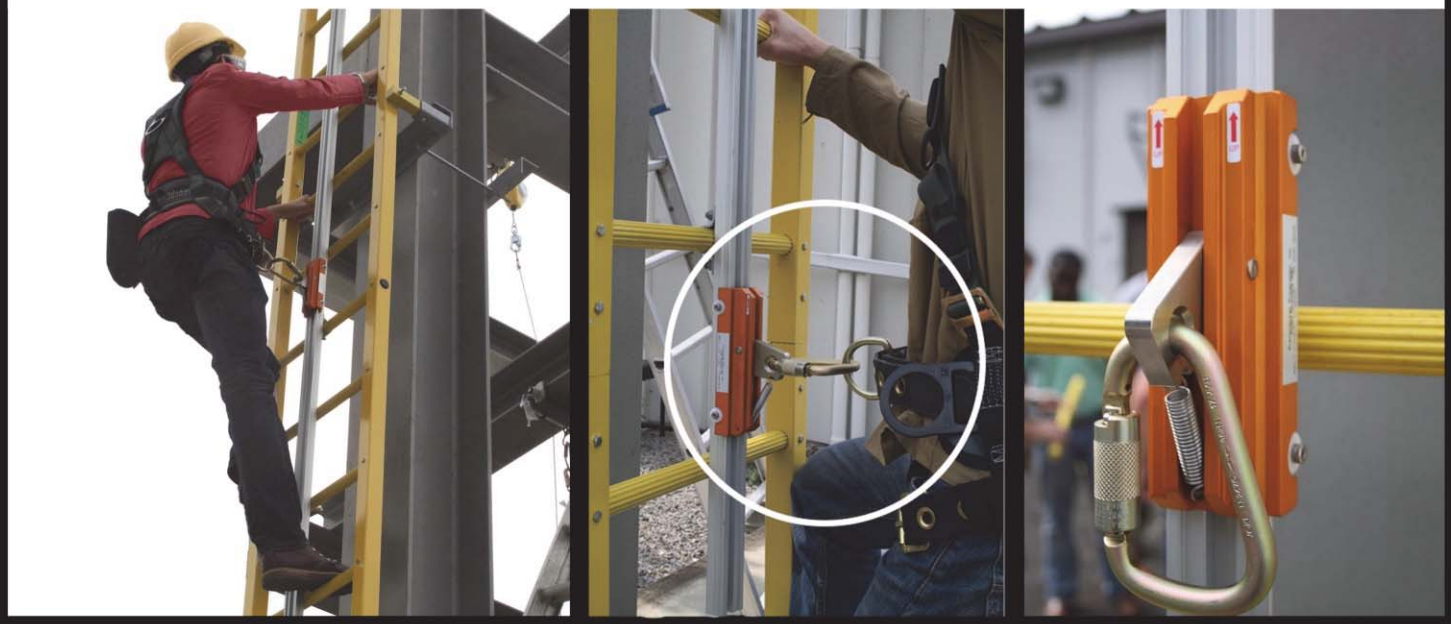

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IMPACT ON THE CONSTRUCTION INDUSTRY

In the midst of a nationwide shortage of skilled workers, many contractors are struggling to adhere to federal hiring requirements, exposing many employers to civil fines and criminal charges which would ultimately challenge their ability to survive.

It is important to note that both general contractors and subcontractors bear the same responsibilities when it comes to maintaining Forms I-9 documentation. General contractors should be further aware that they could be held responsible if a subcontractor fails to meet all requirements. Ultimately, liability depends on knowledge.

If a general contractor or even a large subcontractor is aware that a lower-tier subcontractor is employing undocumented workers, they can be held liable as well. To prevent any issues regarding knowledge, contractors should always make proper inquiries into hiring and employment practices of subcontractors.

As previously discussed, it is critical that each employer implement and enforce sound employment and employee documentation policies to ensure compliance with all federal requirements. Hiring independent legal counsel can assist with identifying and rectifying any deficiencies which an employer is not even aware exist. Getting out in front of deficiencies is critical to avoid civil or criminal liability should an ICE official come knocking on the door. R

ABOUT THE AUTHOR: *Lindsey E. Powell is an attorney with Anderson Jones, PLLC practicing in North Carolina and Georgia. Questions about this article can be directed to her at lpowell@andersonandjones.com. Author credit is also given to Keith A. Boyette, attorney with Anderson Jones, PLLC who may be reached at kboyette@andersonandjones.com.*

AUTHOR'S NOTE

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WRITTEN BY **ANDY BAKER**

This photo shows a gravel stop failure during roof inspections after Hurricane Ike in Sept. 2008.

Edge Metal Application

Is There Ambiguity About Regulatory Compliance With Edge Metal Systems?

RECENTLY WHILE preparing training for our team on how to ensure that the edge metals that we install comply with building code, inconsistencies and confusion about regulatory compliance caused me to dig deeper. Specifically, my questions related to ANSI/SPRI/FM 4435/ES-1 2017. The requirements of section 3.0 (shown below) caused the greatest concerns:

- 3.0 Membrane Termination

Two types of membrane termination are industry accepted: dependently and independently terminated systems.

- 3.1 Dependently Terminated Systems

Ballasted systems, ribbon/spot adhered systems, or systems in which the mechanically attached roof over is secured to the substrate at a distance greater than 12 in (300 mm) from the roof edge are considered dependently terminated by the roof edge system. For these systems the RE-1 and RE-2 tests are required.

- 3.2 Independently Terminated Systems

Systems in which the roof cover is fully adhered to the substrate or a mechanically attached roof cover is secured to the substrate at a distance less than or equal to 12 in (300 mm) from the roof edge are considered independently terminated. For these systems the RE-2 test or RE-3 test is required.

Many installed roof systems are mechanically fastened thermoplastic with fastener row spacing that exceeds the 12-inch requirement, and often snap-on fascia systems are utilized to meet the owner/designer's price concerns. The product data sheets for most of prefabricated snap-fascia cover systems frequently contain the following statement(s):

- ANSI/SPRI/FM-4435 ES-1 Tested and Certified.
- Quality Assurance:
  The fascia product shall be listed in the current Factory Mutual Research Corporation Approval Guide approved by ANSI/SPRI/FM 4435/ES-1 SPRI Test Method RE-2 Pull-Off test for fascia. Fascia shall be certified by the manufacturer to design pressures as indicated in current edition of Wind Resistance Standard for Edge Systems Used with Low Slope Roofing Systems.

It was the last few sentences which concerned me as a roofer. If the systems are only tested for RE-2, then it is likely that ballasted systems, ribbon/spot adhered systems, or systems in which the mechanically attached roof cover is secured to the substrate at a distance greater than 12 inches (300 mm) from the roof edge that incorporate this edge flashing may not comply with building codes.

In hopes of finding an edge metal detail that was tested for RE-1 per ANSI/SPRI/FM 4435/ES-1, the NRCA Technical Services was contacted. This resulted in the revelation that RE-1 testing cannot be performed for generic membrane types. Rather, the testing would have to be performed on each type of membrane for each manufacturer. This is due to many factors related to the typical properties of each membrane type and manufacturer. These factors can include type of reinforcement (if any), mixture components, type of manufacturing

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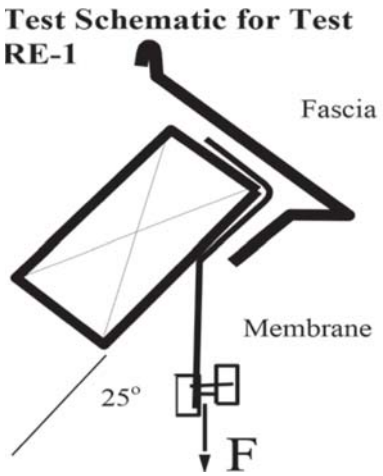

A graphic depicting the RE-1 test from standard ANSI/SPRI/FM 4435/ES-1.

RE-2 testing being conducted on fascia.

RE-3 testing being conducted on coping.

process, etc. Therefore, the testing data can be proprietary.

Now, as a roofing contractor, I am really confused.

1. The building code tells me that the edge metals we install must:

- 1504.5 Edge securement for low-slope roofs.
  Low-slope built-up, modified bitumen and single-ply-roof system metal edge securement, except gutters, shall be designed and installed for wind loads in accordance with Chapter 16 and tested for resistance in accordance with Test Methods RE-1, RE-2 and RE-3 of ANSI/SPRI ES-1, except Vult wind speed shall be determined from Figure 1609A, 1609B, or 1609C as applicable.

2. ANSI/SPRI/FM 4435/ES-1 states:

- Membrane Termination
  Two types of membrane termination are industry accepted: dependently and independently terminated systems.

- 3.1 Dependently Terminated Systems
  Ballasted systems, ribbon/spot adhered systems, or systems in which the mechanically attached roof cover is secured to the substrate at a distance greater than 12 in (300 mm) from the roof edge are considered dependently terminated by the roof edge system. For these systems the RE-1 and RE-2 tests are required.

- 3.2 Independently Terminated Systems
  Systems in which the roof cover is fully adhered to the substrate or a mechanically attached roof cover is secured to the substrate at a distance less than or equal to 12 in (300 mm) from the roof edge are considered independently terminated. For these systems the RE-2 test or RE-3 test is required.

3. We now know that RE-1 testing cannot be uniformly tested for each type of roof membrane. Therefore, it is not always readily available.

4. Of the pre-manufactured edge metal suppliers that were contacted, some indicated they tested per RE-1, while others agreed that they only tested to the RE-2 standard, and some went so far as to say that RE-1 test does not relate to their product. However, ANSI/SPRI/FM 4435/ES-1 2017 states otherwise.

ONGOING QUESTIONS

Should all roofing contractors go ahead and install the securement within 12 inches of the roof edge to ensure that all non-adhered roof systems are independently terminated, avoiding the need for RE-1 testing? Worse yet, should we install fasteners in ballasted roof systems since passing RE-1 test data is not readily available? Fasteners in the field of a ballasted roof can be a disaster. (One option that contractors can use to avoid the need for RE-1 testing is by installing a peel stop.) The question remains: Is confusion about RE-1 and ANSI/SPRI/FM 4435/ES-1 driving contractors to install independently terminated roof membrane systems?

When all is said and done, it is the roof installer that is ultimately responsible for proper application of the product to meet the legal requirements. It appears that there is ambiguity and confusion concerning ANSI/SPRI/FM 4435/ES-1 and code compliance. We can only hope that this will be clarified by building professionals, rather than lawyers. In the interim, we are now aware of the potential issues and can react as we deem necessary to mitigate our liability. R

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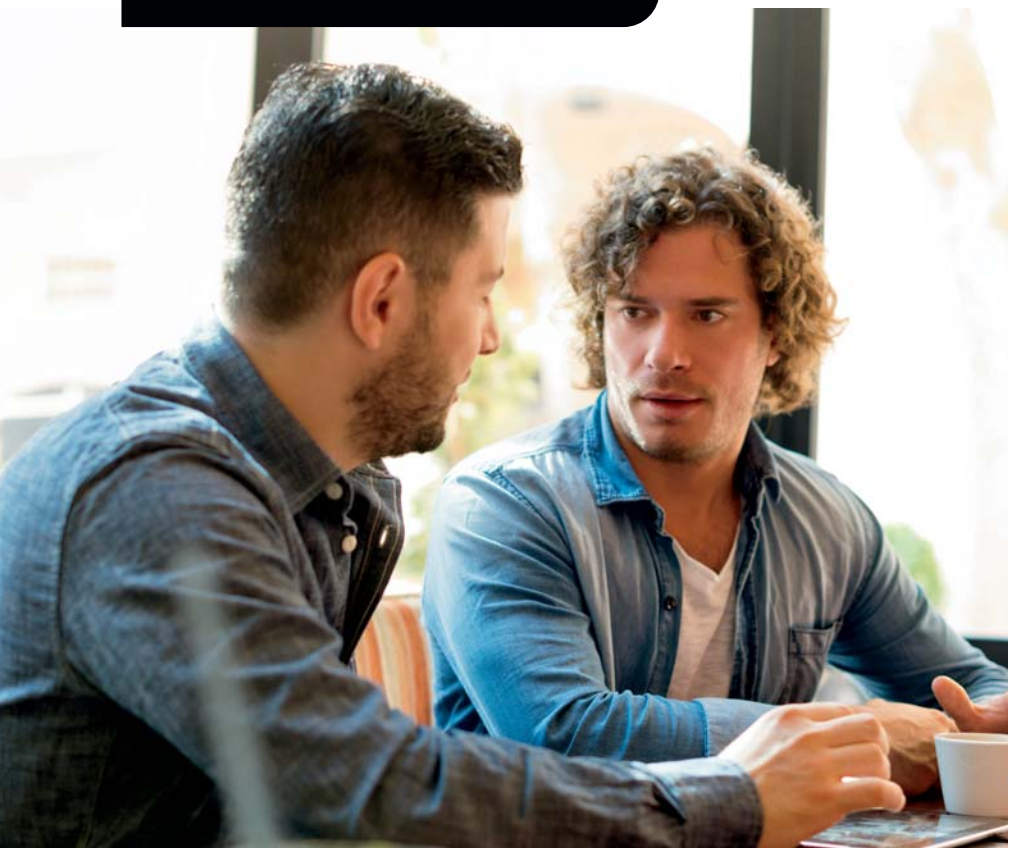

Networking and Sales

How To Create Advocates — Not Adversaries

EVERYONE WE COME in contact with can either help us achieve our goals, or create obstacles. The outcome is dependent on how we engage with them. When we are looking to grow our business, we interact with many people in many different roles. How we see them informs how we choose to deal with them. If we are wrong, we can hurt our growth.

Everyone we meet is not a prospect. There, I said it. Moreover, it is really dangerous to assume that everyone is a potential customer. When we believe that everyone we encounter is a possible client, we approach them from that direction. We decide our communication structure based on that belief. The problem with this belief is that most of the people we meet are not potential customers. So, we are instantly alienating people instead of attracting them.

The truth is that no one likes being treated like a "kill." We are better off not even thinking about our business when we interact with people. That way we are more interested in finding out who they are than we are in telling them about our product or service. It is that curiosity that will help us build relationships.

Consider it this way — throughout our travels we will meet all sorts of people. Some will be colleagues. Others will be referral sources and resources for our connections. Others still will be conduits to our prospective clients. And, of course, some will become clients. That array of possibilities speaks to the value of leading with curiosity and respect.

The more advocates we have in our business, the easier it will be to grow. When you call to speak with a prospect or stop by to see a prospect, everyone you encounter can either help you or hurt you. The gatekeeper can be one of your greatest supporters or they can keep you from getting in to see the prospect. The receptionist can patch you through or keep you out.

The people you meet at networking events can become great resources for you and your business or they can simply be people you meet. The beauty is that you get to choose the result because you choose how you interact.

Let's break it down.

NETWORKING

When you are networking, you can choose how you approach people. When you decide to be curious about the people you meet you are out of sales brain. That's good! Being curious allows you to be fully present. You will be listening and learning. You will be determining who you want to continue to build relationships with. And you will be someone other people want to get to know.

What you won't be doing is selling. You won't be telling other people about your product or service. You won't be trying to gain a client. And, you won't be disregarding people you think aren't prospective clients.

Wherever you go you are building a reputation. It's your decision whether that reputation is good or bad.

When you attend networking events looking for clients, you dismiss anyone you think doesn't look like a prospective client. And when you do that, you miss out on discovering resources and referral

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partners. It's a very shortsighted strategy. Remember, you need a variety of connections in your business community in order to be successful.

PROSPECTING

When you reach out to a person or company to make a connection you are probably not going to speak with the decision maker first. Most likely you will have to go through a receptionist, assistant, or connection. How you interact with them will have a direct impact on your ability to get to the right person.

Their job is to ensure the people they support are not interrupted unnecessarily. You aren't the only person seeking a conversation. If the gatekeeper let everyone in, the decision maker would never get anything done.

Decide to engage with the initial contact with respect for their responsibilities and workload. Too often salespeople take this blocking personally. However, it has nothing to do with the salesperson. It has to do with the responsibilities the receptionist/assistant/connection has in their role. When salespeople realize they can actually help these folks become allies and advocates, the whole conversation changes. You need that gatekeeper in your corner. So, figure out how you can first be in their corner. How can you help them? Stop seeing them as an adversary. Take the time to build a relationship with them. That's how you will gain access to the decision maker.

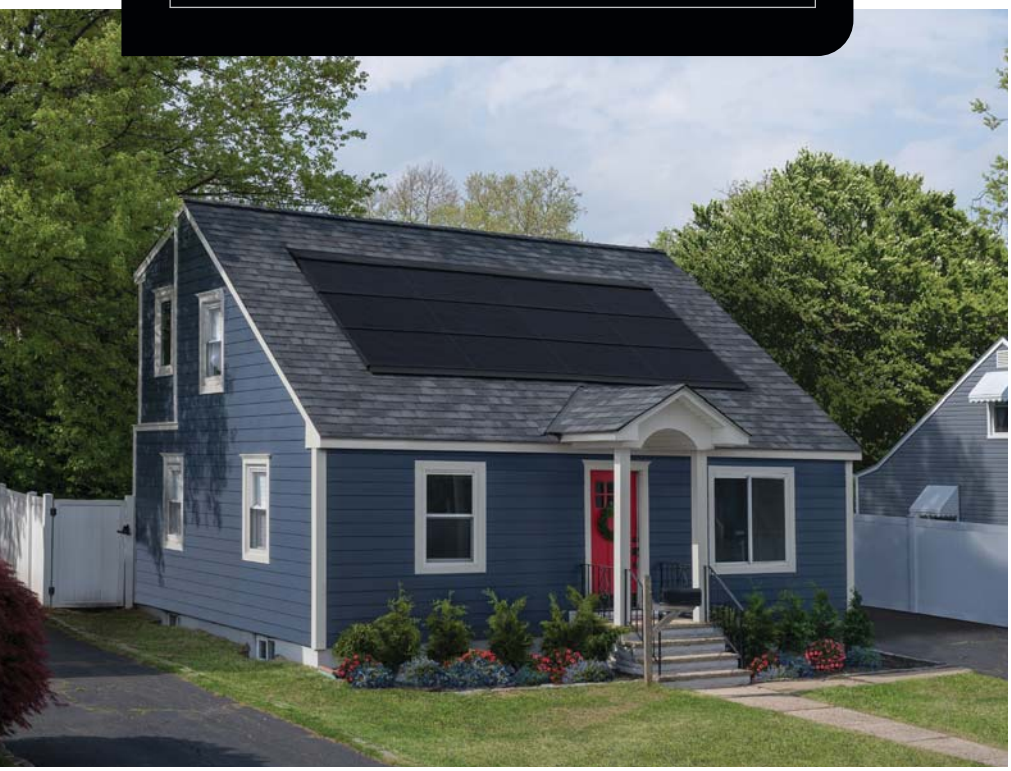
ELSEWHERE

Wherever you go you are building a reputation. It's your decision whether that reputation is good or bad. Whenever you interact with people they are creating a view of you and your company. They are deciding whether you are someone they want in their world or not. Realizing you need as many advocates as possible can help you decide how you will interact with everyone. Build the best reputation you can. That reputation should be one of problem solver, helper, giver. The more you show up as someone who is more interested in helping others than in gaining business, the more attractive you will be. And the more business you will gain.

Everyone is not a potential client. Potential clients are not the only people worth speaking to. Other people can directly impact your ability to grow your business. Remembering these things will help frame how you engage as you venture out on your business building journey. Seek to gain advocates. It's the best way to avoid gaining adversaries. R

ABOUT THE AUTHOR: *Diane Helbig is a leadership and business development advisor helping business owners around the world. She is the author of* Lemonade Stand Selling, Expert Insights, *and* Succeed Without 'Selling,' *as well as the host of the "Accelerate Your Business Growth" podcast. For more information, visit www.seizethisday.co.*

WRITTEN BY **MARTIN DEBONO**



Surprising Solar States

Roofers Can Bring About the Solar Revolution in 'Sunshine' States and Beyond

PENNSYLVANIA, ILLINOIS, AND Florida are not often the first states that come to mind when discussing the future of solar energy. Many would think of California, the Golden State, with its sunny weather, mild climate, and new regulation mandating solar on all new construction starting in 2020. But at GAF Energy, a remarkable 50 percent of our growing sales opportunities currently come from Pennsylvania, Illinois, and Florida. While these states lag behind the likes of California, New York, and Arizona in installed solar capacity, they — and states like them —could stand to be some of the most critical players in the next growth phase of solar adoption.

California currently boasts over six million solar homes, demonstrating that there is a clear market for residential rooftop solar in the United States. California's success serves as a harbinger for other states, even ones not known for their sunshine or progressive energy policies. It comes down to pure economics: the price of solar panels has dropped 99 percent in the last four decades. As solar energy becomes more and more affordable, more and more homeowners across the country are considering the financial and social benefits it can provide. Even residents of the South and Midwest — where electricity is cheap and solar rooftops are few and far between — are starting to show signs of embracing solar as a viable energy source for homes and businesses.

The state of Illinois, for example, is setting some aggressive renewable energy standards to boost solar adoption. More than 40 percent of the state's electricity comes from coal today. The state plans to sunset many coal plants over the next two to five years, in many cases turning to solar instead. In 2017 the state implemented the Future Energy Jobs Act (FEJA), which infused $230 million into solar power and mandated that 25 percent of electric power come from renewable sources by 2025.

In Pennsylvania, solar power is up 47-fold in the past decade, and wind energy has increased by more than 230 percent in that same time frame. And there are now more than 90,000 clean energy jobs across the state, up 60 percent in just five years. Moreover, a two-year planning process called "Finding Pennsylvania's Solar Future" is just getting off the ground and aims to shift 10 percent of the state's energy from non-renewables to in-state solar by 2030. Pennsylvania also ranked as one of the locations that offered the highest solar premiums when you are ready to sell your home, increasing the median home value 4.9 percent, or $8,589, when you compare a home with solar to one without.

Finally, Florida is a prime solar environment: it is the "Sunshine State," after all. As hardware costs have plummeted, financial tools that have helped grow solar in California and Arizona, like solar leases and power purchase agreements, have been prohibited under a law that forbids entities other than a utility from selling power in the state. Last year, however, the Public Service Commission approved the use of residential solar leases in the state on a limited basis, signaling that Florida homeowners could more readily and affordably elect to install solar on their rooftops. Florida locations like Miami have started to more seriously consider the need for climate mitigation and adaptation; renewable energy increasingly seems like a better idea as the city finds itself spending more and more money to battle sea-level rise each year.

BRING IN THE ROOFERS

Despite all this great growth in the industry, at the end of the day, no one really needs to put solar on their rooftop, unless, say, they live far off the grid. You can easily and painlessly get power from the grid via your electric company.

PHOTOS: GAF ENERGY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Humans are creatures of inertia and habit; even many of those inclined to do the right thing and/or save money with solar will put it off indefinitely.

However, every homeowner will need to replace their roof at some point. Turns out, the best time to install rooftop solar is when you are replacing your roof. If you have a roofer install the solar, it becomes one project, one crew, one warranty — and the solar can even help pay for itself, and the roof, over time. How? Homeowners can save money on electric bills by generating clean, renewable energy on their roof. Any excess electricity produced is sent back into the electrical grid for a bill credit, meaning solar can be even more financially rewarding in states with net metering policies. Given all of these benefits, going solar during a re-roofing project just makes sense.

For a roofer, including a solar offering with every new roof will create opportunities to capture a wider set of clients, even in states where solar hasn't traditionally flourished. By offering solar to those who may have been shopping only for solar but could benefit from a bundled offer, roofers introduce an attractive financial concept to the homeowner, on that also benefits communities and the planet to boot. Furthermore, not only will a roofer make their customers happier by including solar as an offering, but they can also boost their bottom line. A solar attachment rate of just one in four new roofing jobs could increase a roofer's top and bottom lines by 20-25 percent.

Roofing and solar are at a convergence point: roofers are now able to offer a comprehensive solar roofing product and are the best equipped to sell and install it on a home. By bringing roofers into the equation now, we're ensuring the same person already on the roof to install shingles is the one installing solar, genuinely protecting what matters most inside the home.

Changing the conversation between roofer and homeowner about what a re-roof means requires changing the entire game, and the impacts have the potential to be immense. Roofers will future-proof their businesses by adding an in-demand product that saves their customers money. The benefits of solar should be front and center in any sales appointment — one project, where roofing installation experts are the ones helping customers save money.

By including solar as an offering, roofing contractors can increase customer satisfaction as they boost their bottom line.

ENERGY FROM EVERY ROOF

Solar economics and policy are changing across the country, opening new markets and expanding business opportunities, and the roofing industry must correspondingly adapt. Rooftop solar should be a roofer's domain. By growing with the solar market and offering bundled re-roof plus solar packages, roofers can bring the benefits of solar to homeowners in states that not only have solar mandates, such as California, but also nontraditional states such as Florida, Pennsylvania, and Illinois. Roof replacement is the perfect time to go solar, and now is the perfect time to start integrating solar with roof replacements. By seizing this opportunity, roofers can begin powering homes across the country, one roof at a time.

ABOUT THE AUTHOR: *Martin DeBono is the President of GAF Energy. He previously headed SunPower's residential North American business and global commercial business and served as President of SunPower Capital. He has held sales and marketing positions at various high technology companies including Cisco, Siebel, Insightful and Pure Networks. DeBono is a decorated naval submarine officer and holds degrees from the University of North Carolina (BS) and Harvard University (MBA).*

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WRITTEN BY **JOHN R. CROOKSTON**

During residential re-roofing applications, it is important to ensure the roof system is properly ventilated.

Thou Shalt Ventilate

Tips for Improving Ventilation on Residential Re-Roofing Projects

IF THE QUESTION is "Should I provide ventilation on this steep-slope roof?" there is a simple, one-word answer: Yes. The problem with this answer is that it would make a very short article, and I am sure that is not what was expected. Let me explain!

Ventilation is required if you have unconditioned space, and it is that space that needs to be ventilated. In most commercial applications, you are dealing with a flat roof membrane over insulation installed directly over a metal deck. With no "attic" involved, there is no unconditioned space and, therefore, there is no space to ventilate. You still have to find a way to control the moisture, but this is accomplished through the use of mechanical air conditioning and heating units, and also through the introduction of outside air and air exchanges. For this article, I want to concentrate on a typical residential steep-slope application, and the basis for most normal houses all goes back to 1 John 1:1, which goes something like this: "Thou Shalt Ventilate."

To help all of this make sense, it is important to define some terms I use. "Conditioned space" is anywhere in the house that we are attempting to control the temperature or humidity – the living space of the house. "Unconditioned space" refers to areas of the structure where we are not attempting to control the temperature or humidity – typically attics (although some attics are treated as conditioned spaces). Unconditioned spaces should be as close to the outside

PHOTOS: JOHN R. CROOKSTON

Erecting scaffolding at the roof's edge ensures safety and gives technicians a comfortable spot to examine and repair intake ventilation at the soffits.

The soffit should be removed as part of the tear-off process.

temperature and humidity as possible. To accomplish this, we would use vapor barriers, insulation, and ventilation. The insulation would be anything that would restrict the transfer of either heat or cold in either direction; the vapor barrier would be anything that stops the transfer of moisture between the hot and the cold areas; and ventilation would be the method by which we allow the hot or cold air to move between the inside of the unconditioned space and the outside atmosphere.

Current building codes and building technologies have improved the performance of homes greatly by making them able to "breathe" and at the same time resist that transfer of energy. Examples would include the newer thermo-pane windows with better weather stripping, and house wrap to stop the wind pressure from penetrating the house. There are also truss roof systems that incorporate high "energy heels" at the plate to allow insulation all the way out to the edge of the plate and still allow a 4 inch air space at the plate to allow the air to flow freely.

To make this all work, it is important to fully ventilate the soffit area, and to combine this with a system to get the air out of the attic space. This could include a ridge vent system, regular roof louvers, turbine vents or gable end vents. It is important to remember, however, that you cannot mix these vents. We need to understand that air is lazy and will always follow the path of least resistance. If we mix the different types of vents on the roof, the air will move from one to the other and short-circuit the airflow. For example, air might flow from a roof vent near the peak to the ridge vent just a couple of feet away, leaving the rest of the attic with no airflow. In this case, more is not better.

WIDE RANGE OF ENERGY EFFICIENCIES

You will find that most of the houses built after the late '70s used truss systems that incorporated the energy heel. This also corresponded with the "energy crisis," which saw a massive increase in the amount of insulation blown into the attics. Four to 6 inches became 12 to 20 inches, and it is important to know that the more you tighten up a house, the more important it is to increase the ventilation. A fully insulated house demands a fully ventilated house to perform effectively. About 10 years ago, we built a house and a cheese-making facility, using R-panels, which are made from EPS foam sandwiched between layers of OSB panels. They are incredibly strong and energy efficient. They can get so tight it is difficult to open or shut a door because of the air pressure. That can potentially be dangerous in the event of poor indoor air quality and pollution. In this instance, we engineered a mechanical system to completely change the air twice an hour — and at the same time, saving the energy of the heated or cooled air with an air-to-air heat exchanger. The system supplied combustion air for the furnace and the stove, and also recycled the heated air from the bathroom fans and the oven exhaust, saving the

heat, but exchanging the air itself.

Our projects have ranged from this extreme of efficiency to some of the older homes – some more than 150 years old – that had no insulation. They were wonders of efficiency for their time, and the builders understood all of these principles. It was common to see some of these elaborate homes with what looked like a "widow's watch" observation tower with windows all around at the very peak of a low-sloped hip roof. Combined with a large central staircase, the owners could open the windows and inside doors in the summer, and the central hallway and the "widow's watch" acted as a large chimney, moving the hot air out and pulling cool air in without any fans or electricity.

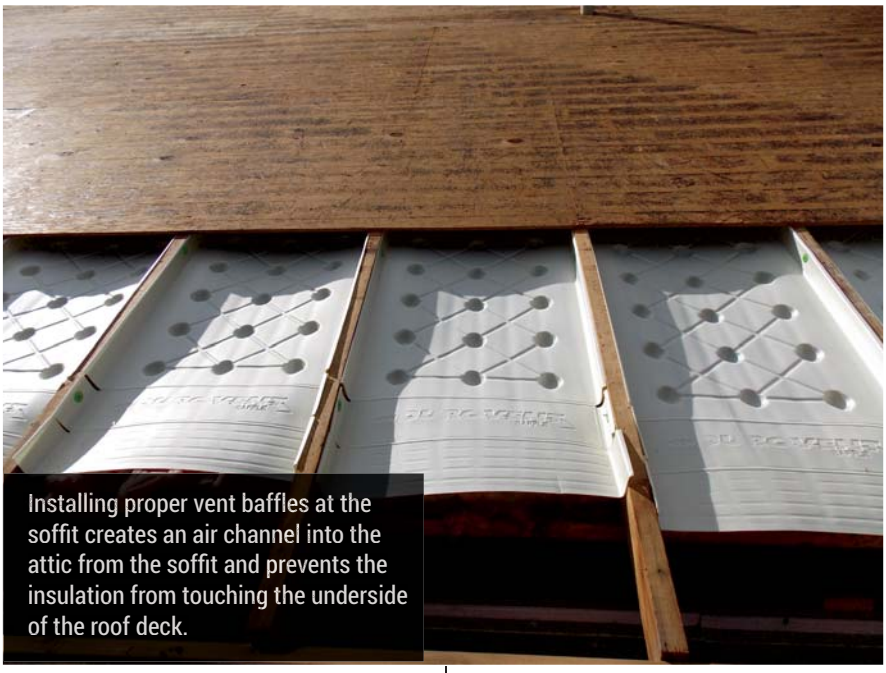
Many churches and other large buildings used the same principle to control the air inside, using either the steeples or large towers to act as chimneys as well as architectural and design focal points on these buildings. Problems often begin when we try and upgrade buildings to modern standards without taking into consideration how the changes will affect the design and operation of the building. Addressing these large, complicated buildings will be the subject of another article, but right now I want to specifically address the needs of residential houses built from the '20s up through the late '70s.

HOMES BUILT FROM 1920-1979

There are millions of them. Before World War II, most were built with perhaps some minimal insulation or some aluminum foil to act as a radiant barrier, but energy was cheap and to do more would have been a waste of money. Without much insulation, there was little need for ventilation, as the house was drafty and, by definition, a drafty house is ventilating itself. After the war, the ranch-style house was the rage and I worked on thousands of them growing up. I have home movies of myself on the roof with my father when I was only four years old. By the time I was 10, I could lay out a roof and knew exactly what I was doing up there. Today, they would call that child abuse, but back then it was life. The point is that I lived and worked through this transition. In the '50s, 2 inches of insulation in the walls was common and 3-1/2 inches in the ceilings. We would install some roof louvers in the attics and they would install some 3 inch vent strips in the wooden soffits for an intake. It was not much, but it was enough. Then the oil embargo occurred in the early '70s and energy prices jumped.

Demand for insulation to save energy skyrocketed, and suddenly there were six pages of ads in the Yellow Pages for insulators. If some insulation was good, then more was better, and they blew insulation everywhere. Some was

It may be necessary to remove the bottom sheet of plywood to access the area from above. Often insulation will be found blocking the soffit.



Installing proper vent baffles at the soffit creates an air channel into the attic from the soffit and prevents the insulation from touching the underside of the roof deck.

installed in the walls, but the biggest bang for the buck was in the attics, and it seems that all of the soffits were filled and the opening at the plate was blocked. Without this intake, the only thing that the roof louvers could do was let out some heat; the air movement stopped. The water vapor still got into the unconditioned attic space through whatever insulation was installed, and since it could not get out, it would condense in the insulation and on the wood surfaces and cause mold, rot and mildew.

Since there was no air movement at the plate, and the insulation was packed tightly against the bottom of the roof decking, in northern climates the heat would transfer to the roof surface during the winter, and ice buildup became a huge problem. In the southern climates things were reversed, and problems cropped up during the summer months when the air conditioning was running. Simply put, "You cannot fool Mother Nature!" Shingles that used to last for 25 to 30 years were now "cooked" in place in 10 to 15 years. Mold and algae became a problem on roof surfaces to a much greater extent than in years past, and most of this is and was caused by a lack of ventilation.

TIPS FOR AVOIDING MISTAKES

Roofing is so much more than just installing shingles, but we have to be able to see the bigger picture to understand why. As a third-generation union carpenter, who is still working on roofs at 67 years of age, I love what I do and I am very good at it. Since I see the same mistakes being repeated again and again, I feel obligated to pass on the experience that I have accumulated over the years. I have learned some hard lessons making all of the mistakes I am talking about here, and hopefully all of us can learn from them.

Here are some tips for avoiding common ventilation mistakes at each stage of the re-roofing process:

- Check the attic space when you figure a new roof.
- If you can't see light coming from the soffit into the attic, then there is no air getting in either. · At this point, you either have to become a carpenter or soffit man — or hire one.
- Take apart the soffit as you do the roofing tear-off.
- You may need to remove the bottom sheet of plywood to see what you are doing from above.
- If the soffit is aluminum or vinyl, chances are that there is an original wooden soffit beneath it.
- Tear it all out. Take out the insulation that has been blown into the soffit at the same time.
- Replace the old soffit with a fully vented aluminum or vinyl soffit system. Vented aluminum has twice the Net Free Area as vinyl for the same square footage, but they both work.
- Install proper vent baffles at the soffit to create an air channel into the attic from the soffit. You cannot

let the insulation touch the bottom side of the roof deck.

- Check the bathroom vents and make sure that they are vented to the outside with a flapper vent through the roof and not vented into the attic space.
- Do the same for any kitchen vents.
- Install new sheeting along the bottom after you have fixed all of these problems.
- Determine how much ventilation you need to vent the attic space (square inches). Normally, this is 1/150 of the attic floor space. (For example, if the attic floor is 30 feet by 50 feet, the attic floor area is 1,500 square feet. 1,500 divided by 150 = 10 square feet of ventilation.)
- You need this much ventilation opening at the high point of the roof, ideally at the ridge.
- If you install a ridge vent, take out and cover over the holes of the old roof louvers, turbine vents and gable end vents. You can just install some felt or plastic sheeting over the gable vents from the inside.
- This will give you one intake at the soffit area, and one exhaust at the ridge. Don't worry about having too much intake at the soffit, as it will only allow as much air in as it exhausted at the peak.
- Install the new roof as per code.

ENSURING SAFETY AND EFFICIENCY

We will normally erect a scaffold around the perimeter of every job we do to give us access to this important area of the roof. This may sound like overkill, but that is the area where you want to spend the most time, as that is where the problems normally occur. It can be more expensive, but what we are talking about is value as opposed to price. Quite simply, I am not interested in talking to someone whose only concern is the cheapest price. On a steeper, higher roof, you will find that this is actually a faster and cheaper way to work, too. With a catch platform around the building, you have a place to work and store materials,

Making sure the new roof system is properly ventilated will maximize the service life of the shingles installed.

you can see exactly what you are doing, and you also don't need to have harnesses and ropes to obstruct you and still meet OSHA standards. Since I sell the jobs but also work on them, this is what I prefer. It is also impressive for the homeowner and it sets us apart from most of the competition. We have been doing it like this since 1986, so I know that it is a viable option. Scaffold is expensive initially, but when you have used it once, you will wonder how you did the work without it. It is also a line item on all of my bid forms, and after it has been paid for it is a profit center, too. That is the best of all worlds.

I have read that experience is what you get when you are looking for something else. I have many years invested in looking for "something else," so I hope that this article helps you avoid just some of the mistakes that I have made in my lifetime.

ABOUT THE AUTHOR: *John R. Crookston is a roofing contractor and consultant located in Kalamazoo, Michigan. He has more than 60 years of experience in the roofing industry and has written technical articles for a variety of publications under the pseudonym "Old School."*

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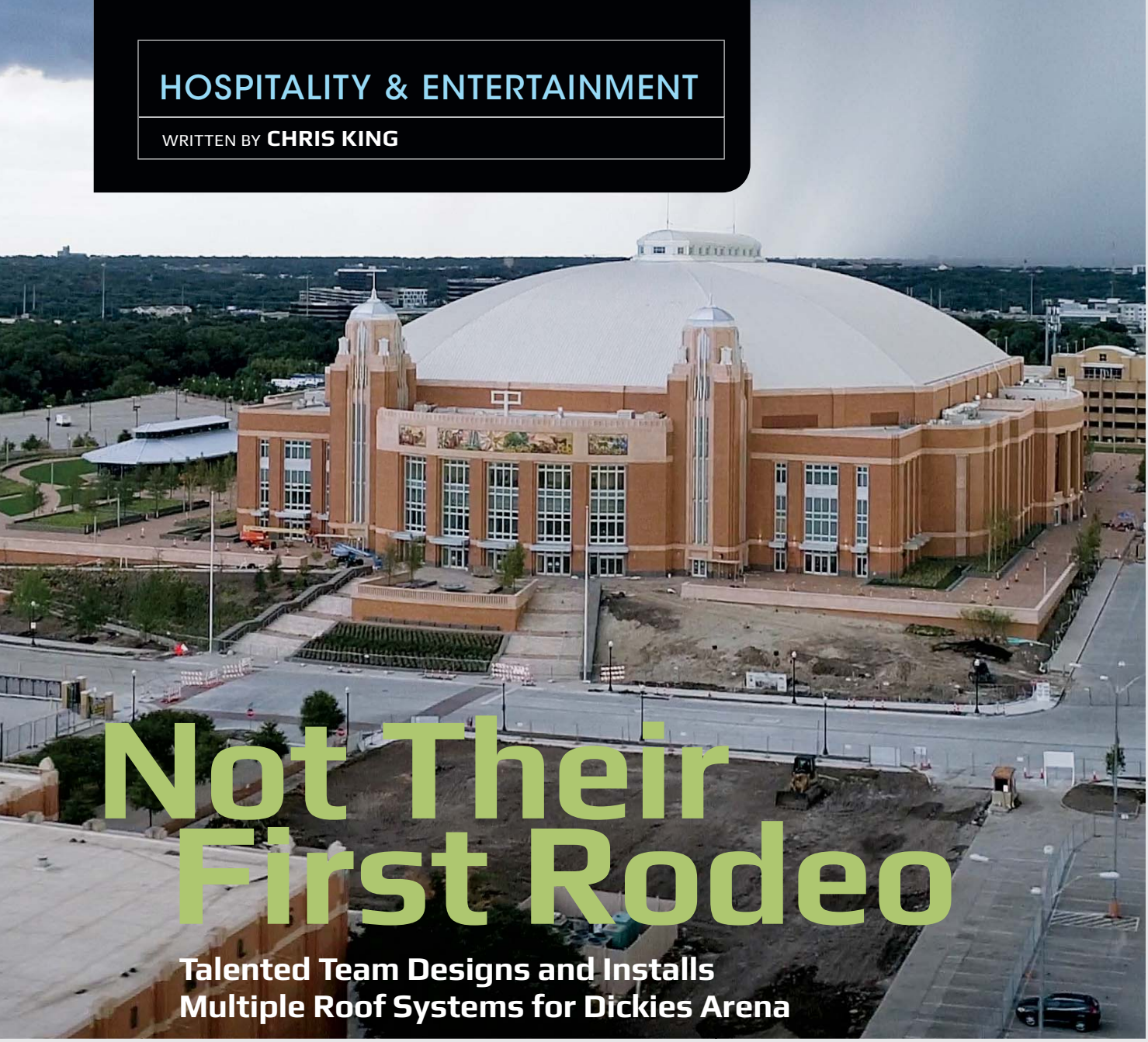


Not Their First Rodeo

Talented Team Designs and Installs Multiple Roof Systems for Dickies Arena

The new Dickies Arena in Fort Worth, Texas, was designed to echo the iconic Will Rogers Memorial Center, a historic landmark built in 1934. The site of the Fort Worth Stock Show and Rodeo as well as other concerts and sporting events, Dickies Arena was designed to provide a modern entertainment experience and configurable event spaces that would stand the test of time. The multiple roof systems on the project — including the plaza deck surrounding the arena — were essential in delivering on these goals.

Dickies Arena features a domed main roof with a cupola at the top that pays homage to its historic neighbor. "One of the major themes, especially of the dome roof structure itself, was to have a kind of throwback to the original Will Rogers Center, which is still there," says Eric Nelson, AIA, RID, CCCA, vice president at HKS, the architect of record for Dickies Arena. "The Will Rogers Center was one of the first buildings of its type to have a long-span steel truss roof system. We used that existing structure as the inspiration for the roof structure inside the arena. We have these very thin, elegant looking trusses that are very art deco."

The new structure's domed roof is surrounded by low-slope roofs and complemented by two towers topped with metal roofs. Dickies Arena also features a pavilion with a standing seam metal roof, which sits on a plaza deck that serves as an outdoor event space as well as a giant roof system covering exhibit space and areas for housing rodeo livestock. (See related story, page 89.) The venue is also designed to provide excellent acoustics for concerts and features luxurious millwork and finishes throughout to provide a touch of elegance. "I like to say that it's a rodeo arena, but it's designed like an opera house," Nelson says.

It took an experienced team of design and construction professionals to envision and execute the project, including HKS, the architect of record; David M. Schwartz Architects, the design

PHOTOS: TRAIL DRIVE MANAGEMENT CORP.

architect; The Beck Group, the general contractor; Jeff Eubank Roofing Co., Inc., the roof system installer; and Sunbelt Building Services LLC, the insulation distributor and installer of the plaza deck.

THE DOME

The roof system specified for the dome featured an 80-mil PVC system with decorative ribs manufactured by Sika Sarnafil. "The roof system is one that we use pretty regularly on our large sports projects, the Feltback PVC," notes Nelson. "It's a lot more durable than other single-ply roof membranes, so we really like it a lot. Dickies Arena is an arena that wasn't just built for the next 20 years; it's meant to be there for the next 100 years, so we wanted to make sure we used nothing but the highest-quality materials, especially with all of the hailstorms that we can get out there in Fort Worth."

The roof system installer, Jeff Eubank Roofing Co., Inc. of Fort Worth, Texas, tackled the dome roof first, followed by the low-slope sections and the metal roofs. Work on the dome roof began in July of 2018. "The project progressed pretty quickly," says Jeff Eubank, vice president of Jeff Eubank Roofing Co. "The dome in and of itself was like two different projects. The top half of the dome is pretty workable and walkable, and the bottom 40 percent of the dome is almost vertical."

The Sarnafil Decor system was installed over an Epic acoustical deck, which posed some logistical and safety challenges. "We had to engineer special anchors because a typical tie-off anchor could not be used," Eubank explains. "Before we could set foot on the job, we had to engineer special tie-off anchors which nested into the acoustical deck."

Eubank and a structural engineer worked with Epic Deck to construct anchor points that would meet requirements for fall arrest. The half-inch aluminum, F-shaped anchors were designed to rest in the flutes of the acoustical deck and featured a ring provide a tie-off point. They were set in place using a crane.

Safety concerns included the Texas weather. "Our biggest challenge came with the heat," says Eubank. "Summers in North Texas are brutal enough, but at the end of last summer, a high pressure system just stalled over Fort Worth. We were in the middle of a drought, with temperatures up to 110 degrees. You're up on a deck with nowhere to hide, and with it was pushing 200 degrees up there. From a life safety standpoint, we ended up pushing the dome installation to night work."

Crews applied approximately 250,000 square feet of material on a near vertical application at night, with lighting provided by six tower cranes. The project required 100 percent tie-off of men and equipment.

The original plan for the dome was to work top to bottom, but as work began, the cupola was incomplete, so the safety and logistical plans had to be radically changed. "We ended up basically making two rings around the dome, doing the near-vertical portion — the bottom 30 or 40 percent — first," Eubank says. "We moved up and did another 360-degree loop around the top half of the dome once the cupola was done."

The roof system was installed over the acoustical deck and loose-laid filler. After a 5/8-inch DensDeck Prime substrate board was installed, crews mechanically fastened two layers of Sarnatherm polyiso and 1/4-inch DensDeck Prime. They adhered the Sarnafil G-410 20 Feltback membrane, which was produced in a custom color called Agreeable Gray.

After the membrane was installed, the PVC ribs were heat welded into place to give it the look of a standing seam roof. "We installed over 16 miles of custom-color Decor ribbing," notes Eubank.

THE LOGO ON THE ROOF

The dome roof also prominently features the Dickies Arena logo, which took some advance planning. "We left an area of the ribs out on the east side anticipating the logo up there," Eubank says.

Sarnafil manufactured the letters in a separate custom color, but the challenge was to align them perfectly on the roof. Eubank Roofing came up with a plan to use a section of 60-mil PVC membrane as a backer sheet, and they stenciled the areas for the letters across it. Once the backer sheet was installed, crews just filled in the blanks. The last

DICKIES ARENA
FORT WORTH, TEXAS

TEAM

ARCHITECT OF RECORD: HKS Inc., Dallas, Texas, www.hksinc.com

DESIGN ARCHITECT: David M. Schwartz Architects, Washington, D.C., www.dmsas.com

GENERAL CONTRACTOR: The Beck Group, Dallas, Texas, www.beckgroup.com

ROOFING CONTRACTOR: Jeff Eubank Roofing Co., Inc., Fort Worth, Texas, www.eubankroofing.com

MATERIALS

DOME ROOF

ROOF MEMBRANE: Sarnafil G-410 20 Feltback PVC with Sarnafil Decor ribs, Sika Sarnafil, https://usa.sika.com/sarnafil

ACOUSTICAL DECK: Epic Metals, www.epicmetals.com

COVER BOARDS: 5/8-inch DensDeck Prime and 1/4-inch DensDeck Prime, Georgia-Pacific, www.buildgp.com

METAL ROOF

STANDING SEAM PANEL: 24-gauge Galvalume Power Seam, Fabral, www.fabral.com

UNDERLAYMENT: Fabral HT, Fabral

On the pavilion, a standing seam metal roof system was installed.

steps in the dome installation included installing ribs in a second custom color to go through the letters. Helicopters also brought in three large Dickies signs, which were placed atop concrete pedestals treated with a Sarnafil liquid membrane.

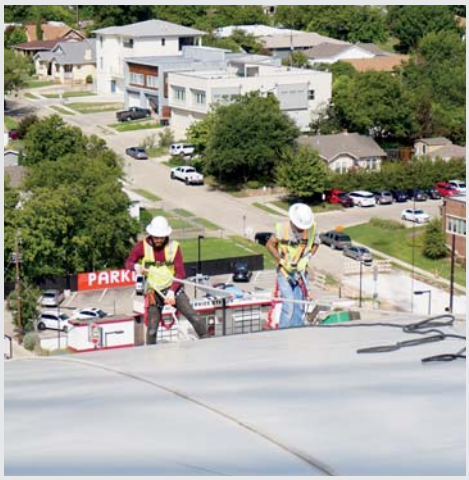
FLAT ROOFS AND METAL ROOFS

On the low-slope sections that surround the dome, the Sarnafil G-410 Feltback was installed over structural concrete and fully tapered polyiso.

A vapor barrier was installed over the structural concrete deck. After masonry work was completed, crews installed a fully tapered polyiso system in ribbons of OM Board adhesive, then adhered 1/4-inch DensDeck Prime and the 80-mil PVC membrane.

The complex also features two different metal roof systems from Fabral. On the north side of the building, the two towers were capped with a flat-seam panel. Down at the plaza level, the pavilion was topped with a double-lock standing seam roof system featuring Fabral 24-gauge Galvalume Power Seam panels.

According to Nelson, the design was meant to evoke a rustic effect. "The cladding on that building is all quarter-inch steel with rivets on it," Nelson points out. "Galvalume is finished to look like galvanized sheet steel, but it won't tarnish or turn white or black like galvanized steel would — which is why they selected it — but it still has that kind of throwback look of a barn."



OUT OF THE GATE

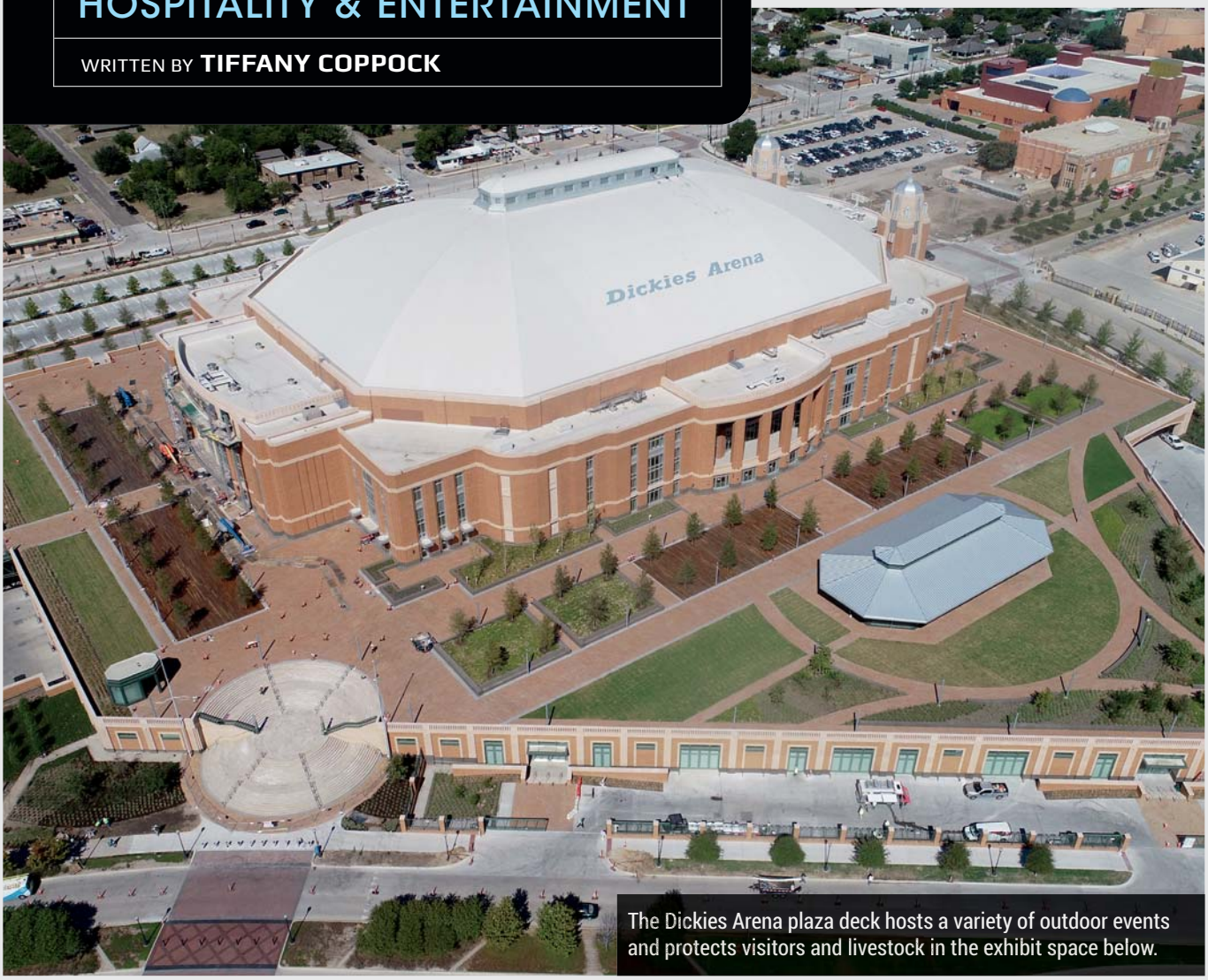
Dickies Arena is now open to the public and is gearing up to host its first rodeo. The experienced team that built it has moved on to other projects, but they look back on their work on the new landmark venue with pride.

Eubank commends the general contractor, H.C. Beck, for a smoothly operating jobsite. "The job was very well managed from a safety standpoint," Eubank says. "The general contractor did a fabulous job of manipulating trade work and making sure no one was working overtop of anyone else."

Nelson agrees, crediting the teamwork at every phase of the project for the successful outcome. "The partnership with David M. Schwartz as the design architect really worked very smoothly from our side," Nelson says. "We worked very well with a talented team of consultants and who specialize in sports design. It's a one-of-a-kind type of project."

"My family has been in Fort Worth for five generations, and this is a project I'm just tickled to death about for the city," says Eubank. "To be part of its install means a lot." R

WRITTEN BY **TIFFANY COPPOCK**



The Dickies Arena plaza deck hosts a variety of outdoor events and protects visitors and livestock in the exhibit space below.

Spectacle, Slope and Strength

Dickies Arena Plaza Deck Extends the Experience

Not all the action at Dickies Arena takes place under the domed roof. The Dickies Arena plaza deck provides not only breathtaking views of the Fort Worth skyline, but offers a high level of functionality, strength and performance to protect visitors and livestock.

According to Bill Shaw, operations manager at Dickies Arena, the plaza is designed to serve as an extension of the rodeo, enabling visitors to watch the livestock from above. Ten-to-12-foot windows built into the plaza deck provide a view of the 100,000 square foot warm-up area where animals work with their handlers before barrel racing and other rodeo events. A roadhouse tent hosts musicians for plaza deck performances held following the rodeo. And instead of a conventional courtyard, Dickies Arena boasts a "cork yard" wine and food space.

FUNCTIONALITY FUSES WITH PERFORMANCE

From lush green spaces that provide a scenic vantage point for taking in the iconic Fort Worth skyline and views of nearby barns and stables to fire lanes for emergency vehicles and concert equipment deliveries, Dickies Arena requires a plaza deck that can deliver outstanding strength. And in Fort Worth's unpredictable weather, it must also successfully manage storm water runoff. The insulation used in the roof — Owens Corning Foamular extruded polystyrene (XPS) — is key to delivering compressive strength and storm water management performance. But the team specifying insulation for this unique landmark encountered some unusual challenges.

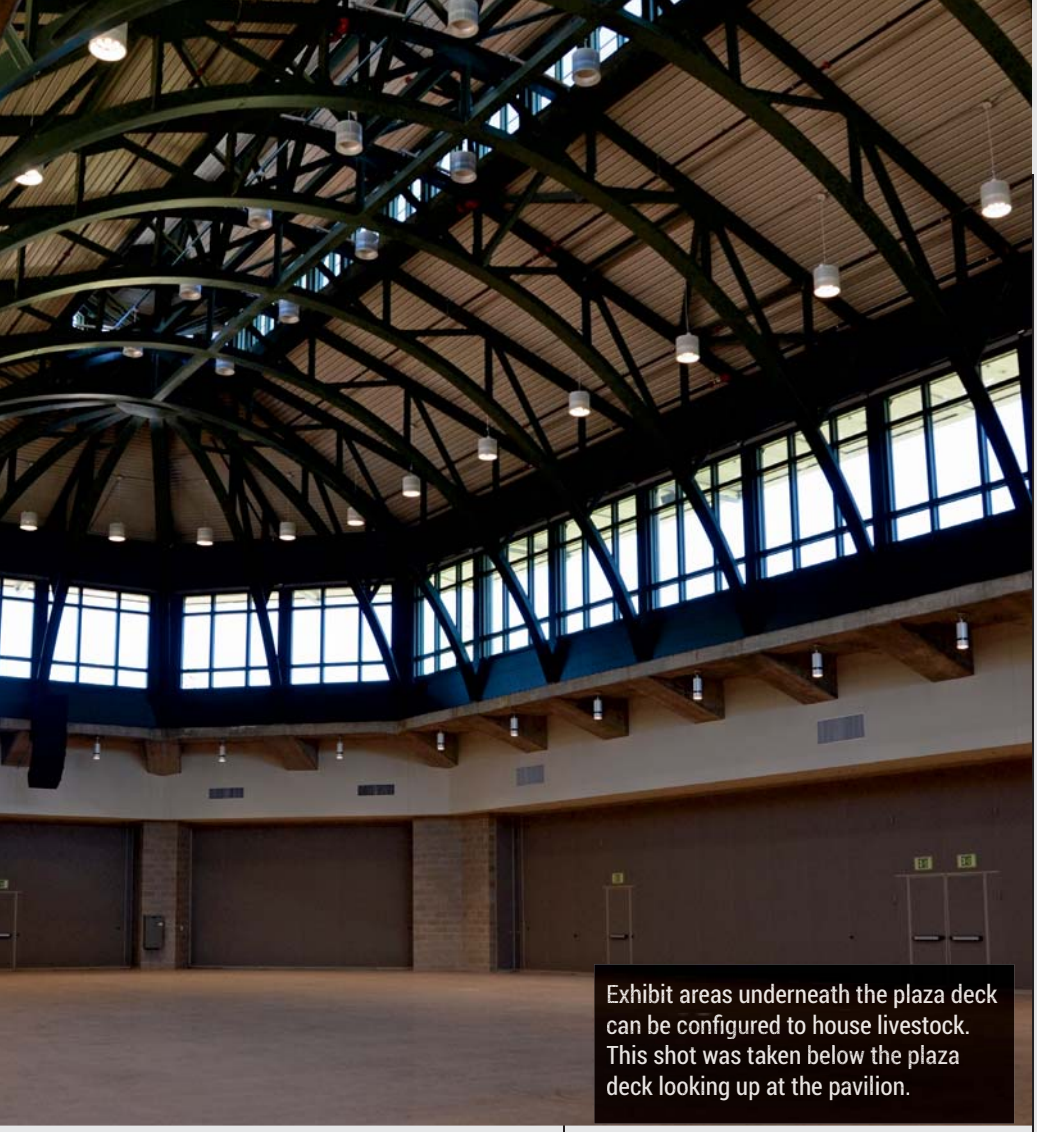


Exhibit areas underneath the plaza deck can be configured to house livestock. This shot was taken below the plaza deck looking up at the pavilion.

With a plaza deck encircling the main arena of about 140,000 feet, the size, scale and slope of the Dickies Arena plaza deck all presented challenges for the insulation team, beginning with the estimating process. The plaza's design required a blend of tapered, flat filler, and reverse tapered installation.

Each phase was broken into three layers. The reverse taper layer brings the slope of the roof back to a flat slope. The flat fill section raises the height of the roof without adding the weight that concrete would have contributed to the plaza. A traditionally sloped area above the slab and pavers directs water back to the drainage assemblies located in the top layer of the roof. These layers had to be carefully calculated for many sections around the jobsite that changed in priority as construction surged ahead of schedule.

All the calculations required an experienced team who could coordinate and collaborate in real time. Sunbelt Building Services LLC was the insulation distributor on-site and team members' experience in the roofing industry proved to be an invaluable asset. As Sunbelt prepared the drawings, Owens Corning calculated the insulation estimates by computer and by hand to ensure accuracy, piece by piece, and then Sunbelt reviewed them again. "You'll never get the correct material count if you don't know how the roof is sloping, where the drains are located and how to interpret the structural architectural drawings," says Darrell Evans, project manager at Sunbelt Services. The result of the estimating process showed the collaboration and teamwork were successful. The estimated insulation for one of the first phases was within two pieces of the material used on the jobsite.

MANAGING STORM WATER

Based on the "sandwich" of the roof design, Dickies Arena required two sets of drains sloping in different directions, according to Eric Nelson, AIA, RID, CCCA, and vice president at HKS, the architect of record for Dickies Arena.

The structure has one set of drains at the lowest level, where TREMproof 6100, a waterproofing membrane from Tremco, was hot-mopped into place over the concrete slab. On top of the waterproofing layer is the insulation and filter fabric, as well as the sand bed, Hanover pavers, and planters with trees. Slot drains at the top level collect surface water, and the drains at the lower level collect any water that works its way through that system. Extensive modeling was helpful in determining not only the placement of drains but precisely how much insulation should be used — and its depth and location — in various parts of the plaza deck.

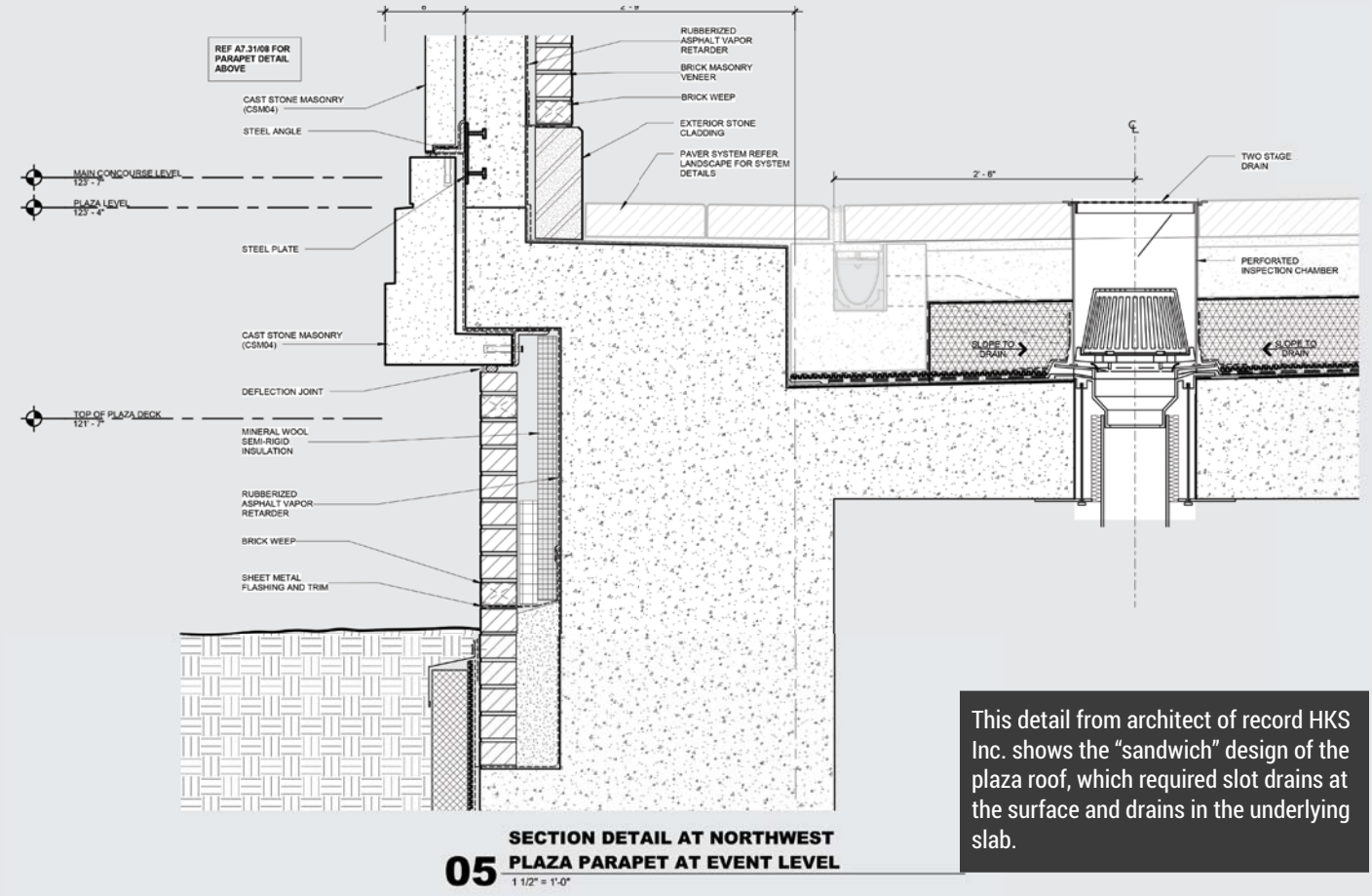
Given all the activity taking place on the plaza roof, material weight was a huge consideration when selecting the roofing insulation. Emergency vehicles must be able to navigate the fire lanes that encircle the deck. Semi-truck trailers need to unload concert equipment and staging. From a building material perspective, the plaza deck supports 5 inches of concrete in addition to the weight of the insulation, with reverse tapering depths varying from 3 to 5 inches. In some areas, the plaza deck's insulation is 12 to 13 inches deep.

While the project was originally specified to require 100-psi insulation, the team evaluated the Dickies Arena design structure and determined its design would allow weight to be distributed in a way that could be effectively managed by a 60-psi insulation. This exercise in value engineering revealed the lighter compressive strength XPS could deliver required strength and offer better economics. The plaza can support weight loads of 25,000 pounds.

LOGISTICS REQUIRE A TEAM EFFORT

With the estimating complete and materials specified, supply chain management became an area of focus. Owens Corning worked with its manufacturing plants across the nation to coordinate logistics involved with production of XPS product and delivery to the jobsite.

PHOTOS: TRAIL DRIVE MANAGEMENT CORP.



This detail from architect of record HKS Inc. shows the "sandwich" design of the plaza roof, which required slot drains at the surface and drains in the underlying slab.

A best practice on any construction project is to ensure products are not left unprotected and exposed to the elements, so communication and jobsite staging were coordinated between Owens Corning, Sunbelt and various contractors on the job. As XPS continues to expand slightly after manufacturing, the insulation was "aged" for 30 days after it came off the line. Owens Corning production plant teams, product managers and sales managers worked with a dedicated purchase order processor and a team of 20 to manage the plaza deck insulation project through to completion.

On the jobsite, tapered pieces were sent up the slope and cut into specific rectangular sizes. Easily cut with a knife, structurally sound XPS isn't prone to breaking into messy pieces and avoids random materials blowing away from the construction site. Given the sunny and windy climate in Fort Worth, the contractor kept exposed materials protected from sunlight and glued loose pieces together with a product that would not harm the insulation. Ordering the right amount of the right products at the right time was essential when considering up to 700 people were working on the project during peak construction periods.

The effect of the plaza deck gracing Dickies Arena can be summarized by modifying a common statement about Texas: "Everything is bigger and better in Texas." R

ABOUT THE AUTHOR: *Tiffany Coppock, AIA, NCARB, CSI, CDT, LEED AP, ASTM, RCI, EDAC is the Commercial Building Systems Specialist at Owens Corning where she provides leadership in building science, system development, testing, and documentation.*

DICKIES ARENA PLAZA
FORT WORTH, TEXAS

TEAM

ARCHITECT OF RECORD: HKS Inc., Dallas, Texas, www.hksinc.com

PLAZA DECK INSTALLER: Sunbelt Building Services LLC, Dallas, Texas, www.sunbeltllc.com

MATERIALS

WATERPROOFING MEMBRANE: TREMproof 6100, Tremco, www.tremcosealants.com

INSULATION: Foamular 600, Owens Corning, www.owenscorning.com

BRICK PAVERS: Hanover, www.hanoverpavers.com

IMAGE: HKS INC.

WRITTEN BY **ANN ITEN**

Island Dreams

Roofing a Resort in Paradise Took Great Design and Better Planning

PHOTOS: TIMBERS KAUA

The Timbers Kauai features Hawaiian-inspired design elements throughout. Materials and finishes were selected for the richness and longevity they provide.

The Hawaiian Islands epitomize paradise with sandy beaches, crystal clear waters, warm days and balmy nights. Some are blessed to call the islands home, while others are lucky visitors. Both groups come together at Timbers Kauai — Ocean Club & Residences at Hokuala, an oceanfront destination nothing short of spectacular.

Opened in June 2018, Timbers Kauai exudes luxury island living. Located on Kauai's picturesque southeast coast, the destination offers short- and long-term residents breathtaking unobstructed views of the Pacific Ocean and Hau'pu mountain range as well as immediate access to an unparalleled shoreline.

The design aesthetic of Timbers Kauai is inspired by the naturally distinct Hawaiian paradise surrounding it. All materials and finishes were deliberately selected for the richness and longevity they provide, from the cladding and windows, to roofing, luxe interior finishes and lush landscaping. Elements combine naturally, providing seamless easy connections between indoor and outdoor spaces.

"Key Hawaiian-inspired design elements were incorporated into the public indoor and outdoor spaces and main lobby," says Gary Ross, director of architecture for Timbers Resorts. "Examples include the wave patterned fascia panels, nautical inspired backlit entry panels and the lobby's Kappa inspired floor tile patterns."

When considering roofing options for the resort, architects aimed for a durable, resilient material that complemented the sophisticated island design theme. They ultimately turned to Irvine, California-based Boral Roofing, specifying Saxony 900 Slate Appalachian Blend, a high-performance concrete roofing system with earthy stone hues replicating the natural look of real slate.

Since concrete tile is a high-quality, durable roofing solution that lasts much longer than some other competing roofing options, it is an ideal solution for the resort. The low maintenance tile also allows for localized repair areas should damage ever occur.

Sustainability is a major selling point of the concrete roof tile. Manufactured using naturally occurring and abundant geologic materials, the tile incorporates no chemical preservatives and is 100 percent recyclable at the end of its life on the roof. Concrete tile also provides the resort with substantial energy efficiency benefits, rendering significant reductions in the ongoing energy costs associated with heating and cooling the property as the seasons shift.

FIGHTING UNPREDICTABLE WEATHER

Another core consideration in the selection of the roof was storm resistance. The subtropical weather on Kauai can be trying for a roof. Hot, humid weather is common and torrential rainfall, fierce wind and hail occur as well. To protect the resort from these harsh weather variables, the architects sought a roofing material able to withstand the elements. Boral Roofing's tile not only provided a complementary aesthetic, but also the weather resistance attributes required on Kauai.

"We were able to specify a product that not only met the stringent wind and rain conditions of building in Hawaii, but also provided the style and elegance required of this project," says Chris Ridings, partner at Poss Architecture + Planning of Aspen, the design firm retained by Timbers Resorts for the project.

Concrete roof tile also notably scores high in fire resistance. The Timbers Kauai roof is non-combustible, helping prevent ignition from occurring. The tile offers a Class A fire rating, the highest fire resistance rating for roofing.

CHALLENGING INSTALLATION

Those involved in construction in Hawaii understand shipping can be a challenge. Many building materials must be delivered from the mainland. With most projects on strict timelines, delays in shipping can be troublesome and even costly. Thus, it is important that logistics, lead times, packaging, and fulfillment of orders are correct. With the roof installation, these factors came in to play.

Installation of the roof was led by Honolulu Roofing & Waterproofing, one of Hawaii's first-established roofing companies. A project comprising three large buildings and 600 squares, the installation occurred over a three-month period. "We had to deal with adverse weather, primarily rain, but also hurricane warnings," says Dan Jaeger, vice president. "Kauai didn't end up getting hit with a hurricane, but because of the warnings, the materials already in transit had to return to their shipping origin and then be reshipped. It took a bit longer than we would have liked."

Despite weather delays, the Honolulu Roofing team completed the installation seamlessly once it got

started. Jaeger points out that Boral Roofing was onsite during installation and contributed to the project's success. "It's really great to see a manufacturer present putting that level of effort into providing guidance during an installation," Jaeger says.

The roof included all Boral components, but the attachment used for this project was the Polyfoam instant set adhesive, which is compatible with Boral Tile Seal underlayment.

Honolulu Roofing was able to install more than 580 squares of roof tile using one crew of eight men, with each member assigned a specific task on the roof, all overseen by Jaegar. He flew in daily from Honolulu before sunrise to make sure the job ran smoothly, even getting in a morning walk to the job site for exercise.

Honolulu Roofing also provided waterproofing for the low-slope portion of the project as it was critical that the roof tile installation tied into the low slope system properly. All told, the installation of the roof tile was completed ahead of schedule despite weather-related shipping delays.

BUILT TO ENTICE AND ENDURE

Timbers Kauai - Ocean Club & Residences at Hokuala is designed to offer an unparalleled experience for those who visit. Built from rich materials that last, the resort encourages luxury island living along a breathtaking stretch of coast. The island retreat offers residents and visitors alike a thoughtfully curated collection of services including access to a full-service restaurant with progressive approach to farm-fresh Hawaiian food, an oceanfront infinity-edge swimming pool, a separate ohana pool with a beach entry, and water features that form the heart of the resort. These are just a few of the onsite amenities set within the quality-crafted resort built of exceptional materials. No doubt, Timbers Kauai is designed to endure. R

ABOUT THE AUTHOR: *Ann Iten is the director of marketing for Boral Roofing, a manufacturer of durable and energy-efficient new and retrofit roofing systems. Visit Boral Roofing online at www.boralroof.com, and contact Ann at Ann.Iten@boral.com.*

TIMBERS KAUAI
LIHUE, HAWAII

TEAM

ARCHITECT: Poss Architecture + Planning, Aspen, Colorado, www.billposs.com, and Gary Ross, Director of Architecture, Timbers Resorts

ROOFING CONTRACTOR: Honolulu Roofing & Waterproofing, Honolulu, Hawaii, www.honroof.com

MATERIALS

CONCRETE ROOF TILE: Saxony 900 Slate Appalachian Blend, Boral Roofing, www.boralroof.com

UNDERLAYMENT: Boral Tile Seal, Boral Roofing

WRITTEN BY **DOUG KRAMER**

Gold Coast Retrofit

Roof of Hong Kong's Premier Yacht Club Gets a Major Facelift

Set within a premier marina and home to some of the region's largest luxury yachts, the Gold Coast Yacht and Country Club is an opulent leisure retreat for the who's who of Hong Kong. Nestled along the South China Sea, the club offers stunning oceanfront views and an enviable set of amenities and attractions for its members and visitors.

But even the most picturesque and well-located of properties is subject to the elements. A subtropical region, Hong Kong's weather pattern includes an annual typhoon season spanning May to November when periodic downpours, tropical storms, and heavy winds are more commonplace. In fact, this weather is directly responsible for the necessary, recently completed retrofit of the yacht and country club's roof.

Prior to retrofit, the existing 38,000-square-foot roof was comprised of terracotta tile, including grout lines throughout. With both a flat deck and a pitched deck, none of the tile work was actually waterproof – far from ideal in moisture-laden Hong Kong. In 2018, after several years in operation, the lack of waterproofing had led to significant leaking throughout various portions of the roof. The club ownership recognized the necessity of restoring the roof to prevent additional costly structural damage. That's when Green Tech Insulation Systems (GTIS) was called in.

A Hong Kong-based roofing and insulation contractor specializing in innovative sustainable solutions, GTIS was faced with some serious challenges. The new roof system obviously had to seal and waterproof the facility and GTIS recommended spray polyurethane foam (SPF) roofing to the club for its abilities to do both. Additionally, SPF is a lighter weight solution that may be applied directly overtop an existing roof, eliminating the costly and time-consuming removal of the older tile roof.

But the regional weather and rains complicated the installation itself. Either rain or extreme humidity was present during at least half of the installation timeline, making it difficult to dry out the substrate prior to application of the SPF roof. To ensure proper adhesion to the substrate, GTIS utilized Lapolla Thermo-Prime. The single-component, water-based acrylic primer promotes adhesion of spray foam roofing to a variety of substrates.

The roof also included interior gutters, many of which were experiencing moisture intrusion through cracks. For this issue, the four-person GTIS crew used a roof torch to dry out the concrete. The GTIS team also utilized silicone for the repair and refurbishment of these gutters.

GTIS spray-applied Lapolla FOAM-LOK 2800-4G, a spray foam system notable for integrating the earth-friendly Honeywell Solstice blowing agent, which eliminates ozone depletion impacts and dramatically decreases global warming potential over older spray foam roofing systems.

"Spray foam roofing is the right product to be deployed in Hong Kong because of its superb performance in the face of our regular and somewhat harsh weather patterns," says Chris Brazendale, managing director

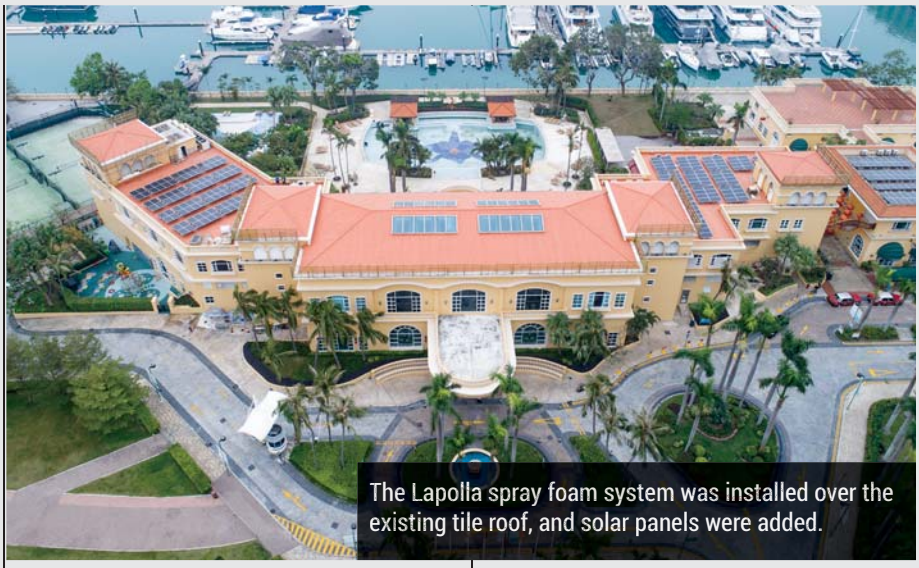
PHOTOS: GREEN TECH INSULATION SYSTEMS (GTIS)

of GTIS Asia Limited. "The combined ability to seal, waterproof, resist high winds and reduce energy demands are major selling points here."

Robert Grant, Icynene-Lapolla's field service representative based in Arizona, attended a portion of the installation to provide educational training to some of the newer GTIS crew installers.

"We pride ourselves on the resources we provide to our contractors and the training I provided onsite is a good example of this," says Grant. "When weather caused delays on the project, I also got into full gear and laid down a good portion of the roof to help GTIS meet the project timeline." Grant himself is also a trained installer.

Club management shared its appreciation of the installation timeline being met. "From start to finish we have been impressed with the GTIS team," says Robert Kawai, general manager of the Gold Coast Yacht and Country Club. "The project completed quickly and work was done with minimal impact to the Club's operations."



The Lapolla spray foam system was installed over the existing tile roof, and solar panels were added.

ENERGY-SAVING STRATEGY

The owners of Gold Coast Yacht and Country Club were looking for a complete energy solution for their upscale destination. In addition to the spray foam, which guarantees significant long-term energy bill savings, they also sought a renewable energy system. Once the roof retrofit and coatings were successfully applied and in place, the owners also engaged a solar contractor to install a robust photovoltaic system. Installation of the photovoltaics took place over a one-month timeframe.

"The Hong Kong government recently introduced an initiative to provide power directly back to the grid, which the owners of the club are participating in," notes Brazendale. "Additionally, the longer-term plan will be to install batteries to capture the solar power and to offset energy demand at the facility. An added benefit of the batteries is assurance to the owners and managers of the facility that power will be accessible to the club, even if a storm or another event affects the grid."

A key requirement of the client was to maintain and enhance the attractive appearance of this upscale facility. To that end, the GTIS and Lapolla teams worked with the club ownership to develop custom color coatings designed to match the original tile roof, and these were applied to the completed SPF roof. GTIS recommended Lapolla THERMO-FLEX 1000 elastomeric coating for the roof and GE Enduris 3500 silicone coating for the roof perimeter.

"The custom color topcoat really helped us retain the overall original appearance of the roofs, which was important to us" says Kawai.

In addition to providing a protective layer over the spray foam material which protects it from UV rays, debris and the elements, the coatings also stand up to the humidity present at the ocean-adjacent site. The coatings also protect against biological growth, which is key as roof surfaces under solar panels typically do not dry as quickly.

"The owners are extremely proud of the retrofit," notes James Cooper, operations director of GTIS. "With regular care and maintenance, the new roof is expected to last for decades. This combined SPF and solar roofing system is a sustainable investment in the Gold Coast Yacht and Country Club that will provide valuable ROI for a significant number of years to come."

"We are really looking forward to the benefits of a watertight roof and lower cooling costs and are so happy with the team and SPF and coatings products we selected for the club," adds Kawai.

ABOUT THE AUTHOR: *Doug Kramer is President & CEO of Icynene-Lapolla, a global manufacturer and supplier of spray polyurethane foam. The company's products are recognized for optimizing energy efficiency and performance in the envelope. Doug Kramer may be reached at dkramer@icynene-lapolla.com.*

GOLD COAST YACHT AND COUNTRY CLUB
HONG KONG

TEAM

INSTALLER: Green Tech Insulation Systems (GTIS), Hong Kong

MATERIALS

SPRAY POLYURETHANE FOAM: Lapolla FOAM-LOK 2800-4G, Icynene-Lapolla, http://icynene-lapolla.com

PRIMER: Lapolla Thermo-Prime, Icynene-Lapolla

ROOF COATING: Lapolla THERMO-FLEX 1000 elastomeric coating, Icynene-Lapolla

ROOF COATING: GE Enduris 3500 silicone coating, GE Silicones, www.siliconeforbuilding.com

Efficiency and Design

Sports Facility Highlights the Versatility of Insulated Metal Panels

Sports facilities are unique environments that face varying environmental conditions from both within and outside the structure. In evaluating building materials, client and builder seek proven solutions for meeting environmental requirements, codes and long-term durability without forsaking the art of design.

Enter the new Boston Sports Institute (BSI), a 130,000-square-foot multi-use recreation facility in Wellesley, Massachusetts, a suburb of Metro West Boston. A collegiate town and activities hub for surrounding residential communities, Wellesley lacked a professional-grade sports facility. Featuring two NHL ice arenas, a synthetic turf field, indoor track, repurposed 2012 Olympic trial pool, warm-up pool, sports rehabilitation area and strength training facility, this $23.3 million complex was completed in July 2019. Centered on a public-private partnership model between the town and the management company Edge Sports Group, BSI prioritizes ice and pool time for local schools who previously traveled to professional facilities. It is also rentable for private organizations and sports groups.

"We were committed to using insulated metal panels from the earliest design stages, both for its performance and design flexibility," states Kevin Provencher, AIA, LEED AP, Director of Architecture at the design builder, Dacon Corporation. "We have a lot of history with this type of product on a variety of building types. It is an effective solution for multi-use facilities with variable environmental requirements. Both ice rinks and natatoriums have high moisture loads, but the ice rink's temperature will be maintained at 55 degrees Fahrenheit while the pools are at 82 degrees. It's an ideal wall system for a facility with demanding environmental needs."

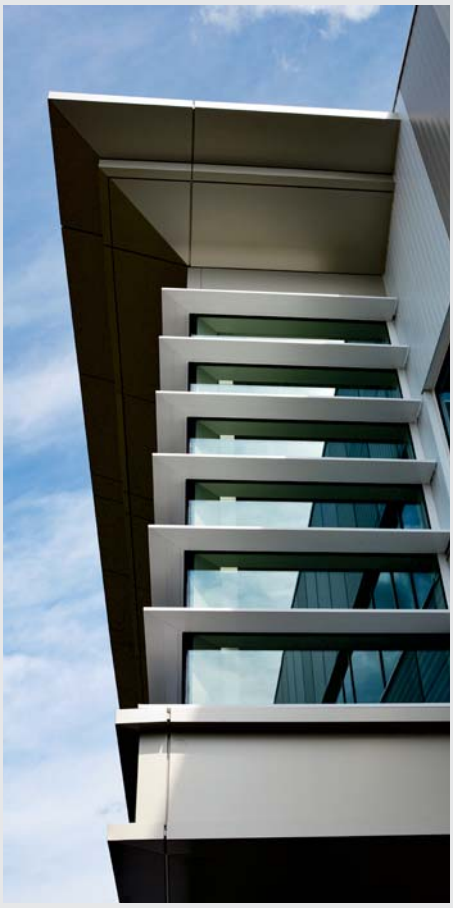
Provencher notes insulated metal panels (IMPs) provide a total wall system that incorporates a continuous insulating layer with control layers for weather, air and vapor barriers. "It helps that we partnered with a quality metal building builder," Provencher says. "Collaboration was key to this project's success. Selecting the right details and sharing responsibility eases the burden on the designer."

Barnes Buildings & Management Group Inc. of Weymouth, Massachusetts, a Metallic Building Company dealer, installed the insulated metal panels from Metl-Span as well as the engineered metal framing system. Tony Barnes oversaw the erection of the metal framing and challenging installation of 58,000 square feet of insulated metal panels. Tim Allison, the Vice President of Project Management at Barnes, oversaw project administration.

"We have a mixture of panel types in multiple colors that run in two orientations," Allison says. "When we have just one type of panel and one color, we simply unwrap the bundle and install continuously. With multiple colors, you must spread out bundles so we can access the panels in the order needed. With this site, we didn't have much room, so it was tricky. We paid close attention to the drawings and details to ensure correct installation."

Allison says Barnes Buildings erects

PHOTOS: METL-SPAN



The roof system incorporates a double lock standing seam panel from Metallic and Metl-Span's CFR insulated metal panels.

a lot of structures using engineered metal framing systems and IMPs. He's noticed an architectural trend is using mixed colors and panel orientation.

Metl-Span's Smoke Gray, Polar White and Sandstone were installed to create an eye-catching aesthetic. "Our client wanted a strong visual impact on the north façade facing the state highway," Provencher says. "When passing other commercial buildings commuters notice this vibrant design featuring vertical and horizontal panels. Tim Allison and Marty Barnes provided valuable input, influencing the final outcome."

There are several unique details to BSI, including a parapet on the gable end of the building above the pool. It starts low at the eaves and grows to 3 feet at the peak to hide rooftop equipment. Barnes Buildings also installed an accent band near the top of the building, a single-skin metal panel that continues horizontally from the windows. The 7.2 Rib panel from Metl-Span is 36 inches wide with ribs that are 1-1/2 inches deep.

The roofing for more than 75 percent of the building is a double lock standing seam from Metallic in bare Galvalume. The roofing above the pool is a bare Galvalume insulated metal panel, Metl-Span's CFR system. It starts approximately 35 feet from the roof peak, so the top section of roofing is standing seam. At the transition to where the IMPs are above the pool, the roofline drops 1 foot. The interior skin on the roofing and wall IMPs in the pool area are coated with Valspar's Flurothane IV, a finish formulated to protect in exceptionally harsh environments where chemical corrosion protection is needed.

"It's all things we've dealt with on other projects, but there's a little bit of everything on this one," Allison says. "It's a special job and a visually appealing project. The IMPs are ideally suited for our New England climate. When used as walls and roofing, they provide excellent continuous insulation on any building." R

BOSTON SPORTS INSTITUTE
WELLESLEY, MASSACHUSETTS

TEAM

DESIGN BUILDER: Dacon Corporation, Natick, Massachusetts, www.dacon1.com

IMP INSTALLER: Barnes Buildings & Management Group, Weymouth, Massachusetts, www.barnesbuildings.com

MATERIALS

WALL PANELS: Insulated Metal Panels, Metl-Span, www.metlspan.com

ROOF PANELS: CFR Insulated Metal Panels, Metl-Span

METAL ROOF SYSTEM: Double Lock Standing Seam, Metallic Building Company, www.metallic.com

Stealth Roofing

Re-Roofing a Planetarium Under the Stars

The James S. McDonnell Planetarium is a St. Louis icon. Located in Forest Park, a 1,300-acre public park, the planetarium is the main attraction at the Saint Louis Science Center, one of the few free nonprofit science museums in the country. It serves more than one million people each year. Opened in 1963, the planetarium features one of the world's best opto-mechanical start projectors, which projects a 360-degree view of the constellations in the night sky onto its domed ceiling.

The giant, white structure is hard to miss, but its roof is hidden from view for those on the ground. The low-slope roof system and penthouse are nearly invisible behind a large, bowl-shaped parapet. The existing roof was saturated with moisture and was starting to develop leaks, and the planetarium's dome-shaped screen and multimillion-dollar projection system could not get wet.

THE PROBLEMS

Bade Roofing was just finishing up a re-roofing project at a Science Center warehouse when the company was called in to take a look at the planetarium roof. According to Dave Bade, president of Bade Roofing, and Drew Bade, the project manager, the company determined a total roof replacement was required. They also identified some key challenges.

The 4,000-square-foot roof is unusual; it's perfectly round, yet slightly bowl-shaped, with round penthouse in the center. The unique shape would make it difficult to design a tapered insulation system, flashings, and terminations for the 30-year project. Another difficulty was posed by the concrete step-offs located under the existing roof. There were no dimensions on the original plans, so creating the tapered insulation layout would be especially tricky.

The schedule was also complicated, as the planetarium would remain open throughout the construction process, hosting daily educational presentations for schoolchildren, as well as special events and exhibits. Work couldn't take place during business hours.

"We had to work at night, craning stuff up there with big lights," says Dave Bade. "The good thing was the guys couldn't fall because they couldn't go anywhere; the roof had an eight-foot wall around it. The safety plan was easy, but the tapered design was tough."

THE PROPOSAL

Bade Roofing decided to go with a SureMB 120TG Base Ply as a temporary

PHOTOS: VERSICO

roof to ensure the equipment inside the building would be protected throughout the tear-off and installation process. "It was a secondary line of defense that allowed us to remove the entire roof all at once and not have to rely on tie-ins from the old roof to the new one when the crew started and stopped each night," Drew Bade says.

The temporary roof allowed the company to accurately measure the existing roof for the tapered insulation design. "This is another reason we decided to use the SureMB 120TG; it allowed us to really see what was going on with the tapered and make adjustments prior to ordering," notes Drew Bade.

The roof specified for the final phase of the project was a 90-mil VersiGard EPDM fully adhered system manufactured by Versico. "The Science Center and the architect both have a history of using EPDM on their projects because they've had a lot of success with it," says Drew Bade. "And with the uncommon design and shape of this roof, EPDM was perfect to mold into all the unique angles and it did a good job conforming to the many curves of the building. We used a 90-mil EPDM to get the 30-year warranty the Science Center wanted and for the overall longevity of the roof."

THE PROCESS

Once the crane and light towers were in place, crews began the loading and tear-off process. Crews accessed the roof through a window of the penthouse, but material had to be lifted in place with the crane. The typical workday began at about 5 p.m., and crews worked until 2 or 3 o'clock the next morning.

"We started by priming the concrete deck with CAV-GRIP 3V," says Drew. "Then we installed the SureMB 120 TG Base Ply."

The insulation was adhered in Flexible DASH low-rise adhesive. Crews installed a base layer of 2-inch SecurShield polyiso, which has a special facer, followed by a layer of tapered SecurShield polyiso. The drainage areas needed exacting care. "The drains were

down in a concrete sump," says Dave Bade. "We put the drawing right on the roof and cut out each of those sections. It was like cutting a pie into 50 pieces."

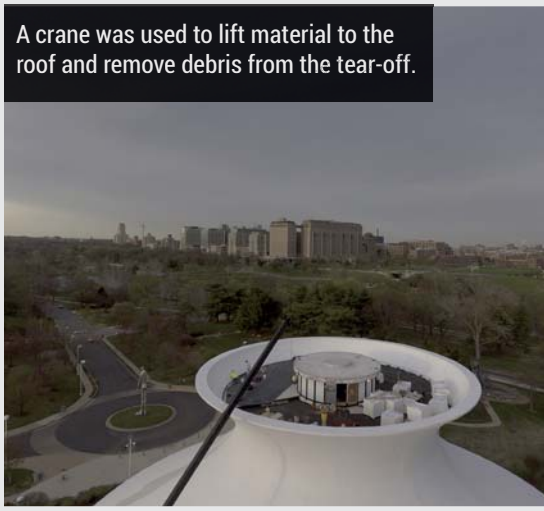
Crews then installed Securock cover board, followed by the 90-mil VersiGard EPDM. "The EPDM did a great job conforming to the building's angles and curves," says Drew Bade. "We adhered the EPDM with Versico's standard Bonding Adhesive because it's got a long track record and it works."

Once the tapered insulation was in place, the membrane installation was pretty straightforward, although the circular roof area posed some challenges with the details. "The counter flashings and terminations were kind of tough because everything had to be pre-bent to that radius," Dave Bade notes. "It wasn't a tight radius, but everything had to be pre-formed to that exact radius so you could keep constant compression on that membrane."

THE PROFESSIONALS

The new system qualified for a 30-year warranty. "One of the main benefits of a Versico system, from a contractor perspective, is the support from Versico's tech reps," says Drew Bade. "It's second to none; they make sure the job's done right and they're there every step of the way."

The work was meticulous, and Bade Roofing's experienced crews took great care to get it right. "The artistic part of it is the roof itself. It's a shame that no one will ever see it," says Dave Bade. "We did the work at night, so no one



A crane was used to lift material to the roof and remove debris from the tear-off.

even saw our trucks."

It's a satisfying accomplishment to re-roof an iconic structure, even if no one sees you do it. "We really wanted to do this job," says Dave Bade. "It meant a lot to us because we try to do things that are out of the ordinary. After being in business for more than 60 years, you like project like this because you get to show off your talents. And the men like stuff like this; the ones who got to work on this project, it really meant a lot to them. They are true professionals." R

JAMES S. MCDONNELL PLANETARIUM
ST. LOUIS, MISSOURI

TEAM

ROOFING CONTRACTOR: Bade Roofing Co., Inc., St. Louis, Missouri, www.baderoofing.com

ARCHITECT: Thomas Roof Inc. Architects, Lake Ozark, Missouri, www.txrac.com

MATERIALS

MEMBRANE: 90-mil VersiGard EPDM, Versico, www.versico.com

INSULATION: SecurShield Polyiso, Versico

BASE PLY: SureMB 120TG, Versico

PRIMER: CAV-GRIP 3V Low-VOC Adhesive/Primer, Versico

COVER BOARD: 1/2-inch Securock, USG, www.usg.com

WRITTEN BY **CHRIS KING**

Ahead of the Curve

Innovative Design Comes to Life at Innovation Amphitheater

Innovation Amphitheater is a 1,500-seat arena in Barrow County, Georgia. The striking curved, clamshell-style roof above the outdoor stage looks across the complex at the building that houses the ticket office and concession stand. Both are clad in matching charcoal-colored standing seam metal roof systems.

SACO Systems installed approximately 12,000 square feet of Petersen's PAC-CLAD 24-gauge Tite-Loc Plus panels on the amphitheater roof and 10,000 square feet of the company's Snap-Clad panels on the amenities building.

"The roof on the concession and restroom building was a 6:12 slope with hips and ridges," notes John Salo, vice president of SACO Systems. "The stage roof was literally curved with the panels sloping from the front to the back and draining to the rear of the stage."

Founded in 1976, SACO Systems focuses on architectural metal cladding components for roofs and walls, as well as custom canopies and awnings. The company was called in on the Innovation Amphitheater project by Carroll Daniel Construction, the construction manager, and asked to provide pricing for the project.

Both roof systems were installed over metal decks and featured Atlas AC Foam II polyiso insulation and TAMKO TW Metal and Tile self-adhered, waterproofing underlayment. "Given the compounding slope of the stage roof, the mechanically seamed panels were an ideal choice for the project," Salo states.

THE INSTALLATION PROCESS

After the metal decking was installed and inspected, crews from SACO Systems mobilized at the site. "We field measured for the PAC-CLAD panels and coil stock to fabricate the trims and flashings required for the project," notes Salo. "We installed the insulation and underlayment to dry in the structure prior to panel delivery. We returned to the site a few days prior to panel delivery and began installing perimeter flashings that were fabricated in our facility in preparation for the panel installation."

Executing the curved design of the amphitheater roof in the field would

PHOTOS: HORTONPHOTOINC.COM

Approximately 12,000 square feet of Petersen's PAC-CLAD mechanically seamed Tite-Loc Plus panels were installed on the amphitheater roof.

The building housing the office and concession stand was topped with 10,000 square feet of Petersen's PAC-CLAD Snap-Clad panels.

be the biggest challenge on the project. Salo contacted Dave Landis, Petersen's sales and technical services manager for the Southeast. He's often called in to consult on complex jobs and approves warranty applications.

Constructing a perfectly symmetrical curved roof is a difficult task, and in this case, the task was made even more difficult by the way the panels were oriented on the roof. "In this case, the panels ran parallel to the curve," notes Landis. "Typically, they run perpendicular to the curve. Any time we deal with curved roofs on a building, there are always some imperfections in the structural decking and the structure of the building, and the roofer and the general contractor must give their best efforts to try and get it within reasonable plumbness so that we can get a roof cladding to lay down and look good."

After walking the roof with the superintendent, Landis and the SACO Systems team developed an ingenious method of achieving the nice, smooth curve that was desired. "What we ended up doing was using two different types of clips to account for the imperfections in the deck," Landis says. "We used flat clips that pull the panel flush to the deck, and we interspersed those with 3/8 space clips, which lift the panel up 3/8 of an inch off the deck. We used the clips to account for the more challenging areas where the curve wasn't perfect. The clips made it work."

Compared to the amphitheater roof, the other roof sections, including the small shed roofs off to the side of the theater, were pretty straightforward. "The roof on the amenities building was pretty cut and dried," says Landis.

A detailed safety plan was essential, and crews used retractable roof anchors and personal fall arrest systems with double lanyards. "Fall protection is routinely our greatest concern on these projects," says Salo.

Salo credits teamwork for the project's successful execution. "This project was able to showcase what we consider one of our greatest assets: the relationships we have built with other companies like the construction manager and PAC-CLAD," concludes Salo. "We were able to install a first-class roofing system that will perform for the owner for many years to come and at the same time find a solution to match the original design intent despite challenges along the way." R

INNOVATION AMPHITHEATER
WINDER, GEORGIA

TEAM

ARCHITECT: Lindsay Pope Brayfield & Associates, Lawrenceville, Georgia, www.lpbatlanta.com

CONSTRUCTION MANAGER: Carroll Daniel Construction, Gainesville, Georgia, www.carrolldaniel.com

ROOFING CONTRACTOR: SACO Systems, Suwanee, Georgia, http://sacosystems.com

MATERIALS

METAL PANELS: PAC-CLAD 24-gauge Tite-Loc Plus and Snap-Clad, Petersen, www.pac-clad.com

UNDERLAYMENT: TW Metal and Tile, TAMKO, www.tamko.com

INSULATION: Atlas AC Foam II, Atlas Roofing Corporation, www.atlasrwi.com

Maximum Protection

At The Star, Durable Roof Systems Safeguard Buildings at Multi-Use Facility

About 13 years ago, the original Dallas Cowboys Stadium in Irving, Texas, needed a new roof coating. KPost Roofing & Waterproofing of Dallas won the job; not too much later a partnership was born, and multiple roofing projects were the result, include The Star in Frisco, Texas.

Founded in 2004 by Keith Post, Steve Little, and Jayne Williams, with a core group of 11 roofing professionals, KPost now employs more than 400 people, including more than 60 specialized crews. Primarily a commercial roofing company, a residential division was opened four years ago to increase reach and service area. With a dedicated focus on safety, quality, and value, the company has amassed a portfolio of 1,240-plus projects and 60,000 work orders valued at more than $541 million, including multiple highly visible projects in the last several years like the headquarter buildings for Liberty Mutual, Toyota, and Charles Schwab; the Irving Music Factory; the Omni Dallas; the Statler Hotel; Texas Rangers Globe Life Field; and many more.

A longtime partnership with the Dallas Cowboys meant that when the team's new indoor practice facility/mixed-use development was going under construction, KPost stepped in.

THE STAR

The mixed-use facility known as The Star is located on 91 acres in Frisco, Texas, and includes the Dallas Cowboys World Headquarters and domed practice facility, the Baylor Scott and White Health Sports Performance and Healthcare Center, The Star District shopping area, the Ford Center (a state-of-the-art 510,000 square foot indoor athletic facility shared by the Dallas Cowboys, the City of Frisco, and area high schools), and the beautiful Omni Frisco, which is nestled in the southeast corner of the complex.

With a wide variety of building conditions throughout the complex, project architects selected roof assemblies that would meet the individual criteria of a high-rise hotel roof, a mid-level

The Star in Frisco is a mixed-use complex that includes the Dallas Cowboys World Headquarters, a domed practice facility, the Ford Center, and the Omni Frisco Hotel.

PHOTOS: KPOST ROOFING & WATERPROOFING

mixed-use space roof, and the domed roof of the Cowboys indoor practice facility. Various manufacturers and system assemblies were considered, and the use of a premium coverboard was always front of mind.

"The Omni Frisco roof levels 16 and 17 included a large amount of rooftop mechanical and lighting systems that require regular maintenance and a durable surface from which to work," explains Chris Evans, chief estimator with KPost. "Additional details included the sheathing on the parapet walls and, of course the dome over the indoor practice facility."

Evans's job with KPost is that of leading the team with technical brainstorming and quality control in accomplishing project pricing and proposals.

"The use of a cover board was always part of the design," continues Evans. "The architect opted for a single-ply roof at all roof areas. Single-ply roof membranes typically perform better when placed over a solid substrate. If not, there is an increased risk for premature wear, tear, and puncture. We needed to choose an option that would help the roof membrane perform to its full potential."

Additionally, Frisco is located in the midst of the hail belt, which upped the ante for additional durability and protection against puncture.

WHY USE A COVER BOARD?

Using a cover board is important for multiple reasons:

- To preserve membrane integrity: Cover boards provide a smooth substrate to support the waterproofing membrane with the right balance of strength and flex.
- To protect the insulation: Insulation compression causes material degradation, which lowers R-values. The polyiso insulation boards are typically the most expensive component in a commercial roof assembly, and critical in achieving target R-value. Cover boards are well-equipped for heavy loads and will protect the insulation and membrane beneath from being smashed by heavy equipment.
- To increase durability: Puncture and impact resistance ensures product longevity. Impact resistance to foot traffic equals less maintenance, fewer repairs over time, and an extension of the life of the roofing assembly.
- To provide weather protection: Wind and hail can wreak havoc on roofing assemblies, but a cover board helps maintain structural integrity during both the storm and the post-storm inspection.

The cover board is a team player; it not only protects the assembly and building from damage — it supports the performance of other assembly materials and the mechanical assets that call the roof home.

THE RIGHT MATERIALS FOR THE PROJECT

Carlisle's single-ply roofing membranes were chosen for the project, with Sure-Weld TPO specified for lower roof areas and Sure-Flex PVC for the dome roof. DensDeck Prime roof boards were incorporated in the submittals, with products provided by CSL Materials of Frisco. Evans and his team chose Georgia-Pacific's DensDeck Prime Roof Board with EONIC Technology as the cover board for The Star — and offered multiple reasons why.

"It is clear that DensDeck and GP, along with their trade partners, are committed to testing a large amount of assembly types and material configurations. This commitment by GP has resulted in an ample amount of approved and tested assemblies, which allows us to find the right answer for pretty much any roof area," says Evans.

"Fact is, DensDeck has become one of our key components used on most roof systems," says Aileen Struble, senior estimator with KPost. "Between the testing, the ease of use, and the durability, DensDeck consistently offers the best protection."

The most senior estimator on the KPost team, Struble has been with the company since the doors opened. She works on multi-system projects, including both new construction, remedial work and large historical renovations. She is KPost's go-to estimator when faced with technically challenging and complicated projects, and she has received four ABC National Eagle Awards on her projects. An estimated 300,000 square feet of DensDeck Prime Roof Board was used on The Star.

When it came to the challenging logistics of the domed roof covering the indoor practice facility, the DensDeck Prime Roof Board passed with flying colors — literally, as the roof board was integral to the overall system, which was flown into place via helicopter.

"It's all about consistency," concludes Evans. "One of the greatest benefits with DensDeck is the fact that we receive the exact same product every single time we order it. This incredible level of consistency affords us the ability to deal with other challenges of construction because we know how DensDeck will behave under multiple conditions, and at the end of the day this consistency minimizes our overall risk. Partnering with consistency is necessary for success."

"We like to call DensDeck the Goldilocks of the roof board industry: some options are too dense, and with some the dimensional stability just isn't there," says Struble. "GP and DensDeck has figured it out, because their roof board is just right." R

THE STAR
FRISCO, TEXAS

TEAM

GENERAL CONTRACTOR: Manhattan Construction Company, Dallas, Texas, www.manhattanconstructiongroup.com

ROOFING CONTRACTOR: KPost Roofing & Waterproofing, Dallas, Texas, www.kpostcompany.com

MATERIALS

ROOF MEMBRANES: Sure-Weld TPO and Sure-Flex PVC, Carlisle SynTec, www.carlislesyntec.com

COVER BOARD: DensDeck Prime, Georgia-Pacific, www.buildgp.com

RESIDENTIAL

WRITTEN BY **BO COPELAND**

After the Storm

Florida Keys Roofers Emerge as Leaders in Hurricane Recovery Efforts

PHOTOS: KEYS ALL AREA ROOFING

Sometime during the drive between Kissimmee and Key West in September 2017, Dion Watson and Deb Shirley realized life would never be the same.

Watson, owner of Keys All Area Roofing, and longtime partner Shirley were headed home from Central Florida after escaping the wrath of Hurricane Irma when the phone started ringing. For the next 380 miles, one caller after the other pleaded for help with their destroyed roofs.

Irma had ripped through the Keys as a Category 4 storm, leaving little untouched in its path. By the time Watson and Shirley reached Key West, they had fielded some 400 calls.

Work at Keys All Area went from a comfortable and steady pace of residential and commercial jobs to a breakneck frenzy of weathering the aftermath.

"I don't even remember the first year after the hurricane," Watson says. "My life is divided into before Irma and after Irma. It was crazy. We had almost 80 guys down here roofing seven days a week and couldn't get it done."

As one of the only female-owned roofing companies in Florida's southernmost region, Keys All Area has crushed the stereotype that roofing is man's work. Watson and Shirley don't focus on being women in a male-dominated business, though; they focus on providing quality work.

The 18-person company has proven itself as a dedicated community partner, helping locals get back on their feet and ensuring that landmarks, like the Faro Blanco condo buildings in Marathon, remain intact.

In addition to working on private jobs (like the Faro Blanco buildings), Keys All Area has re-roofed hurricane-damaged homes in coordination with the Monroe County Long Term Recovery Group, the American Red Cross, Habitat for Humanity and the Florida Conference of the United Methodist Church. In October 2018, Keys All Area was recognized by the Marathon Chamber of Commerce with a Community Contribution Award.

When the towers of the Faro Blanco condominiums were damaged during Hurricane Irma, the condo association wanted the new roofs to retain the original character of the buildings and provide increased durability.

All of this from two women who knew little about roofing just a few years ago.

RAISING THE ROOF

Watson and Shirley moved to the Keys from Arkansas in 2006 to be closer to family, leaving behind their careers in human resources. In the Keys, Watson worked at a marina and became fast friends with Doug Richards of Tampa-based All Area Roofing & Waterproofing. With Richards' encouragement, Watson learned the nuts and bolts of roofing, from quoting jobs to laying shingles, and opened a de-facto branch of All Area Roofing. Watson worked alongside the Tampa-based All Area crews, learning roofing one nail at a time.

In early 2015, Watson and Richards purchased an established, reputable Keys-based roofing company, including the trucks, inventory and phone number, to bring new standards of excellence in roofing to the area. Keys All Area Roofing was born.

"I was on every job, from start to finish, and learned every day about the roofing industry," Watson says. "My main goal was to bring mainland quality roofing to the Keys."

Then came September 10, 2017, the day Irma made landfall at Cudjoe Key, located about 145 miles south of Miami. Within hours, the 130-mph winds leveled 1,179 homes and damaged 2,977.

For Watson and Shirley, the catastrophic damage meant the roofing business was about to go into overdrive.

LIFE AFTER IRMA

Arriving in Key West, the women found their own home damaged — part of the porch roof was torn off, siding was missing and the backyard was decimated — but it was nothing like what happened to their neighbors. Roofs that were once the crowning glory of Key West bungalow homes now cluttered the streets.

In the weeks and months that followed, Keys All Area multiplied its staff to keep up with the demand. Shirley, an organizational whiz, quit her job in the aircraft-parts industry to become the Keys All Area director of operations, keeping the business running smoothly.

Watson and Shirley pushed back against roofing scammers by helping locals understand their options and make sense of the confusing regulations and codes in the rebuilding efforts. The women believe in honesty and quality work.

"Our quality is not going to change because it's a residential three-square shed in the back of somebody's yard,"

Dion Watson and Deb Shirley of Keys All Area Roofing.

Watson says. "Every job we do is like we're doing a warranty job. Whether it's a two-square job on a shed or a 100-square job in a shopping center, we do them the same way."

The can-do approach, coupled with a commitment to the community, helped Keys All Area land one of its most complicated jobs yet — Faro Blanco Condominiums.

TWO BUILDINGS, TWO ROOFS

Compared to other buildings in the Keys, the Faro Blanco condos — twin five-story structures with octagon-shaped and flat roofs — fared well in the storm. Even so, many of the terracotta roof tiles were damaged beyond repair, so the condo association wanted new roofs that retained the original character with improved durability.

The residential buildings, located near the landmark Faro Blanco lighthouse, resort and marina, had to continue the area's Mediterranean-style aesthetic. The choice: Gulf Coast Supply & Manufacturing's 0.032 aluminum VersaLoc with 1.5-inch mechanically seamed panels in Terra Cotta for the highly visible mansards and Firestone UltraPly TPO with a tapered insulation system for the low-slope roof.

TEAMWORK AT ITS BEST

Even before the job began, Watson knew the constant ocean winds, surrounding landscape and continuous stream of residents and visitors into the buildings meant someone could easily get hurt.

The mansard and flat roofs also meant two teams needed to work simultaneously to get the job done on time. While an eight-person team was pulling tile from one roof, a 12-person team was removing the existing flat roof. An 80-foot telescoping forklift hoisted the more than 1,500 metal panels, and a boom lift ensured workers would be safe at the steep angles.

Watson says the work was made easier with Gulf Coast Supply's assistance. Gulf Coast packaged the materials in reinforced crates so everything could be safely loaded onto the roofs and also helped with the tear-offs. The job was estimated to take 16 weeks, but the work was completed in 10 weeks, wrapping up in March of 2019.

The Gulf Coast Supply materials, style and color complement the original design and add improved structural integrity to the roof, according to Watson. While metal roofs are not mandatory in the Keys, they have become a standard for safety in storm-prone areas.

The high-velocity-wind clips and corrosion-free fasteners were used to ensure protection against the harsh elements (sun, sand and salt) that can cause rust and weathering. A polyvinylidene difluoride (PVDF) finish on the aluminum protects against harsh UV rays for long-lasting and vibrant color.

"It's beautiful," Watson says. "I would say Faro Blanco has been probably the biggest feather in my cap."

ROOFING IN PARADISE

In the coming months and years, Watson hopes to grow the company with a continued emphasis on customer service and support. Even though it's been more than two years since Irma, there's plenty more work.

"Irma recovery is ongoing with many people just now getting insurance money or assistance from nonprofits to get their roofs replaced," Watson says. "Sadly, we still have a lot of work to do from the damage of Irma."

ABOUT THE AUTHOR: *Bo Copeland is the inside sales manager for Gulf Coast Supply & Manufacturing. Copeland has been lauded for his commitment to excellence in the roofing industry as the 2018 Earl Blank Memorial Service Heart Award recipient from the Florida Roofing and Sheet Metal Contractors Association (FRSA).*

FARO BLANCO CONDOMINIUMS
MARATHON, FLORIDA

TEAM

ROOFING CONTRACTOR: Keys All Area Roofing, Key West and Marathon, Florida, https://keysallarearoofing.com

MATERIALS

METAL ROOF SYSTEM: 0.032 aluminum VersaLoc with 1.5-inch mechanically seamed panels in Terra Cotta, Gulf Coast Supply & Manufacturing, https://www.gulfcoastsupply.com/

FLAT ROOF SYSTEM: 60-mil Firestone UltraPly TPO with a tapered insulation system, Firestone Building Products, https://www.firestonebpco.com

Missouri Home Gets a Fresh Appearance With Impact-Resistant Roof Upgrade

OF THE $723 million in property damage caused by hail in the United States annually, many of those losses take place in the "hail belt," a center strip of the country that regularly receives more hail damage than most parts of the country.

Sibley, Missouri, a suburb of Kansas City, sits squarely in the buckle of the hail belt. An impressive five-bedroom home built in Sibley had weathered several damaging storms, but unfortunately, the home's wood shake roof could not stand the test of time.

When Chase Roscher, vice president of Zucca & Daughters & Sons Roofing Company, Inc., was approached by the homeowner, the home's roof was failing and in need of total replacement.

"This particular roof was a wood shake roof and had bad hail damage," says Roscher. He explained that while popular for its natural aesthetic, wood shake roofing can be difficult and expensive to maintain properly.

"Unlike asphalt roofing, wood shake roofing requires yearly maintenance and upkeep to avoid becoming a hazard," said Roscher. Without diligent upkeep, he added, prolonged sun and water exposure can cause wood shake to break down, making it more vulnerable to mold, algae, fires and impact damage from hail and wind-blown debris.

In addition to needing an impact-resistant roof solution, the slope of the roof was an extremely steep 12/12 pitch. The roof would need a sturdy, reinforced shingle that would resist the forces of gravity. According to Roscher, the homeowner considered swapping out their aging wood roof with a slate roof. While slate can provide a long-lasting, sophisticated appearance, the weight and cost of the product are often prohibitive.

"Slate roofing will last longer, but it is so heavy that if your house isn't built for it, you have to go in and do a lot of additional structural work to support it," Roscher says. "It's also extremely expensive compared to asphalt. For people looking for a higher-end appearance, the value proposition of an impact-resistant asphalt shingle really fits that need."

Roscher suggested CertainTeed Belmont IR (Impact Resistant) shingles in the color Black Granite for the project. Emulating the appearance of slate, the product offered a natural-looking solution with the strength and durability of a reinforced, impact-resistant asphalt shingle. Eighty-five squares of the product were required for the project.

"We try to present Belmont to customers as an option," says Roscher. "With this product, you're spending less to get the same great look as slate with more functionality."

Installing the product came with benefits for both the homeowner and the roofing contractor. The product offers Class 4 impact-resistance — the highest impact rating in the industry — allowing the homeowner to qualify for a premium discount on their home insurance and decreasing the chances of having to file a hail damage claim in the future.

For the roofing contractor, working with a familiar, lighter-weight asphalt product — as opposed to a heavier slate product — saved his crew time and improved the safety of the installation. That was especially important, given the steep pitch of the roof and three stories separating the eaves from the ground below.

"The homeowner was extremely happy, and the product gave the homeowner insurance savings and more value," Roscher says. "That's better for us and the homeowner." R

MISSOURI RESIDENCE
SIBLEY, MISSOURI

TEAM

ROOFING CONTRACTOR: Zucca & Daughters & Sons Roofing Company Inc., Blue Springs, Missouri, www.zuccaroofing.com

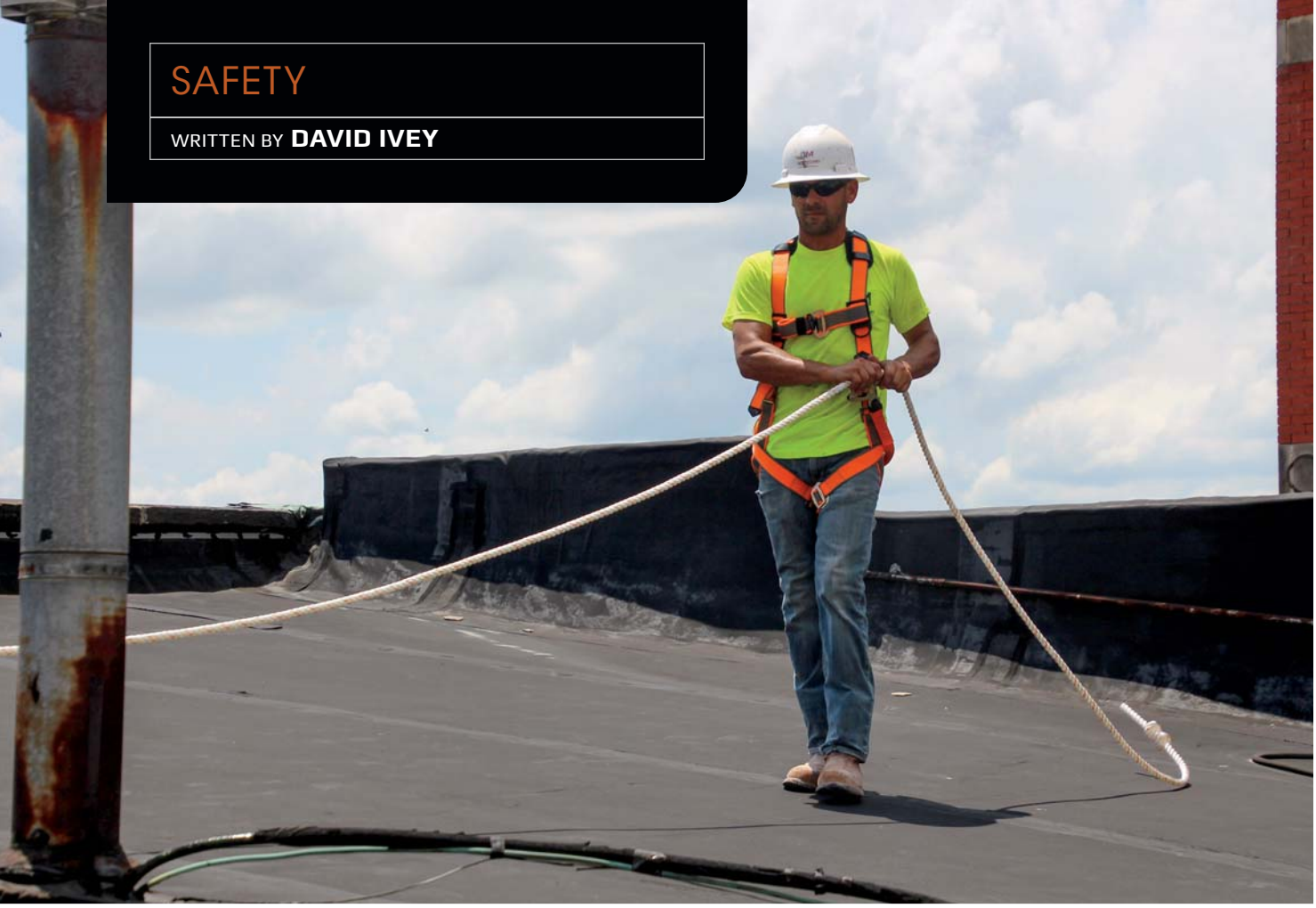
MATERIALS

SHINGLES: Belmont IR in Black Granite, CertainTeed, www.certainteed.com

PHOTO: CERTAINTEED

SAFETY

WRITTEN BY **DAVID IVEY**



The ABC's of Fall Prevention

FALLS ACCOUNTED for almost 40 percent of fatalities in construction in 2017, according to OSHA, and failure to provide fall protection remains the most frequently cited OSHA violation. Nearly 400 construction workers died in the United States as a result of falls in 2017 alone. These are more than statistics on a page; these sobering numbers mean as much to the roofing industry as they do to any other profession. By nature, roofing jobs require working at heights, where we and our teams may be exposed to fall risks. It's important to do everything we can to mitigate these risks and ensure that we and our teams go home safely at the end of the day.

Some simple precautions early on can prevent much more dangerous and costly scenarios later. Fall restraint and restricting access to hazardous areas can prevent falls in the first place, which is the preferred approach whenever possible. Guardrails are an excellent, cost-effective way to restrict access to roof perimeters, skylights, roof hatches, ladder access points, and other fall hazards. If your jobsite lacks these safety features, temporary guardrails are available that don't penetrate the roof and damage it. These portable, free-standing safety rail systems are great for temporary jobsites or one-time contracts, where you aren't installing permanent guardrail fixtures.

Whenever workers need to access areas in which there is a fall risk, however, fall protection is key. Personal fall protection systems are a cost-effective way to ensure the safety of your team. The basic ABC's of fall protection are Anchors, Bodywear, and Connectors, which combine to make a complete personal fall arrest system.

ANCHORS

Anchors are the fixed points on a roof to which personal fall protection gear can be tied off. Anchors provide a solid foundation for any fall protection system, ensuring the rest of the worker's fall protection equipment is secured to a stable point that can support their weight and the force of a fall.

Many styles of roof anchors are available, including standard single-worker anchors, four-way anchor plates, and swiveling anchor points that allow for increased working range, as well as reusable anchors that can be installed with screws or nails for temporary use on rooftops.

BODYWEAR

The gold standard of bodywear for fall protection is a full body harness. The full body harness is the roofer's equivalent of a sailor's life vest — both can save one's life in an emergency. Worn properly, harnesses evenly distribute the force of stopping a fall throughout

PHOTOS: MALTA DYNAMICS

the parts of the body best able to absorb it — across the larger muscles of the legs, shoulders and chest.

Few other pieces of equipment are as personal to the user as one's harness, so it's important to find one that fits well and is comfortable to wear. Many harnesses offer optional padding for the back, neck and shoulders to help keep the pressure off, even when wearing a toolbelt. One-piece designs eliminate shoulder pad slippage and help to keep the harness and padding in place, allowing it to be worn safely and comfortably even while moving around on the jobsite.

CONNECTORS

Connectors include self-retracting lifeline (SRLs), shock-absorbing lanyards and vertical lifeline assemblies. These components are what actively arrest a fall and stop an uncontrolled descent. They also assist in absorbing the fall's impact and diverting some of the stopping force away from the worker's body and harness.

An important factor to consider when choosing a connector for roofing jobsites is the location of your anchor point relative to the working surface. Most standard SRL and lanyard systems are designed for overhead tie-off, but this isn't always possible when working on a rooftop. When you're working on a leading edge — a walking/working surface with an unprotected side or edge 6 feet (1.8 m) or more above a lower level — and you don't have an overhead anchor point, foot-level tie-off requires a different style of connector that's designed and rated specifically for these kinds of applications.

Of course, all the best fall protection gear in the world means little if your crew doesn't know how to use it correctly or fails to wear it because it's uncomfortable or ill-fitting. Training and proper fitting and use of personal fall arrest systems is an important final step to take with your teams.

OSHA 29 CFR 1926.503 states: "Employers must provide a fall protection training program to workers who might be exposed to fall hazards.

Of course, all the best fall protection gear in the world means little if your crew doesn't know how to use it correctly or fails to wear it because it's uncomfortable or ill-fitting.

Training must include how to recognize fall hazards and how to minimize them." OSHA cited 1,978 companies for failure to properly train their teams in 2018, up from 1,728 citations in 2017.

Simply purchasing fall protection equipment isn't enough to keep your workers safe. Your team needs to know how to properly use, inspect and store safety equipment to prevent injury, and your equipment must be properly maintained and kept in good repair. Safety training courses are available from fall protection equipment manufacturers, who can train your teams on how to inspect, use and maintain their products. Knowing how to identify jobsite hazards, having a fall protection plan that meets your jobsite's specifications and a rescue plan prepared should anything go wrong are all part of any successful training program.

Coming to a jobsite prepared to employ fall prevention, equipped with personal fall protection, and trained in the proper use of your safety systems lays the groundwork for keeping your crew safe when working on roofing projects at heights. These precautionary steps are important to ensuring that your team members don't become another statistic. R

ABOUT THE AUTHOR: *David Ivey is a Fall Protection Engineer for Malta Dynamics, where he oversees the engineering and installation of all custom fall protection systems. For more information or with questions about OSHA compliance of fall protection systems, contact him by email at divey@maltadynamics.com.*

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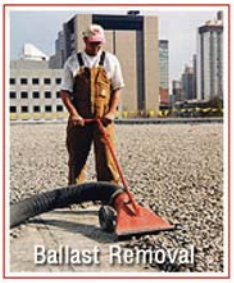
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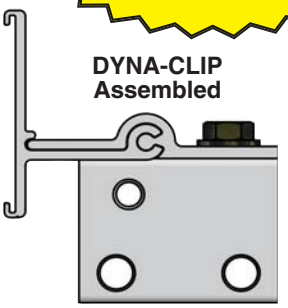

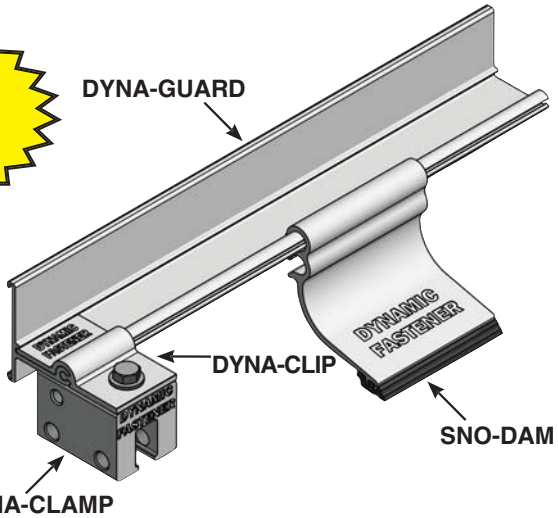

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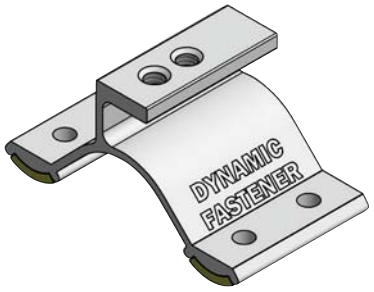

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