January | February 2019 Vol. 10 | Issue 1

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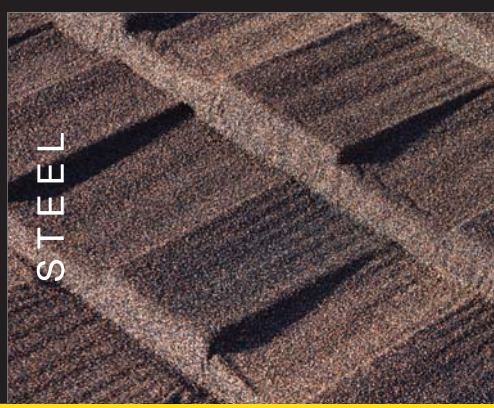

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JANUARY / FEBRUARY 2019 | VOL. 10 NO. 1

FEATURES

COVER STORY

SUPER-FLEXIBLE SPACES

At the Ace Hotel in Chicago, amenities include rooftop event spaces crowned with vegetative assemblies, bar areas and a climbable sculpture.

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ON THE COVER

The Ace Hotel in Chicago's Fulton Market Historic District features 159 guestrooms and amenities including rooftop event spaces with stunning views of the Loop. The complex features several vegetative roofs, including a rootop terrace with a climbable sculpture and plants that evoke a natural prairie landscape.

Photo: Scott Shigley for site design group ltd.

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RAISE THE ROOF

WRITTEN BY **CHRIS KING**

Back to the Future

As the calendar flips to mark the start of a new year, it is traditionally a good time to take a step back and contemplate the future. This often means focusing on setting goals — both for yourself and for your business.

That topic must have been top of mind for many of the authors who contributed to this issue, as the articles can serve as a road map when planning for the year ahead.

This issue is chock full of great business management advice, beginning with personnel. In her column, business consultant Diane Helbig urges business owners to think of their business like a football team, making sure the right people are in the right positions.

Once the lineup is set, the team needs systems in place to guarantee success. Caroline Trautman points out that proper record-keeping procedures can be the key to prevailing in a dispute, and she offers tips on procedures to safeguard your company.

Success also hinges on finding new business, so marketing is always essential. Heidi J. Ellsworth and Karen L. Edwards detail the importance of developing an overall marketing plan — and outline ways to get started.

Others tackled the task of identifying potential problems facing the industry. Jared Blum believes Congress and extreme weather will pose the biggest challenges to the roofing industry in 2019. Tom Hutchinson looks at roof failures in new construction using metal studs, while Justin Koscher points to more robust building codes as a valuable tool to protect communities from severe weather events — and help them bounce back. Trent Cotney explores the jobsite of the future — which is already here, in the form of high-tech tools including geofencing, building information modeling (BIM) and smart contracts. The same technology that helps people count their steps can now help companies determine who is on the jobsite, record their work, calculate their pay and automatically trigger the next task to be performed. It's a Brave New World.

There will be lots of new technology to explore at this year's International Roofing Expo in Nashville, and I hope to see you there. It's a great place to network and hone the strategies you are working on to help improve your business.

There might not be any products there to help me with my annual goal to lose some weight, but at least I have Josie the Wonder Dog to make sure I get around the block a few times every day.

Here's wishing that 2019 brings you much happiness and success.

Find us on

Roofing

JANUARY / FEBRUARY 2019
VOL. 10 NO. 1

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 Raleigh, N.C.-based Anderson Jones PLLC. She concentrates on areas including construction law, construction litigation, lien and bond claims, and contracts. In "Business Sense," page 34, she offers advice on properly documenting projects in process.

Diane Helbig is an international business and leadership change agent, author, and award-winning speaker. As president of Seize This Day, based in Cleveland, she helps businesses and organizations operate more constructively and profitably. In "Business Sense," page 40, Helbig likens running a business to coaching a football team.

Paul Casseri is the product manager of the Roofing Shingles and Underlayment Division for Atlas Roofing Corp. He is responsible for all areas of product management, including product initiation, feasibility, design, development and testing. In "Details," page 46, he offers tips on working in cold conditions.

Justin Koscher is the president of the Polyisocyanurate Insulation Manufacturers Association (PIMA). In "Tech Point," page 50, he explores the role of building codes in helping communities prepare for natural disasters and severe weather events.

Jared Blum is the executive director of the EPDM Roofing Association (ERA) and serves as chair of the Environmental and Energy Study Institute. In "Industry Outlook," page 54, he analyzes some of the key variables likely to affect industry in the year ahead.

Heidi J. Ellsworth and **Karen L. Edwards** are the authors of two books: *Sales and Marketing for Roofing Contractors* and *Building a Marketing Plan for Roofing Contractors*. In "Marketing," page 58, they offer advice on developing an overall marketing strategy.

Thomas W. Hutchinson, AIA, FRCI, RRC, CSI, RRP, is a principal of Hutchinson Design Group Ltd. in Barrington, Illinois, and a member of Roofing's editorial advisory board. In "The Hutchinson Files," page 62, Hutchinson explores the topic of roof failures in systems using metal studs in exterior wall construction.

Trent Cotney is the CEO of Cotney Construction Law and an advocate for the roofing industry who serves as general counsel for FRSA, RT3, TARC, WSRCA and several other roofing associations. In "New Technology," page 70, he covers developments including geofencing, BIM and smart contracts.

Chris Lafferty works with Design Components Inc. in sales and marketing. He has an extensive background in general contracting and restoration. In "Safety," page 102, he answers some frequently asked questions about OSHA's regulations regarding fixed ladders.

30Ave Retail Center, Inlet Beach, FL Owner: Corr Group US Architect: Dougherty Architecture + Design Installing contractor: Ameritech Roofing
Distributor: Roofer's Mart Photographer: hortonphotoinc.com Profile : Snap-Clad Color: Cityscape

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-Phillip Jorgenson, Project Manager, Ameritech Roofing

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Atlas Roofing to Host HGTV and DIY Network Star Mike Holmes at 2019 IRE

MIKE HOLMES, professional contractor and TV host on HGTV and DIY Network, will be at the Atlas Roofing booth during the 2019 International Roofing Expo (IRE) in Nashville, Tennessee.

Holmes is scheduled to be at the Atlas Roofing booth (#1454) on February 11. He will be sharing his experiences in the construction industry, interacting with fans and doing interviews.

Holmes' daughter, Sherry, will also take part in the IRE festivities, serving as the keynote speaker for National Women in Roofing Day on February 9.

Recently the Holmes team named Atlas shingles with Scotchgard Protector as a HOLMES Approved product. The HOLMES Approved designation represents products that meet Holmes' high-quality standards. Atlas, 3M and the Holmes team are determined to increase awareness with homeowners to help eliminate black streaks on roofs cause by algae. "I'm proud of this work," Holmes says. "Together we're going to continue to improve the quality of our homes and change our industry for the better."

For more information, visit www.atlasroofing.com.

Update: U.S. District Court Finds for S-5! in Patent Infringement Case

The United States District Court for the District of Connecticut upheld the claims of S-5! in its patent infringement lawsuit against Ace Clamp/PMC. The court found that PMC directly infringed S-5!'s patent and the court ordered that PMC be permanently enjoined from making, using, offering for sale, or selling in the United States the ColorSnap system and replacement parts until S-5!'s patent expires.

For more details about this action and decision, visit www.S-5.com.

Cotney Construction Law Launches Subscription Plan

Cotney Construction Law, a full-service national law firm for construction, specialty trades and OSHA law, announced the new Cotney Construction Law Subscription Plan, a new service designed to help roofing contractors reduce risk and budget for their legal costs.

Cotney Construction Law works with all types and sizes of construction companies across the country. According to the firm, Cotney Construction Law is able to provide legal services with predictable billing to reduce risk and increase a company's bottom line. Cotney Construction Law subscription services provide a subscription-based plan that is tailored to the client. It provides the client with a predictable monthly billing plan for non-litigation matters. Clients will select a subscription level that best suits their needs at a set monthly rate.

According to the firm, roofing companies that enroll in a subscription-based plan will have access to attorneys to assist with a variety of legal issues. Additionally, clients will be able to utilize law firm subscription-based services to ensure their companies follow laws and regulations that impact their businesses.

"Whether you are a sole proprietor starting a new company or a multi-national contractor that is several generations old, budgeting for legal spend is essential to the maintenance of a profitable roofing business," said Trent Cotney, CEO of Cotney Construction Law. "Every roofing project consists of several moving parts that must be coordinated and balanced in order to complete the project and ultimately turn a profit. Cotney Construction Law helps their clients achieve this goal by managing risks in their contractual agreements, advising clients on good business practices and, when necessary, vigorously representing their clients in disputes."

For more information, visit www.cotneycl.com.

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Garland Receives Medical Mutual Pillar Award for Community Seruice

GARLAND WAS RECENTLY HONORED with a Medical Mutual Pillar Award for Community Service for its annual tradition of supporting non-profit organizations through fun, creative and thoughtful fundraising. Garland's philanthropic initiative called Spirit Week began in 2010 with Garland employees helping raise more than $400,000 for charities in northeast Ohio and across the country over the last nine years. The company was honored at an event in December along with seven other 2018 Pillar Award honorees.

Garland's Spirit Week initially began as a weeklong fundraising event, but has since transformed into a several months long initiative that kicks off well before the official date in May. Garland has supported a variety of charities throughout the years, including Make-A-Wish Foundation, St. Jude Children's Research Hospital, Greater Cleveland Habitat for Humanity, Ohio Cancer Research and most recently, the Achievement Centers for Children. In addition to providing Garland employees with a way to give back to the community, Spirit Week has also served as a way for employees to support their fellow partners through cancer diagnoses.

In 2013, Garland supported the Bonnie J. Addario Lung Cancer Foundation, an organization that funds lung cancer research and advocacy. The organization was providing help, support and comfort to the wife of a California-based Garland sales rep after she was diagnosed with Stage IV lung cancer at 28 years old. One of Garland's own board members was also battling the disease.

Three years later, two more Garland family members received cancer diagnoses. Once again, Garland's employees rallied behind their colleagues not only by offering support personally and professionally, but also by raising money for Ohio Cancer Research, a nonprofit organization dedicated to funding aggressive cancer research.

"Garland's employees truly have embraced the goal of Spirit Week, which has always been to support non-profit organizations who are doing so much good in our local community and also across the country," said Chuck Ripepi, Garland's CFO. "To see the impact we've had over the years through our fundraising and volunteerism is what keeps us going year after year. Spirit Week has become part of who we are as an organization."

Garland's 2019 Spirit Week charity is Santa's Hide-A-Way Hollow, a completely volunteer-run organization that brings the spirit of Christmas joy to seriously and terminally ill children and their families all throughout the year.

For more information, visit www.garlandco.com

Carlisle Companies to Acquire Petersen

Carlisle Companies Incorporated, through its Carlisle Construction Materials (CCM) operating segment, announced that it has entered into a definitive purchase agreement to acquire Petersen Aluminum Corporation for approximately $197 million.

Headquartered in Elk Grove Village, Illinois, Petersen's primary business is the manufacture and distribution of architectural metal roof panels, steel and aluminum flat sheets and coils, wall panels, perimeter roof edge systems and related accessories for commercial, residential, institutional, industrial and agricultural markets. Founded by Maurice R. Petersen in 1965, Petersen, through its premier brand PAC-CLAD, has grown to become a company with approximately $160 million of annual revenue.

Chris Koch, CEO and president of Carlisle Companies, said, "The acquisition of Petersen is part of our strategy of providing customers with a portfolio of high quality, innovative products and solutions that meet an increasing array of their building envelope needs. Petersen is an excellent fit with our recent acquisitions in the metal roofing space, including Drexel Metals, Sunlast Metal and Premium Panels, as well as a significant complementary addition to our single-ply roofing systems. We anticipate achieving annual synergies of $4.0 million across our metal roofing platform as a result of the acquisition. Petersen further broadens our scale and geographic penetration of the attractive and fast-growing regions of Texas, Arizona, Georgia and the Midwest as we continue to execute on our metal roofing growth strategy. I look forward to welcoming the Petersen team to Carlisle and driving further growth and innovation with the help of the Carlisle Operating System."

Upon completion of the transaction, the business will be reported as part of the CCM segment. For more information, visit www.carlisle.com.

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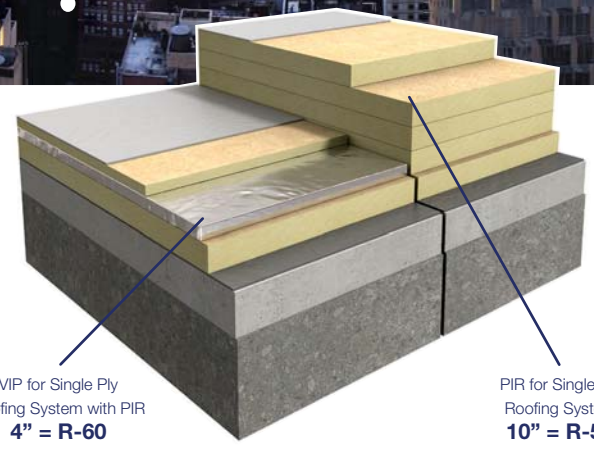

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NEWSFROMNRCA

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

NRCA
National Roofing Contractors Association

NRCA Seeks ProCertification Qualified Assessors

NRCA PROCERTIFICATION is a national worker certification program designed to create a competent, sustainable and high-performing roofing industry workforce. Experienced roofing workers can demonstrate their skills and knowledge to become certified roof system installers in specific roof system applications and disciplines.

But NRCA needs company leaders to help make this program work. NRCA ProCertification Qualified Assessors will serve as performance exam proctors for those seeking installation certifications, evaluating and verifying NRCA ProCertification participants' hands-on skills. Qualified Assessors are uniquely qualified by meeting eligibility requirements, completing two self-paced online training modules, and passing a proctored online exam.

The NRCA ProCertification Qualified Assessor Program exists to teach Qualified Assessor candidates observation and assessment skills and the policies and procedures required to fulfill their roles in the ProCertification program.

The benefits of being a Qualified Assessor are significant and include expanding your current business offerings by assessing ProCertification candidates; generating additional revenue by charging ProCertification candidates an appropriate fee for conducting their performance exams; gaining access to NRCA ProCertification materials for specific roof system disciplines; and earning a digital badge and professional recognition as being one of the leaders in our industry.

For more information about becoming a Qualified Assessor or to submit an application, visit www.nrca.net/NRCA-PRO-Qualified-Assessors. For more information about NRCA ProCertification, visit www.nrca.net/NRCA-ProCertification.

NRCA Releases Latest Volume of the NRCA Manual

The NRCA Roofing Manual: Membrane Roof Systems—2019 is now available in the NRCA Bookstore. This volume of the manual provides information about the best industry practices and technical information regarding the design, materials and installation techniques applicable to membrane roof systems used in low-slope applications. It offers roof system configurations with a list of applicable roof components and references on where to find additional information in the manual. It also includes construction details for built-up roof (BUR) membrane, polymer-modified bitumen, liquid-applied, EPDM and other single-ply membrane roof systems.

NRCA offers an electronic PDF version of the volume in the NRCA Bookstore, and it will also be available on the NRCA app. For more information, visit www.nrca.net/store.

Online Registration Opens for Roofing Day in D.C. 2019

NRCA ANNOUNCED that online registration is open for Roofing Day in D.C. 2019, which will be held April 3-4. The purpose of the event is to bring the roofing industry together to meet with members of Congress and their staffs and deliver the industry's message with "one voice."

On March 6-7, 2018, the roofing industry came together in Washington, D.C., for Roofing Day in D.C. 2018. The event was a success with more than 400 professionals from all segments of the roofing industry coming together to deliver a unified industry message to Congress. From states as far as Hawaii and Alaska, roofing professionals from all segments of the industry showed up and made a lasting impression on legislators, bringing to their attention our urgent need for regulatory reform, enhanced career and technical educational programs, and immigration reform that meets our workforce needs.

The NRCA encourages all industry stakeholders to attend and bring employees and crew members to be a part of this unique and exciting event. It's important for Congress to hear from all segments of the industry. Registration is only $75 for company representatives and $25 for roof system installers. You do not need to be an NRCA member to participate—anyone from the roofing industry is welcome and encouraged to attend.

To learn more about Roofing Day in D.C. 2019 and to register, visit www.nrca.net/roofingday.

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Roofing Alliance Welcomes the Industry to Embrace its Mission at IRE

THE ROOFING ALLIANCE, formerly The Roofing Industry Alliance for Progress, is the foundation of the NRCA. It was established within the National Roofing Foundation (NRF) to create a permanent endowment fund to serve as a highly focused resource for the roofing industry and its customers. Its objectives include funding research and education projects while also supporting and funding charitable and educational programs.

The Roofing Alliance is inviting attendees of the International Roofing Expo (IRE) to join them at the conference, where they will experience the best and brightest of the roofing industry, as exemplified by programs and events including:

Construction Management Student Competition. During this year's IRE, the Roofing Alliance will be celebrating its fifth competition, with students competing on February 12. Teams of college and university students are tested for their roofing, project management, estimating, safety, quality control and presentation skills. The five finalist teams will present full bid submittals to industry judges through oral presentations during the convention. The winning teams will receive prizes of $5,000 and $2,500 scholarships and the Best Individual Presenter will receive an iPad.

Kyle Thomas, co-chair of the Alliance Construction Management Schools Initiative Committee, and owner of Thomas Roofing out of Mobile, Alabama, sees this event as a way to introduce roofing to a new generation. "We certainly hope that some of the students become interested enough to pursue a career in the roofing industry," he said. "But even for those who go the more traditional route and choose to work for a general contractor, they will have a much better understanding of the roofing portion of the projects that they will be working on."

NRCA's Industry Awards Ceremony and Cocktail Reception. The winners of the student competition awards will be announced at NRCA's Industry Awards Ceremony and Cocktail Reception, to be held February 12, 2019. The ceremony also honors winners of the Most Valuable Player (MVP) award and Gold Circle Awards.

In its 19th year, the MVP Program honors leadership in the field. Five outstanding roofing professionals will be honored this year, and one winner will be chosen as Professional Roofing's Best of the Best, an honor co-sponsored by OMG Roofing Products and Professional Roofing magazine. The prestigious Gold Circle Awards honor outstanding contributions and unique roofing-related jobs and services. Roofing Alliance and NRCA members were encouraged to submit their best work in the following categories: Outstanding Workmanship; Innovative Solutions; and Safety Preparedness and Performance.

The Roofing Alliance is challenging contractors across the country to adopt the roof of a Ronald McDonald House in their area.

Ronald McDonald House Charities challenge. On the expo show floor, attendees can visit the Roofing Alliance in Booth #2523 to learn about the Ronald McDonald House Charities (RMHC) challenge, which challenges roofing contractors across the country to adopt the roof of a Ronald McDonald House in their area and to provide donated roofing services.

"We want to be sure that every roofing professional understands the mission and accomplishments of the Roofing Alliance," stated Rod Petrick, Roofing Alliance President. "Membership in this organization is all about giving back and we are doing it every day. Not only do we want to continue to grow the Roofing Alliance, but we also want to keep our current members actively involved especially with the RMHC and construction management initiatives. We really would like to see all 165 Ronald McDonald Houses adopted and a great turnout for our student competition presentations at IRE. We ask that everyone in the industry stay engaged and we plan to facilitate that with strong, consistent information exchanges that will inspire the industry and help promote our professional image."

For more information about the Roofing Alliance, visit www.roofingalliance.net.

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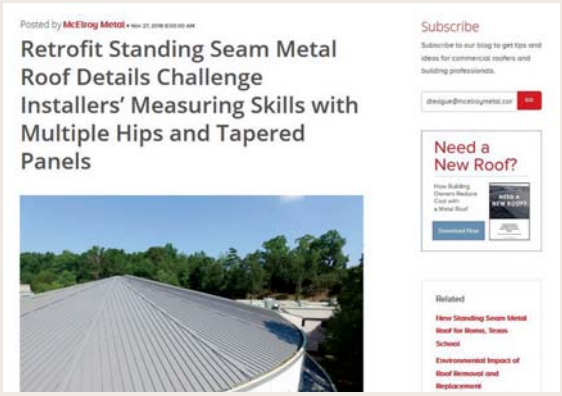
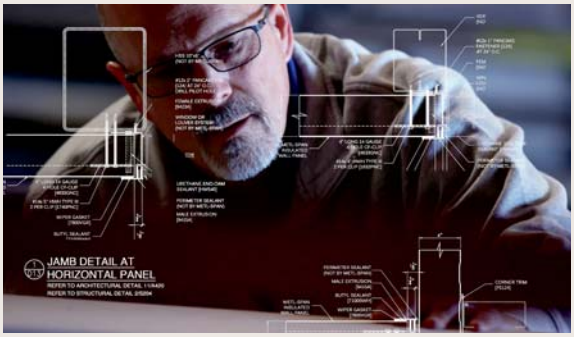


McElroy Metal Adds Blogs to Help Contractors, Consumers, Homeowners

McElroy Metal has developed three blogs to help educate contractors, consumers and homeowners on the benefits of metal roofing and wall products. McElroy Metal's Commercial Building blog features commercial projects completed with the company's products. The Homeowner blog speaks to those looking for design inspiration and information about installing metal roofing on their home. The News blog showcases the company's new products and projects. All three blogs can be accessed from the Blog drop-down menu on the company's home page, www.mcelroymetal.com.



Metl-Span Creates Video Library for Installation Assistance

Metl-Span has developed an online video library that includes several installation instructional videos, as well as videos featuring specifiers discussing their success stories with Metl-Span products. The installation videos cover Commercial-Industrial Roof Installation, Roof Installation and Commercial-Industrial Wall Installation. The library also includes testimonial videos and videos explaining the benefits of using insulated metal panels. The Metl-Span Video Library can be viewed at: www.metlspan.com/resources/videos/.

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* US 9,573,150 B2; US 9,566,594 B2; US 9,174,234 B2; CA 2,806,690 C; US 9,498,792 B2; US 9,381,536 B2; US 7,056,556 B2; US D501,855 S; CA 2,493,739 C

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EVENTS

JANUARY

14-16

MCA WINTER MEETING
Key Largo, Florida
Metal Construction Association
www.metalconstruction.org

16-18

CRCA 36TH ANNUAL TRADE SHOW & SEMINARS
Oakbrook Terrace, Illinois
Chicago Roofing Contractors Association
www.crca.org

18-20

SPRI 37TH ANNUAL CONFERENCE AND BUSINESS MEETING
Tucson, Arizona
SPRI
www.spri.org

22-24

CAROLINAS MID-WINTER ROOFING EXPO
Raleigh, North Carolina
Carolinas Roofing and Sheet Metal Contractors Association
www.crsma.org

22-24

NRCA'S QUALIFIED TRAINER CONFERENCE
Rockdale, Illinois
National Roofing Contractors Association
www.nrca.net

24

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

FEBRUARY

4-7

SPRAYFOAM CONVENTION & EXPO
Daytona Beach, Florida
Spray Polyurethane Foam Alliance (SPFA)
www.sprayfoam.org

6

OHIO ROOFING CONTRACTORS ASSOCIATION TRADE SHOW
Columbus, Ohio
Ohio Roofing Contractors Association
www.ohioroofing.org

10

CERTA TRAIN THE TRAINER AUTHORIZATION
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11-13

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13

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13-14

RCMA GALA & ANNUAL MEETING
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MATERIALS & GADGETS

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Boral Roofing offers its MetalSeal Underlayment, a high-temperature, self-adhered underlayment designed especially for metal roofing but suitable for any roof material in any climate. According to the company, Boral MetalSeal is easy to install and eliminates the need for an excessive number of nails, reducing installation time and cost. The high-strength woven polyester surface remains intact under high foot traffic and provides UV resistance up to six months. It comes in 216-square-foot rolls for a net two squares.

www.BoralRoof.com | **Circle No. 17**

Water-Based, Non-Toxic Acrylic-Urethane Coating

Garland offers Pyramic Plus LO, a bright white, water-based, acrylic-urethane roof coating designed to preserve asphaltic modified bitumen surfaces from UV degradation and lower temperatures on the roof surface. Pyramic Plus LO, though 100-percent water-based and non-toxic, contains uniquely formulated biocides that minimize the growth of micro-organisms including bacteria, fungi, and algae on the surface of the coating. With an odor comparable to standard house paint, these systems will not disrupt building occupants or business as usual. Pyramic Plus LO is ideal for use in sensitive applications such as schools and hospitals.

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

Vent Secured Roofing System

Carlisle SynTec Systems introduces the VacuSeal Vent Secured Roofing System, which uses special vents that harness the power of the wind to lock roof membranes in place. According to the manufacturer, VacuSeal systems are quick and easy to install and save cost and labor by substantially reducing the amount of glue, ballast, or fasteners a project requires. According to the company, there are no cold-weather limitations for installation and no VOCs or odors. The system is UL certified with uplift certification at 195 psf negative pressure.

www.CarlisleSynTec.com | **Circle No. 18**

Extended-Length Aluminum Retrofit Drain

Marathon Roofing Products now offers an extended version of its Aluminator Retrofit Drain that is 22 inches long. According to the company, the Aluminator Drain is constructed of heavy-duty spun aluminum body, aluminum ring/dome and the ProSeal seal designed to prevent water backup issues. The Aluminator also has the option to be PVC or TPO coated for direct hot-air welding to PVC or TPO membranes.

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

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MATERIALS & GADGETS

Ladder Attachment Accessory for Standing Seam Roof Anchors

SeamSAFE introduces a ladder attachment that extends the utility and versatility of the company's safety anchors designed specifically for standing seam roofs. The ladder attachments are used with SeamSAFE anchors to enable roofers to easily affix a ladder to a standing seam roof for access to different roof areas and upper levels. The ladder attachments can also be used on mansard roofs or to permanently mount a ladder to a standing seam vertical surface. They can be used for fall arrest protection at the same time they are being used to secure a ladder or toe board.

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

All-Weather Roof Flashing

New Seal-Fast Repair Hero roof flashing from **Mule-Hide Products Co.** is an all-system, all-weather maintenance and repair product. The solvent-based, fiber-reinforced terpolymer sealant adheres to all roof substrates, including asphalt, modified bitumen, metal, TPO, EPDM, PVC, Kynar, concrete, Elvaloy/PVC, Hypalon (CSPE) and polyisobutylene (PIB). According to the manufacturer, Repair Hero can be applied to dry or wet surfaces and under water. It can be used in any weather and in any ambient temperature. Repair Hero complies with VOC-related regulations in all 50 states and does not need to be mixed or stirred before use.

www.MuleHide.com | **Circle No. 23**

Bulk Material Warmer

Powerblanket Hot Boxes are designed to efficiently heat temperature-sensitive materials such as roofing materials, paints, chemicals, epoxies, resins, equipment, and pallets of any material. Easily assembled, taken apart, and moved from job to job, hot boxes are ideal for cold-weather storage and freeze protection, as well as transporting, jobsite heating, remote location use, and winter roofing projects. According to the manufacturer, the Hot Box can protect critical, temperature-sensitive materials and extend the roofing season and limit downtime to maximize profits. It is safe to leave on overnight for immediate use the next day.

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

Silicone-Infused Elastomeric Roof Coating

Nationwide Protective Coatings Mfrs. Inc. introduces PERMASIL, a new silicone-infused bright white elastomeric acrylic, ceramic insulating, waterproofing protective roof coating. The water-based, energy-saving formula is designed to beautify, protect and extend the life of roofing surfaces. Silicone technology adds extra waterproofing protection by sheeting off water from the dried coating surface. According to the manufacturer, the product is easy to apply and comes with a 15-year warranty.

www.NationwideCoatings.com | **Circle No. 25**

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Structural Acoustical Roof Decks Reduce Noise, Provide R-Values Up to 44

Tectum Structural Acoustical Roof Deck solutions from Armstrong Building Solutions provide predictable noise absorption, durability, and sustainability to meet building design needs. Composite roof deck options provide R-values up to 44. By providing noise absorption up to 0.80, the panels often eliminate the need for additional acoustical treatments, providing faster and easier installations than standard steel roof decks.

According to the manufacturer, Tectum Roof Decks are an ideal noise reduction solution for large, high traffic, exposed structure spaces such as auditoriums, gymnasiums, arenas, pools, ice arenas and multi-use facilities. Tectum Roof Deck panels also help meet ANSI S12.60 Acoustical Performance Criteria for learning spaces such as gymnasiums.

Tectum Roof Decks are composed of rapidly renewable and FSC-certified aspen wood fiber that is bonded with an inorganic hydraulic cement for maximum durability and performance. Tectum 1 (non-composite panels) meet the most stringent sustainability criteria, including EPD, HPD, and Declare, and contribute favorably to LEED v4, and the Living Building Challenge.

Tectum Roof Deck solutions in plank or tile configurations are available in a wide variety of system configurations to address a building's design requirements in low-slope applications and are compatible with virtually all roofing materials, providing a thermal barrier for field-applied foam plastics.

Tectum Composite Roof Deck panels are typically used in sloped applications where acoustics, insulation, a nailable surface, and structural integrity are all important. An NRC up to 0.80 provides predictable acoustics, often eliminating the need for additional noise reducing materials. R

"Tectum Composite Roof Deck panels are typically used in sloped applications where acoustics, insulation, a nailable surface, and structural integrity are all important."

JAN/FEB 2019 ROOFERS' CHOICE Roofing

The "Roofers' Choice" winner is determined by the product that receives the most reader inquiries from the "Materials & Gadgets" section in a previous issue. This product received the most inquiries from our September/October 2018 issue.

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Q&A on OneDek™ with Mark Munley of All Weather Insulated Panels

Having worked for Firestone Building Products, Knauf Insulation and Kingspan, Mark Munley has more than three decades in commercial roofing materials. As Product Manager for the new OneDek™ roof deck system from All Weather Insulated Panels, Munley calls OneDek™ "the most significant development within the commercial roofing space during my career."

What stands out as the chief advantage of OneDek™ compared to traditional techniques?

MUNLEY: The advantage is that the system can be installed by any trained trade, in all types of weather conditions. It can be done in phases, meaning significant savings for contractors and owners to consider. Getting the building "dried in" faster with less consequential damage is a game-changer in terms of construction costs.

In Europe, where insulated metal panels (IMPs) are very popular, most there are used in roofs. In America, more IMPs go into walls. Why?

MUNLEY: Since the 1960s, contractors and designers of commercial, industrial and refrigerated buildings have relied on IMPs for their aesthetics, excellent thermal efficiency, ease of installation and overall structural integrity. The use of IMPs, or insulated metal roof decks like our RD1, represents a natural migration to best management practices. We have already seen that IMPs can be installed more efficiently, either by a fabricator/erector or by the commercial roofing company. There is no need for a certified welder.

Do roof decks meet the newest regulations?

MUNLEY: Our RDI roof deck has an R value of 8-per-inch and requires significantly less fasteners to achieve ultimate wind uplift loads of 105 PSF and 165 PSF. As R Values and higher wind-uplift requirements are regulated into code, the value proposition associated with OneDek™ will become very apparent. Additionally, our RDI meets and/or exceeds existing diaphragm values while providing enhanced thermal values.

You have seen installed costs in the roofing industry rise. Does OneDek™ affect this area?

MUNLEY: "OneDek™ can help reduce costs. The RDI panel has an exterior and interior 22ga steel liner which is vapor and water tight. Also, unlike traditional assemblies, there's little fear of walking on our RDI deck, making for a safer, damage-free working platform. It doesn't deflect nearly as much. The greater benefit is that the robust RDI panel in the OneDek™ system will virtually eliminate callbacks regarding damages by other trades and third parties.

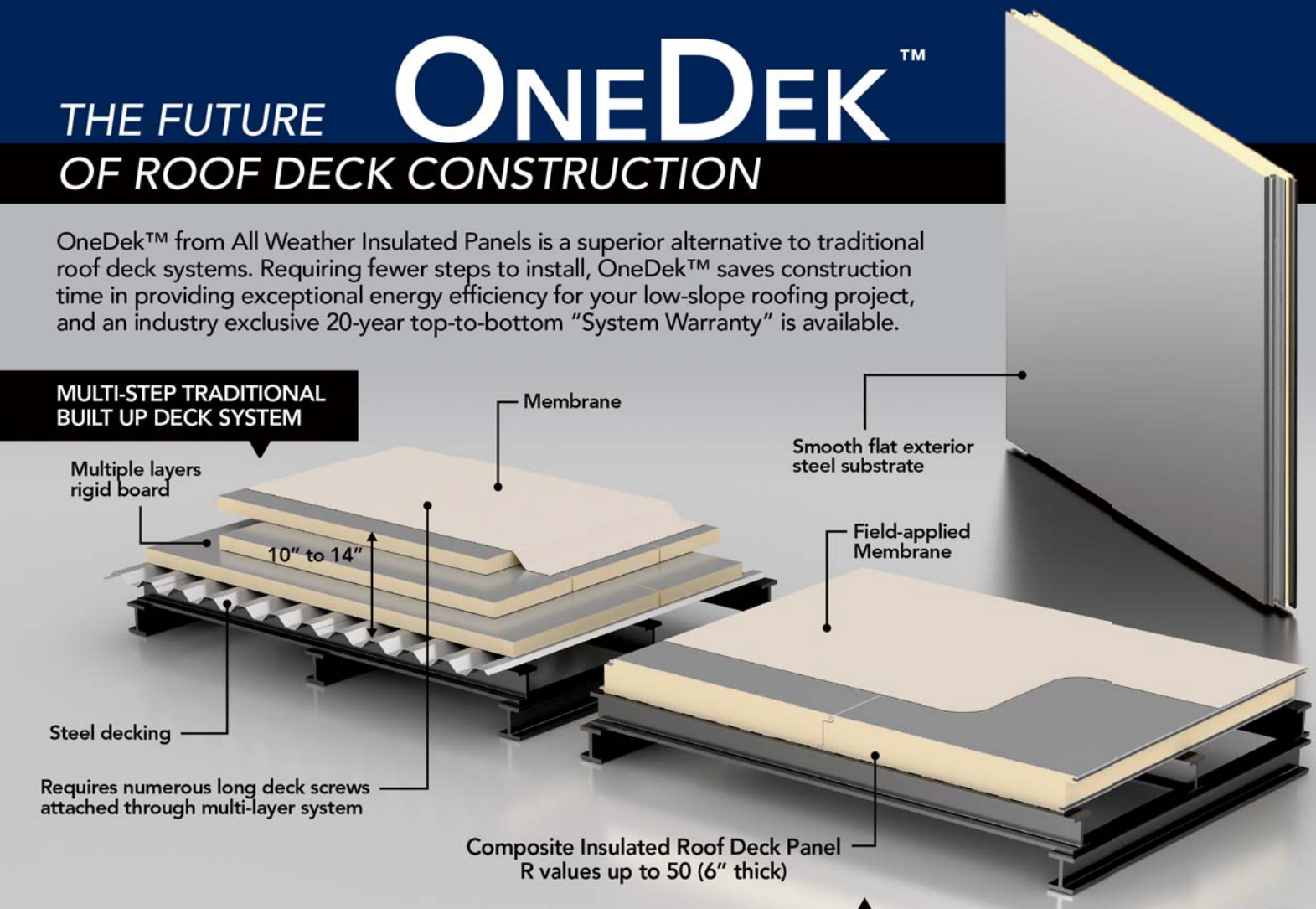
What's the biggest concern project managers and owners of large flat-roof building projects will have about OneDek™?

MUNLEY: Cost, schedule availability and will the building owner receive a warranty for 20 years – those three. The OneDek™ system is the cost competitive solution to meet performance needs of the design professional while also providing the installation community with an efficient, safe and durable commercial roofing system that will last multiple roof generations.

THE FUTURE OF ROOF DECK CONSTRUCTION

ONEDEK™

OneDek™ from All Weather Insulated Panels is a superior alternative to traditional roof deck systems. Requiring fewer steps to install, OneDek™ saves construction time in providing exceptional energy efficiency for your low-slope roofing project, and an industry exclusive 20-year top-to-bottom "System Warranty" is available.



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- Incredibly fast installation, no on-site application of rigid foam insulation
- Steel substrate provides exceptional damage & fire resistance
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WRITTEN BY **DIANE HELBIG**

Leading Your Business Like a Football Team

Your Organization Works Best When the Right People Are in the Right Positions

HAVE YOU ever watched a football game and thought about your business? I did that the other day. It struck me that there is great value in considering your business as if it were a football team. The basic structure is set. What matters is who occupies each position – and that includes the staff.

When we look at a football organization, we see specific positions that require certain skills. It's pretty clear. There can be crossover where a player has skills that fit more than one position. This makes the team more flexible.

We can use the football org chart for a company as a whole, or for a department within a company. The hierarchy works just as well in either. While the structure is important, the behavior of the people in the various positions has tremendous value.

What does it take to become a Super Bowl-worthy football team? The right people have to be in each position. The leadership has to be skilled at coaching the players. Everyone has to appreciate their role as part of the whole and contribute consistently.

The degree to which the leadership directs the team is directly related to how seasoned the team is. A young team – one that hasn't worked together before – requires more direction and management. The more seasoned, experienced team can work with less direction and more autonomy.

Let's use the New England Patriots as our example. We can easily argue that the right people are in the right positions from the head coach to the assistants to the entire player roster. There is a respect throughout the organization – everyone respects everyone else's ability to do their jobs. This respect is translated into expectations. There is consistent conversation about what is going on during a game. Ideas are discussed, plays are attempted, and adjustments are made as needed.

Sometimes the quarterback calls an audible, changing the play in the moment. Members of the defense are often communicating with their teammates about what they see on the other side of the line. Players change positions prior to the snap.

Why does this matter to business leaders? How we successfully lead determines whether we have a Super Bowl team or not. And that is directly

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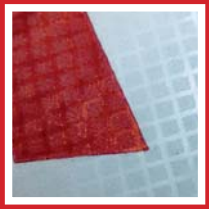

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Communication is the key to success in any organization. The more we share information, and solicit input/feedback, the more cohesive our team will be.

related to how successful our company continues to be.

There are four things that we can take from a Super Bowl football team to lead our businesses more effectively. They are referred to by the acronym PECK:

- *People*
- *Empowerment*
- *Communication*
- *Kudos*

PEOPLE

Every organization works best when the right people are in the right positions. It's about skillset and attitude. Each role has specific functions that must be completed accurately, effectively, and in a quality fashion. It's critical for the leadership to look first at someone's attitude, second their skill set, and third, their accomplishments. Too often, leaders promote people beyond their ability. Or they put someone in a job because they need the position filled. Those are inadequate reasons and lead to failure.

Start from the job description. What skills does the person need to possess in order to do the job well? Match them and you are far ahead. The attitude you are looking for is one of team player, commitment, can-do; the person should be able to work independently and with little direction. To ensure you are hiring someone who really is suited to the position, consider their past performance in a similar position.

Remember – a good salesperson won't necessarily be a good sales manager. The positions require different skills.

EMPOWERMENT

Want to get a lot out of your staff? Empower them to take ownership of their job. Many leaders think they have to micromanage every action of every employee. The truth is this – micromanaging signals a lack of trust. When you don't trust that your employees know what to do, or will go ahead and do their jobs, you hover, monitor, and micromanage. It's disrespectful and only causes low morale. You don't get what you are hoping for; quite the opposite.

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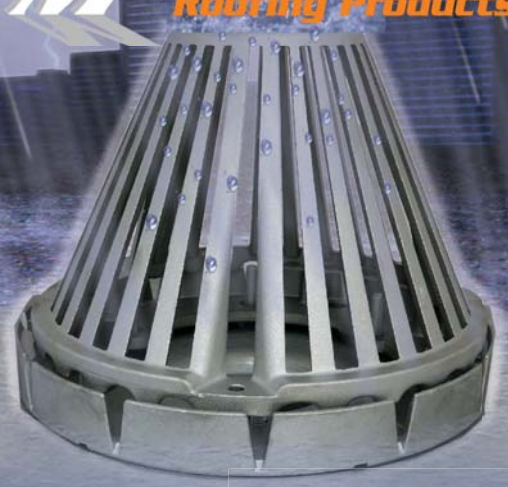

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right positions, it's easy to empower them to perform at their best. The right people have the right skills and know what to do. They are able to analyze a situation and adjust if necessary. They are able to work together toward a common goal. And they understand how their participation impacts the organization as a whole.

Empowerment is a show of respect. It makes everyone's job easier.

COMMUNICATION

Communication is the key to success in any organization. The more we share information, and solicit input/feedback, the more cohesive our team will be. Everyone on the team should know and understand the goals of the organization as well as the reasons behind any initiatives. Things can change, and those changes can have an impact on how the employees do their jobs and live their lives. Sharing the "why" behind all decisions mitigates any concerns or challenges moving forward.

Along with sharing these details, seeking information, ideas, and feedback is one of the best ways to involve staff members in the actual operation of the business. It may be limited to their role in the company. The point is that open, honest, and reciprocal communication builds camaraderie and increases buy-in.

The opposite is also true and deserves mentioning. Withholding information and failing to seek input tells your people you don't value them. After all, if you respect and care about people you communicate with them.

KUDOS

Celebrate successes, no matter how small. Acknowledge individual accomplishments. Positive feedback and reinforcement work wonders for continued commitment to the team. Considering our Super Bowl team, there's a variety of celebration activity, from end zone celebrating to coaches patting players on the head or the back. Accomplishments are celebrated. When people feel appreciated, they excel.

Take a look at your company and ask yourself, "Is this a Super Bowl team?" If you're not sure, it's worth a deeper dive. Consider whether you have a PECK system in place. The good news is you can make adjustments and institute changes at any time. You can turn things around and create an environment where everyone performs at their best. 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 and Expert Insights, as well as the host of the "Accelerate Your Business Growth" podcast. For more information, visit www.seizethisday.com.*

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WRITTEN BY **CAROLINE TRAUTMAN**

Record-Keeping Tips

Proper Documentation Can Be the Key to Dispute Resolution

EVER BEEN told to dance like nobody's watching?

That advice is great for weddings and end-zone celebrations. But after wrapping up a week-long trial, your exhausted, cynical lawyer probably thinks "write every email like it will one day be a courtroom exhibit" is far better advice than the dancing thing.

This might sound needlessly frightening, but for construction professionals working on challenging projects, documentation can make or break the ability to successfully negotiate — or, if it comes to it, prove the merits of — a dispute with another party.

Below are some items that, if handled properly, can help companies establish their side of case and that, if handled poorly, can constitute problem areas.

CONTRACT DOCUMENTS AND STATUTORY NOTICES

Many legal rights on a project come from the parties' written contract agreement. Basic measures like ensuring the both parties have signed — and not just received — the contract can be crucial to preserving these rights. It is also a good practice to keep a copy of the signed contract and all attachments in a location where it is accessible to project managers and others who have authority to deal directly with the other party. As always, reading the contract in advance, and perhaps consulting with an attorney before signing the contract, is an important practice.

Having a checklist for every project can also help ensure that good practices are routine, and not just employed for especially difficult projects. If practices are done on every project, no matter the size or complexity, it is easier to ensure that companies will comply with them.

Potential project checklist items include:

- Has a written contract been signed by both parties and saved in the project file?
- Are certificates of insurance on file for all subcontractors?
-

Checklist items for privately owned projects:

- Have any statutorily required project statements, notices of contract, or notices of subcontract been properly filed and served?
- Have any statutory prerequisites to filing lien claims been met — such as North Carolina's requirement to serve a Notice to Lien Agent?

Checklist items for publicly owned projects:

- Has the payment bond been obtained?
- If required by state or federal statute, has the payment bond surety information been sent to all parties?
- Have statutorily required notices of contract or notices of subcontract been properly served or filed?

NOTICES

Most written prime contracts and subcontracts require parties to give written notice to the other party to communicate various things, like change orders, claims for extra payment, or the other party's breach or default. Failure to provide notice using the proper means and by the required deadline can prevent contractors from asserting their

contractual rights. To ensure compliance with contract provisions, ensure that a copy of the contract is accessible to the project manager and that notices are dated, signed (if applicable), and that copies of the notice are preserved. If notices are sent by email, a good practice is trying to obtain a delivery or read receipt. Notices to cure should state specifically what is expected of the other party in order to cure a default and what will occur if the other party does not cure the default.

Where Notices are concerned, do the following:

- Keep a copy of the signed, written contract in a place where project managers can easily access it.
- Send requests for change orders and additional time or money in writing.
- Send notices to the right person. The written contract usually dictates to whom notices should be sent, and sending notices to a person with managerial authority is generally recommended.
- Consult with an attorney and send a written notice before invoking contractual remedies like self-correcting defective work, supplementing a subcontractor's workforce, or terminating a subcontractor.
- Maintain copies of any letters, correspondence, or notices sent to another party, including copies of proofs of service like Certified Mail cards, email read receipts, or fax confirmation sheets.

Contractors should send emails and text messages with care and should assume that they could one day be seen by an opponent, judge or jury.

CONFIRMING EMAILS

Emails and text messages constitute the bulk of the written communication on most construction projects today. Both emails and text messages — whether they are sent from work or personal devices — are discoverable in legal cases, meaning that companies will be required to provide them to other parties in the case during the litigation process. This may be true whether or not the company or sender believes they are relevant. The implication is twofold: contractors should send emails and text messages with care and should assume that they could one day be seen by an opponent, judge or jury. On the other hand, when used effectively, emails and text messages can be used to accurately document parties' agreements and understandings about what will occur on the project.

With all communications, but

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particularly email, attorney-client privilege is an additional concern. The attorney-client privilege protects communications between an attorney and his or her client. The client has the right to keep these communications confidential in nearly all situations. However, the attorney-client privilege can be waived if communications are shared with third parties. The ease with which people can forward and share emails makes waiving the privilege dangerously easy. In some situations, waiving the privilege once can mean waiving it in future situations.

Here are some do's and don'ts that can result in helpful, not harmful, emails:

- Send emails to document conditions on a project.
- Send emails to confirm important conversations, especially ones about dates of mobilization or that contain notices.
- Respond to any emails that accuse you or your company of failing to fulfill any contractual obligation.
- Ensure you have access to the emails of any employees who leave the company.
- *Don't* forward your correspondence with your attorney to others. This could waive the attorney-client privilege.
- *Don't* copy people outside of your company on emails to your attorney. This could waive the attorney-client privilege.
- In a dispute over fulfilling contractual obligations, *don't* let the other party have the last word. If you are sent an email accusing you of wrongdoing, not responding to an email can make it appear that you agree with it.
- *Don't* send emails from your personal account. If you ever need to pull and produce all of the emails related to a project, it will be much easier to do if you are only pulling from one account per employee.
- *Don't* use profanity or offensive language or phrases. If there is anything you would be ashamed of a judge or jury seeing you say, think twice before typing it.

DAILY REPORTS AND PHOTOGRAPHS

Daily job reports, if done well, can serve as a diary of what occurred on a project. While emails can be helpful, too, photographs do not lie, and daily reports with objective information like number of workers, hours worked, and weather conditions can effectively corroborate a company's narrative of a story or dispute another side's version.

These types of documents typically have to be authenticated in court in order for them to be admissible as evidence, so if possible, it is best for the person who wrote a report or took a photograph to be able to testify about the origin of the document itself.

Recommended procedures include:

- Have competent, trusted employees, such as project managers, take photographs and complete daily reports.
- Have a system in place for uploading photographs and saving them in the construction file so that they are centrally located, not just stored on employees' individual phones or tablets.
- Ensure all photographs are dated or otherwise stored so that dates and identities of the people who took the photographs can be accessed.
- Complete daily reports documenting conditions like date, weather, number of workers, and anything pertinent occurring on the project site. R

ABOUT THE AUTHOR: *Caroline Trautman is an attorney with Raleigh, N.C.-based Anderson Jones PLLC. Questions about this article can be directed to her at ctrautman@andersonandjones.com.*

AUTHOR'S NOTE

The above article is not, and should not be construed as, legal advice. For specific advice, consult with an attorney licensed in your state.

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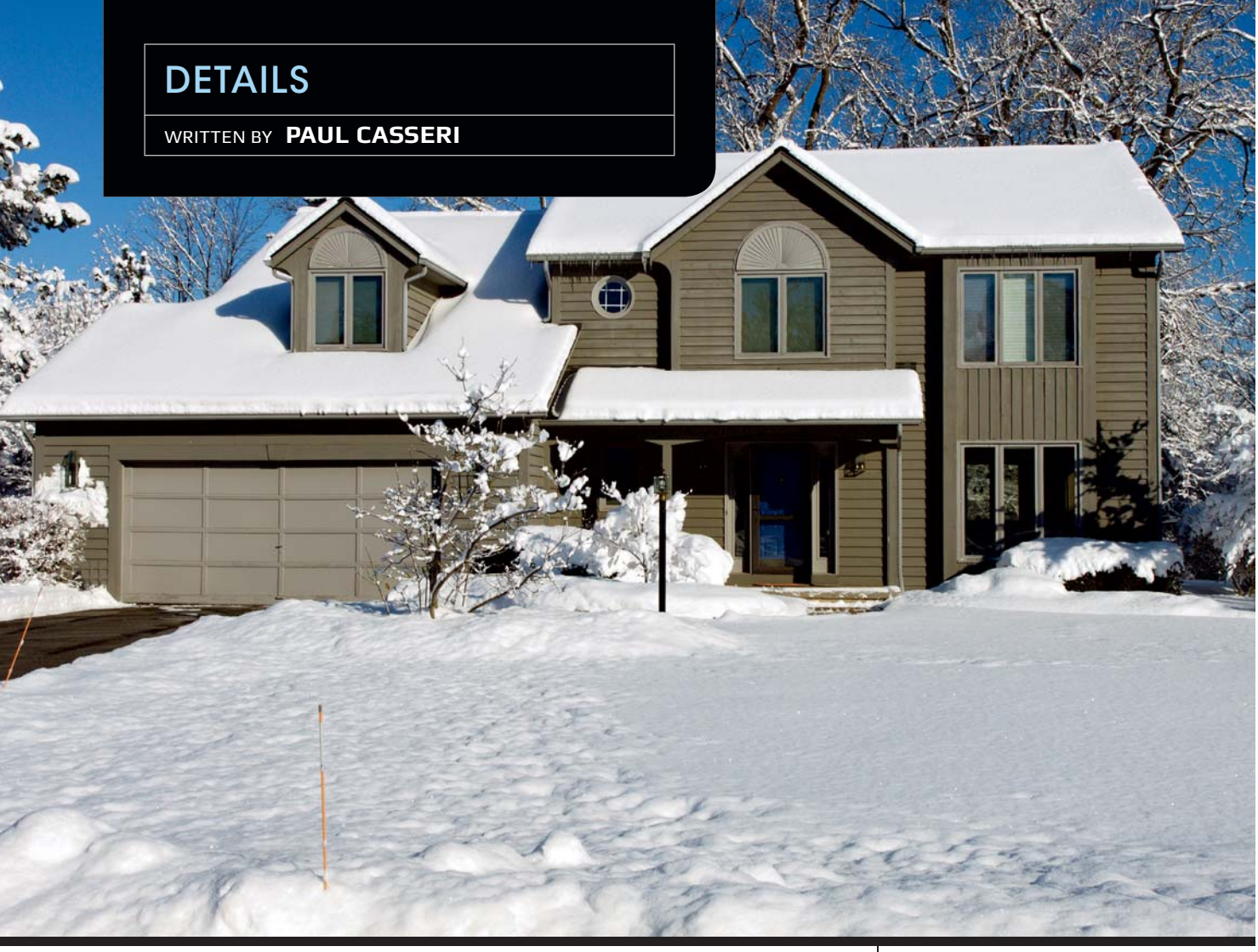

Brrring on the Cold Weather

Safety Tips and Best Practices for Roofing in Frosty Temperatures

INSTALLING A ROOF in cold weather is nothing to sneeze at. While roofing contractors in the deep South may not have to worry about business slowing down in the winter, the majority of contractors must contend with cold temperatures, snow, ice and sleet. And even when these extreme weather conditions allow work to be done, they can still create many product and safety issues on the job.

No matter how well you've honed your craft, roofing in cold weather is a challenge for any seasoned contractor. In addition to thinking about the safety of your workers, you must also consider the usability of supplies and equipment, which may be susceptible to the elements.

For instance, in lower temperatures, certain types of asphalt shingles can become less flexible and equipment may freeze. Also, you should ask yourself: Can I keep my workers motivated and focused on the quality I expect? When roofers are uncomfortable or can't work safely, they begin to worry about themselves more than the work they're doing — and justifiably so.

Before proceeding with your next cold-weather roofing job, consider the following precautions and recommendations.

PRODUCT CONSIDERATIONS

The first rule of cold-weather roofing is to follow all manufacturers' cold-weather installation guidelines. Different manufacturers specify different minimum temperatures for their products. If the temperature is below that minimum, you will need to take extra precautions to ensure the roof shingles are handled correctly and the product seals properly.

For example, while asphalt shingles have been successfully used in cold climates for more than a century, they become less flexible at temperatures below 40 degrees Fahrenheit.

When asphalt shingles lose their pliability, they become prone to cracking and other problems, including failing to lie flat and not holding their shape, which can result in granule loss,

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Because working in cold weather takes just as much, if not more, physical exertion as working in warm weather, roofers should be sure to drink plenty of fluids to prevent dehydration.

humping and other damage. Lower temperatures will also keep the shingle sealant lines from achieving proper thermal activation.

Because of the increased risk of shingle damage and the shingle not sealing correctly in cold temperatures, workers should keep the following things in mind:

- Never throw or drop shingles.
- Give shingles time to warm up before installation if they have been stored in freezing temperatures. Cold shingles — especially fiberglass shingles — may crack on the back when nailed to the deck, which can cause roof leaks. *Best practice:* When installing shingles in low temperatures, nail them by hand to avoid the "blow through" that a high-powered nail gun can cause.

Remember that most sealants won't thermally activate at temperatures below 40 degrees. Instead, seal strips must be hand sealed with an approved asphalt roofing cement or other manufacturer-approved adhesive.

The Asphalt Roofing Manufacturers Association (ARMA) recommends that shingles be pressed into the asphalt cement so that the adhesive reaches almost to the shingle edges, but is not exposed. For laminated shingles, ARMA says at least three spots of sealant may be used. If not sealed properly, eaves and rakes can be extremely susceptible to wind blow-off.

The association also suggests the use of open metal valleys in cold weather because installing closed and woven valleys require shingles to be bent, which could result in damage.

To prevent ice dams — the frozen water that can build up at the eaves of a roof — be sure to install proper roof and attic ventilation in addition to a premium ice and water roof underlayment, which provides a second layer of protection in cold-weather conditions. Ice and water underlayment can be used along eaves, valleys, flashings, hips, ridges, dormers, rakes, skylights and chimneys. Properly ventilating a roof will help ensure maximum protection against ice dams.

Before installing roofing underlayment, be sure that the deck is completely dry so the moisture doesn't cause wrinkling or buckling of the underlayment. This wrinkling can telegraph through the shingles, creating cosmetic and performance concerns. In addition, trapped moisture can contribute to shingle blistering.

Overall, when roofing during cold-weather months, check the forecast and plan for potential delays. Better yet, try to work on bright, clear days, when the sun can bear some of the burden and help warm up the roof deck.

SAFETY CONCERNS

Near-freezing temperatures not only create issues with supplies, they can also pose safety risks to workers.

To avoid frostbite, roofers should layer up in clothing such as ClimaWarm and Hyperwarm, which provide warmth, breathability and protection from wintery weather. Even with the proper attire, workers should beware of the signs and symptoms of frostbite, which include prickling skin, numbness and — worst of all — clumsiness caused by stiff joints and muscles.

In addition to following the Occupational Safety and Health Administration's (OSHA's) safety regulations for harnesses and fall-protection systems, roofers should always wear shoes with good traction — but especially in cold weather, when surfaces can become slippery.

Also, encourage everyone to take regular warm-up breaks throughout the day, limit work schedules during extreme weather conditions and consider investing in on-site heating equipment, such as portable foot warmers.

To best prepare yourself and your crew for winter jobs:

- Plan work around the shorter daylight hours, as well as weather conditions that may prevent roofers from safely being able to put in the necessary hours.
- Expect work performance to slow down due to dexterity issues and other natural body-responsive reactions caused by cold temperatures.
- Anticipate the extra time that will be required to clear snow from roofs and protect the surface from the elements while work is being performed.
- Remember that even a thin layer of snow can camouflage skylights, other materials and debris, which could pose a tripping or falling hazard.
- Because working in cold weather takes just as much, if not more, physical exertion as working in warm weather, roofers should be sure to drink plenty of fluids to prevent dehydration.

Ultimately, the best advice is to be prepared. Take a cold hard look at the weather forecast and plan accordingly, taking into consideration worker safety, product usability and equipment functionality. Being flexible and ready to adjust work as needed can keep winter business from freezing up altogether. R

ABOUT THE AUTHOR: *Paul Casseri is the product manager of the Roofing Shingles and Underlayment Division for Atlas Roofing Corporation. For more information, visit www.atlasroofing.com.*

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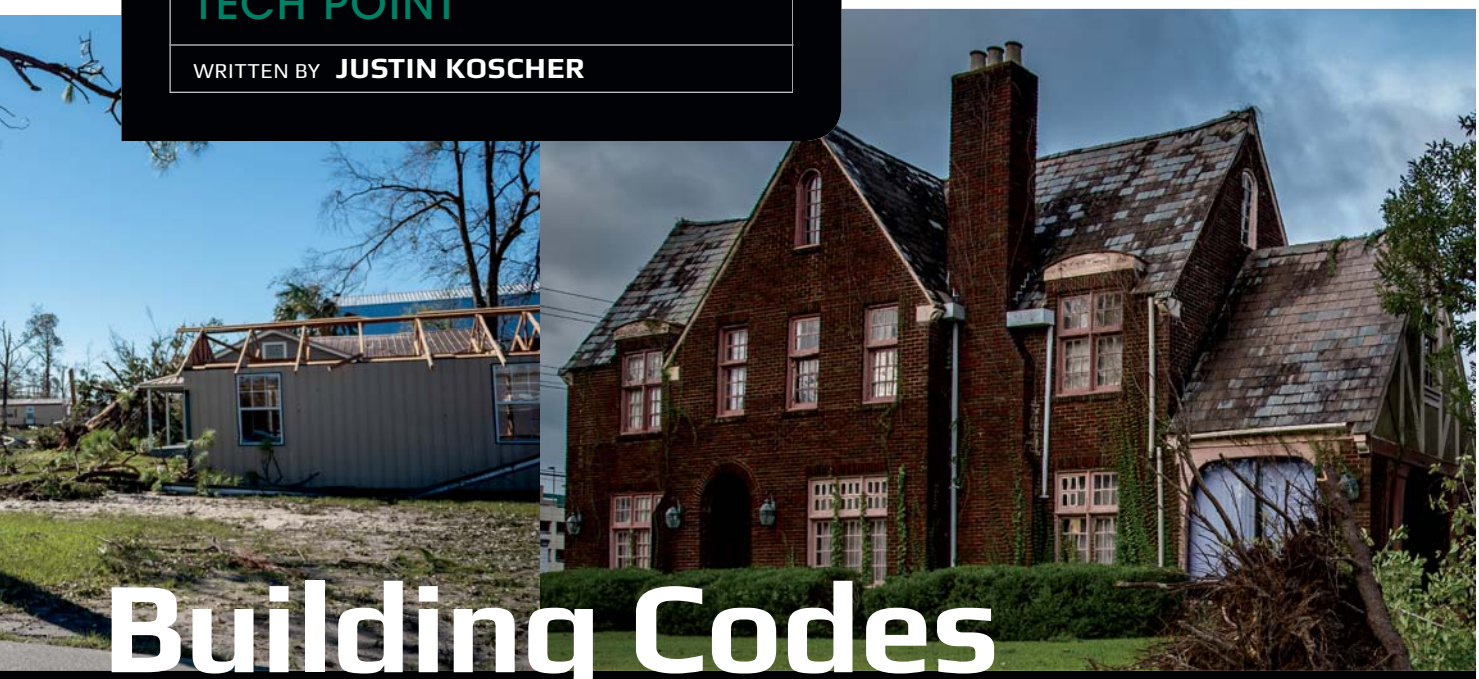

Building Codes

Everyday Tools for Disaster Preparedness and Relief

IN THE DAYS following the powerful assault of Hurricane Michael on the Florida Panhandle, images of widespread devastation headlined television news coverage and print media. Not as prone to hurricane activity as the rest of Florida, the area hit by the almost Category 5 storm had many older homes built prior to the enactment of stricter building codes put into place after Hurricane Andrew in 1992. As a result, many structures built to less stringent requirements were unprepared to weather the onslaught of wind, rain, and debris tossed by Michael's sustained 155-mph winds.

Nothing can guarantee a structure's integrity when faced with such brutal conditions. However, contrast the post-storm condition of those older structures with that of newer buildings and the benefits of more rigorous regulations are clear. The aerial images of the impacted communities illustrate the value of implementing building codes that can contribute to greater resiliency both for the structures themselves and for the safety and comfort of the people and property contained within them during and after a storm makes landfall.

Media coverage of the storm's aftermath included profiles of some of the structures that fared better than their neighbors. The New York Times ran a profile entitled, "Among the Ruins of Mexico Beach Stands One House, Built 'for the Big One'" and the Washington Post published an article entitled, "Houses intact after Hurricane Michael were often saved by low-cost reinforcements."

When interviewed on CNN, Federal Emergency Management Agency Administrator Brock Long said, "... there's a lesson here about building codes. The key to resiliency in this country is where our local officials and

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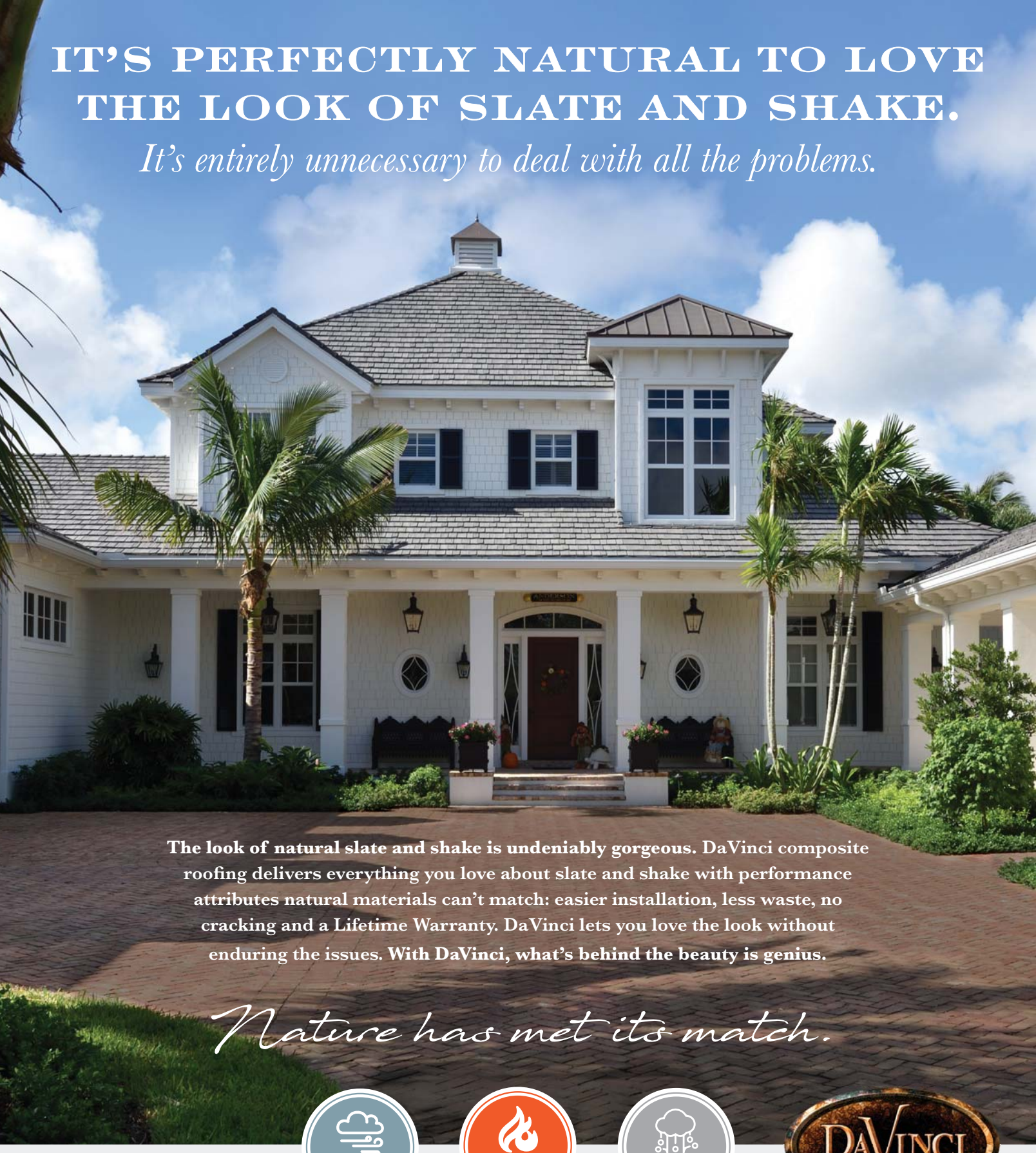

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state officials are going to have to do something proactively to start passing building codes to high standards."

As is often the case in the wake of a disaster, there is a profusion of interest in exploring strategies to protect communities and properties from devastation. These articles and interview reveal that building structures with conscious attention to resiliency can offer markedly improved performance in extreme weather. As an added bonus, many of the products and processes that deliver this resiliency can also contribute to decreased energy usage and operational costs for buildings regardless of the weather they're subjected to.

Under these amendments, building code adoption and enforcement are added as eligible activities and criteria used in grant programs aimed at reducing the impact of future disasters. In other words, states that act to adopt modern building codes and standards will be eligible for additional federal assistance in the event disaster strikes. Moreover, the reforms allow damaged buildings to be rebuilt with federal support to better withstand future events, rather than merely restored to their pre-disaster condition.

While these changes do not specifically address energy codes, adopting and updating building codes will also lead to improvements in energy performance. Energy efficiency is a key part of a building's — and a community's — ability to withstand and quickly recover after a disaster. For example, a well-insulated building can maintain a comfortable temperature when power is lost or intermittent. Building energy codes will also encourage the construction of more robust building envelope systems that can help avoid the crippling effects of moisture intrusion that are common in severe weather events.

The recognition by Congress that modern building codes deliver an answer to disaster preparedness is a positive for homeowners and businesses across the country.

Even before this summer's series of destructive storms, elected officials and government agencies were working to implement wide-ranging strategies to protect our communities. Updating state and local building codes, which exist to safeguard life and protect private and public interests through regulating the design, construction practices, construction material quality, location, occupancy usage, and maintenance of buildings and structures, is one of the most effective ways to increase the safety and resiliency of our built environment.

CONGRESSIONAL ACTION

On two occasions this year, Congress enacted reforms for disaster preparedness that raise the profile and importance of building codes in planning for and recovering from disasters. The nation's disaster relief law — the Stafford Act — was first reformed as part of the Bipartisan Budget Act and later reformed with permanent fixes under the FAA Reauthorization bill passed in October 2018.

According to the National Oceanic and Atmospheric Administration, the first nine months of 2018 (through October 9) resulted in 11 weather and climate disaster events with losses exceeding $1 billion each. Moody's Analytics estimates that losses resulting from Hurricane Michael will cost between $15 and $21 billion. Damage to homes and businesses are a major contributor to the total financial impact of a disaster.

Buildings constructed to meet or exceed modern building codes can therefore play an important role in reducing the overall economic impact of natural disasters. According to the "Natural Hazard Mitigation Saves: 2017 Interim Report" published by the National Institute of Building Sciences, the model building codes developed by the International Code Council can save the nation $4 for every $1 spent. In addition, designing new buildings to exceed the 2015 International Building Code (IBC) and International Residential Code (IRC) would result in 87,000 new, long-term jobs and an approximate 1 percent increase in utilization of domestically produced construction material.

While people, pets and some belongings can be evacuated to safety with enough warning and resources, buildings can't be moved to higher ground or be rebuilt overnight in anticipation of an oncoming storm. Indeed, buildings are often the only things separating people from the brutal forces of natural disasters. The protection they offer is often determined by the quality of the construction materials and the installation methods used, which are themselves often regulated by the safety standards in place at the time of original construction or major renovation.

The recognition by Congress that modern building codes deliver an answer to disaster preparedness is a positive for homeowners and businesses across the country. States now have added incentive to prepare for tomorrow by enacting and enforcing better building codes today. And more exacting building codes will create momentum to raise the bar for all of the codes that work together to create stronger and more resilient buildings that will contribute to better outcomes in extreme weather and reduced energy consumption in any weather. R

ABOUT THE AUTHOR: *Justin Koscher is president of the Polyisocyanurate Insulation Manufacturers Association (PIMA). For more information, visit www.polyiso.org.*

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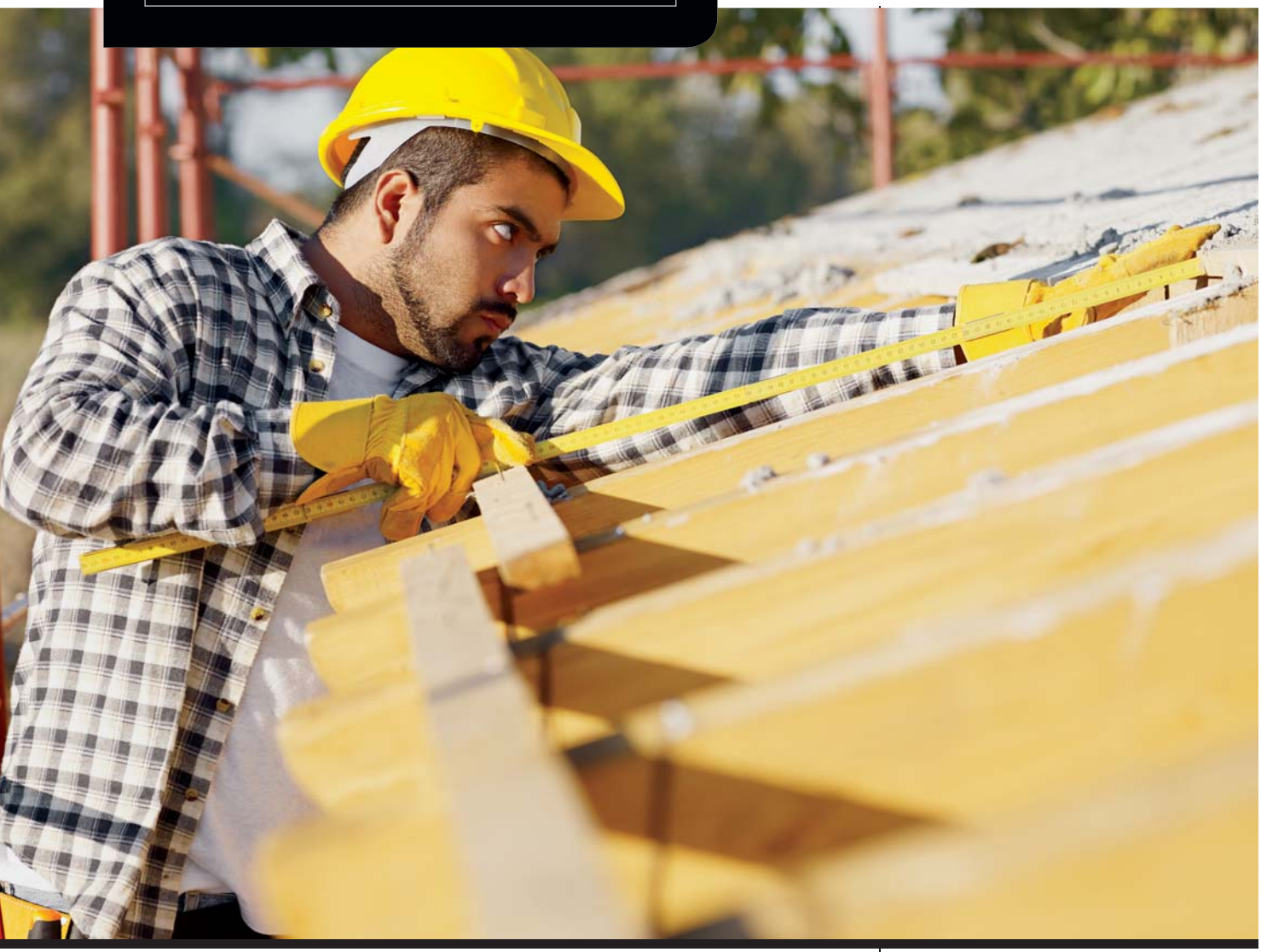

The Forecast for 2019

Weather, Congress Among Variables Likely to Affect Industry in the Year Ahead

AS WE MOVE forward in 2019, the roofing industry can expect to be influenced by two sometimes out-of-control, difficult to predict forces: the weather and the United States Congress. Add to the equation a shifting economic outlook, as well as uncertain immigration policies, and you have a potentially toxic mix that makes any projection difficult. But there are some constants in the current environment that can help guide strategies for the roofing industry, and here's our take on what to expect as this decade winds to a close.

There may be some limited success in tackling immigration reform, but don't expect enough change to mitigate the labor shortage experienced by roofing companies. The Trump-promised wall has yet to be built, but actions to slow illegal immigration have been somewhat successful. The roofing industry has pressed for immigration reform; experts estimate that worker shortages account for up to 20 percent in lost roofing business each year, and sensible immigration reform could help end those shortages. The Center for Construction Research and Training, or CPWR, points out that in some construction occupations, including roofing, more than half of the workers are of Hispanic origin. So, the roofing industry certainly has a compelling case to be made for reform.

Balancing the demand for secure borders against the need for additional workers has so far failed to produce meaningful legislation. Given the intense disagreement on how to move forward, 2019 will most likely be another year of bipartisan gridlock on this issue. The encouraging news comes from two areas of activity: innovations that promote ease

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of roofing installation, and industry efforts to certify roofing workers and increase the prestige of working in the trades. These efforts may help to recoup some of the business that has been lost because of the labor shortage, but only rational immigration reform will help to meet the unmet demand.

The weather may, in fact, be more predictable than the lawmakers who just assembled on Capitol Hill. Late in November of this past year, the Federal Government released the National Climate Assessment, the fourth comprehensive look at climate-change impacts on the United States since 2000. The Congressionally mandated thousand-page report delivered a sobering warning about the impact of climate change on the United States and its economy, detailing how natural disasters are becoming more commonplace throughout the country and predicting that they may become much worse.

While some may challenge the reality of long-term climate change, statistics tell us that short-term increases in cataclysmic weather events are an indisputable fact of life. And a temporary lull in these disasters cannot be taken as a sign of a change in weather patterns. For instance, as of early August this past year, the Tropical Meteorology Team at Colorado State University downgraded the forecast for the rest of the year, until November 1, from "slightly above average Atlantic hurricane season" to less than anticipated. They were correct, for a while. No hurricanes formed in the Atlantic during the rest of August, making it the first season in five years without a storm of hurricane magnitude. But just as forecasters were declaring victory over unpredictable nature, Hurricane Florence delivered a pounding to the Carolinas in early September, and in October Hurricane Michael devastated much of the Florida panhandle. The erratic weather patterns did not stop at the end of the hurricane season: an early December storm dumped as much as a foot of snow on parts of the Carolinas that rarely see that much during an entire winter. So much for the predicted respite from extreme weather conditions.

The difficult-to-predict weather is creating one certainty for the roofing industry: customers will increasingly be looking for durable materials and systems that can withstand weather extremes.

The difficult-to-predict weather is creating one certainty for the roofing industry: customers will increasingly be looking for durable materials and systems that can withstand weather extremes. Additionally, the focus is turning to anticipating destructive weather and mitigating its potential impact by creating resilient structures. ERA has just produced its first annual report, "Building Resilience: The Roofing Perspective." We anticipate updating this product each year to help provide the roofing industry with the latest approaches to creating resilient roofing systems.

Unpredictable labor markets and unpredictable weather patterns are defining the "new normal" for our industry and will no doubt be part of our reality in 2019. But based on past performance, there's at least one certainty we can count on: the roofing industry will come out ahead in the face of these challenges, providing our customers with innovative products and superior service and providing our employees with a work environment that ensures a secure future. R

ABOUT THE AUTHOR: *Jared Blum is the executive director of the EPDM Roofing Association (ERA), www.epdmroofs.org, and serves as chair of the Environmental and Energy Study Institute.*

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Why Do I Need a Marketing Plan?

AS MARKETING professionals who have worked in the roofing industry for more years than we like to admit, we are very aware of the challenge that contractors have in developing and implementing successful marketing programs. With the flurry of lead generation companies popping up seemingly every day, and the SEO companies who promise first page of Google results, how can you decide what to spend money on and how do you know what will work?

It's very tempting to fall victim to "spray and pray" marketing, where you throw some money to a bunch of different things, spray some marketing ads or mailers out there and pray that it works and the phone rings. But it doesn't have to be this way. Success comes from having a plan in place that supports your business goals and provides consistent activities and messaging.

We know that marketing for roofing contractors can be confusing, frustrating and elusive. Most roofing contractors are craftsmen and women who have started businesses by understanding and excelling at roofing, waterproofing and building envelope technology. They are not marketing professionals, so it is hard to change gears and figure out how to sell or promote their services while also running operations, estimating, sales and the business overall. A good marketing plan helps drive marketing without having to worry all the time.

Taking the time up front to strategize and plan on how to market your business successfully enables you to move on to other challenges of the day, week or month. A good plan can be the template for what needs to happen daily, weekly and monthly to keep marketing on task.

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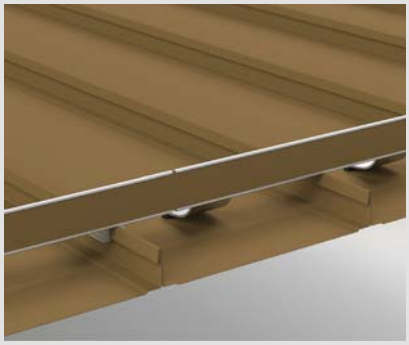

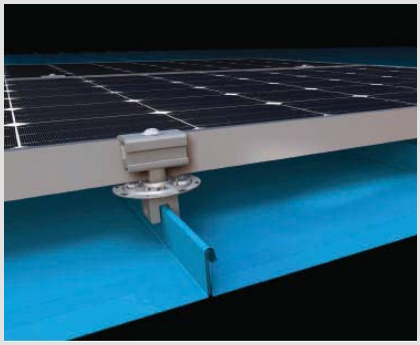

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It also eliminates daily questions or sales calls for additional marketing initiatives. By creating and sticking to a yearly plan, you are simplifying the day-to-day decisions that can stymie progress.

Fewer approvals and more action reduce the stress put on decision makers and puts the action into the hands of the marketing professionals. Whether it is a person in the office, an agency or a marketing coordinator implementing the marketing plan, by being prepared ahead of time you will reduce the stress of making reactive decisions or — even worse — doing nothing due to lack of time and/or planning.

A good marketing plan will also save you money. Without a plan it is easy to say yes to that advertising salesperson from the local media or free coupon website; or that great new advertising concept for ad words or events that is purchased mid-year without planning or research. It can cost the company in lost time, low productivity and extra expense when you do not budget in advance. When you formulate a plan and establish a budget, you can still move money around if necessary, but there is a set allocation to work within.

Timing is important. Look at starting your yearly marketing plan in the fall if possible. It should be a planned exercise to review the past year and look at the upcoming year. Reviewing statistics, campaigns and lead/close ratio is important before starting on the tactical plans for advertising, PR and direct marketing. By organizing budgeting meetings or even off-site working retreats with your leadership team (ideally comprised of leadership from sales, operations, accounting and marketing), you can take the time to review past performance while setting new goals that reflect growth. By being conscious of past performance, you will set the stage for developing strong marketing programs for the next year.

ESTABLISH YOUR GOALS

In fact, you should not even start looking at a marketing plan until you have your goals set. What are the company's plans for growth next year? Will there be new services or products? Will there be any changes in overall company mission? Marketing supports the goals of the company and supports the sales team in attaining the revenue and profitability goals that make a company successful. If you do not have strong goals and plans, then marketing will most likely flounder.

Regarding sales, it is critical that marketing works hand-in-hand with sales. The marketing plan needs to reflect the goals of the sales team so that the marketing activities are nurturing and delivering the right types of leads for sales success. If the goal is to grow metal roofing but marketing is delivering asphalt shingle leads that are not upgradable, both teams will fail.

Marketing supports the goals of the company and supports the sales team in attaining the revenue and profitability goals that make a company successful. If you do not have strong goals and plans, then marketing will most likely flounder.

By understanding the types of customers the sales team is looking for and the products and services they will be selling, a marketing plan can be created that will result in success for all departments as well as for the company.

By creating a marketing plan for your roofing business, you are taking the time to determine the ideal customer for your business and how you will attract, convert, close and delight that customer. A good marketing plan that is well thought out will address every stage of the sales and marketing process and detail how you will retain the attention of past customers while also gaining ongoing referrals.

So, let's get back to that original question: how will you know where you should be spending your marketing dollars? Well, it depends. That's the reason developing your marketing plan is so important. During the process you will have identified your goals and ideal customers. If your business goal is to focus on commercial roof restorations, then you want to invest dollars where your customers can be reached. You might consider joining your local chapter of a building owner or facility manager's group, or implement an advertising program on LinkedIn that targets specific job titles in your area.

On the other hand, if your business goal is to focus on residential roof replacements, you might consider a digital advertising program that is geofenced to target neighborhoods with homes that are 20 years or older and will soon need a new roof. The strategies that you use to reach your customers really depend on what you have determined in your marketing plan.

Your marketing plan serves as a guide for your business. It spells out your company's positioning statement, the markets you will serve, your yearly goals, your brand promise, the tasks and timelines as well as the tools and technology needed to achieve your goals. It will also help you determine budget and resources needed to implement the tasks, campaigns and initiatives detailed in the plan. R

ABOUT THE AUTHORS: *Heidi J. Ellsworth and Karen L. Edwards specialize in the roofing industry, helping contractors, manufacturers and associations achieve their marketing, branding and sales goals. They have authored two books:* Sales and Marketing for Roofing Contractors *and* Building a Marketing Plan for Roofing Contractors. *Both are available in the NRCA Bookstore and on Amazon.*

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WRITTEN BY **THOMAS W. HUTCHINSON, AIA, FRCI, RRC, CSI, RRP**

The Stud Wall and the Roof

How do I start an article on a topic that is so problematic, yet it's not being addressed by designers, roof system manufacturers, FM, SPRI, NRCA or any other quality assurance standard? Like many transitions in the building industry, the use of metal studs in exterior wall construction and roofing in new construction developed out of the twin concerns of value engineering and cost reduction. It has crept silently forward without any real consideration of the possible effects this less robust construction method would have on roof system performance.

You would think that someone along the line would say, "Hmm, I wonder how strong, effective or appropriate a screw fastener through a modified gypsum board sheathing would be?" Let me answer that question: Worthless. (See Photos 1-3.)

There are many issues with metal stud wall construction as it relates to roofing: air drive, moisture, interior pressures, and membrane adhesion to substrate, just to name a few. This article will address only one concern: The base anchor attachment horizontally into steel stud walls, most often clad with a modified gypsum substrate board. (See Photo 4.)

WHY IS THIS A CONCERN?

Problems often begin in the design phase when the condition is not detailed appropriately. (See Figure 1.) The architect/engineer/ designer shows some lines and figures that the roofing contractor or manufacturer will

Photo 1 With a stud wall parapet, inappropriate wall substrate and base anchor screws into a material with low pull-out resistance, this roof blew off in what would be considered moderate winds.

Photo 2 When the base anchors pull out of the substrate, the membrane becomes unsecured and will lift up. Here the membrane was observed lifting to heights of 3 to 4 feet, at which point it popped the coping off.

Photo 3 All the base anchor screws pulled out of the substrate except one that was into the stud, which just tore away when the rest of the membrane lifted.

IMAGES: HUTCHINSON DESIGN GROUP LTD.

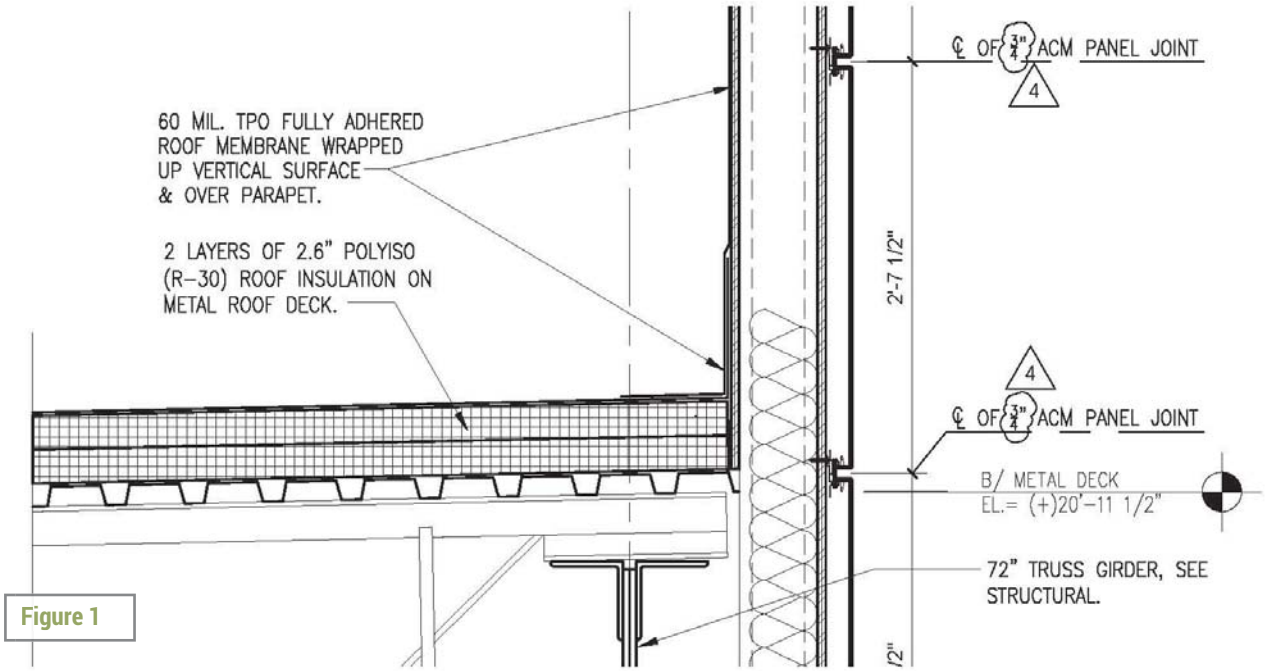

Figure 1

Figure 1 This is a common architectural stud wall parapet detail. No base anchor is even being acknowledged, nor is the concern with vertical vapor drive in the stud wall cavity. This type of detailing, in my opinion, is below the standard of care of the architect.

make it work — and specifies a 20-year warranty. The designer's first mistake is to think that contractors and manufacturers design. They do not. If I were a betting man, I would guess that 99 percent of the specified wall substrate for roof-side metal stud walls is a product that is unacceptable for roofing base flashing application. You're smiling now, aren't you? Been there, huh? Designers often have little knowledge as to how a roof system, or even a roof membrane, is installed, and thus don't even realize the errors of their ways. If they did, they might realize that at the very least a base anchor attachment is at 12 inches on center, and at some time a screw is going to have to go horizontally into the inappropriate sheathing substrate. Concept 1: Architects design. I know this is scary.

Architects and designers who do not prepare project-specific details seem to love manufacturers' standard details, which are provided as a baseline for developing appropriate project-specific details. They are not an end all, and thinking they are is a huge mistake. Another common mistake is not realizing that manufacturers do not have a standard detail for base anchor attachment into metal stud walls. This is probably because they never imagined that anyone would really try to anchor into such a poor substrate. Concept 2: Manufacturers produce products that can be assembled in a roof system; they do not design.

Oh, but the contractor will make it work. Yeah, right. Concept 3: Contractors install materials provided by the manufacturer, as specified by the designer; they do not design. Are you starting to see a trend here?

You can now see the conundrum of the blind leading the blind.

So, to be clear:

- Architects: Design
- Manufacturers: Produce products
- Contractors: Install materials

To say it a bit clearer:

- Architects: Design
- Manufacturers: Do Not Design
- Contractors: Do Not Design

Read it again and see where the responsibility lies. Of course, the manufacturer needs to produce quality materials, which sometimes does not occur, and contractors need to install the materials correctly, which sometimes does not occur.

PULL-OUT STRENGTH

So that we can get this detail correct, let's look at pull-out strengths of various materials. But let's start with trying to determine what pull-out resistance is required. For our example, let's use 60-mil TPO, a common roofing membrane on new construction projects.

Manufacturers report on their data sheets for 60-mil TPO tear strength of around 130 pounds of force (lbf). The test for this isn't pulling the membrane out from base anchors, but it's a good start for our discussion. I suspect that if base anchors are attached at 9 inches or 12 inches on center that the series of fasteners will elevate this value.

Given that we know that the tear resistance of TPO with a series of fasteners is greater than the ASTM D751 Tearing Strength test, I will suggest that we need a substrate with a pull resistance greater than 260 lbf, or twice the tear strength value. After that the membrane will tear itself out from around the fastener plate.

To determine the pull-out resistance of various sheathing materials, I had

Photo 4 This exterior view gives a good idea of how inadequate gypsum-related products are in regard to providing a pull-out resistance. A 16-, 18- or 20-gauge plate should have been placed at the stud wall from the concrete deck up above the anchor point.

the pull-out resistance of a base anchor screw tested on several materials by Pro-Fastening Systems, a specialty distributor focusing on commercial roofing in the Midwest that provides certified pull-out testing. Three pull-out tests were performed on each material. The mean resistance values are as follows:

1/2" plywood: 422 pounds
5/8" plywood: 402 pounds
1/2" glass-faced gypsum: 13.3 pounds
1/2" integral fiber reinforced gypsum: 110 pounds
22-gauge steel deck: 646 pounds
22-gauge acoustical steel deck: 675 pounds
18-gauge steel stud: 1,086 pounds
26-gauge metal stud: 646 pounds
16-gauge steel plate: 1,256 pounds
18-gauge steel plate: 978 pounds
20-gauge steel plate: 724 pounds
22-gauge steel plate: 625 pounds

So as a starter we eliminate all the typical gypsum-based sheathing materials from being used at the base of the roof. I'm not keen on plywood either, as over time, as the plywood dries, the pull-out strength lessens. Additionally, gluing to wet plywood never works well.

DESIGNING THE BASE ANCHOR ON METAL STUD WALLS

The concept is simple — provide a substrate with a pull-out resistance greater than the tear strength of the roofing membrane attached in series. So, let's pretend you're drafting. Come on now, get your paper out, a number 2H pencil, a parallel rule and triangle to get the feel of the detail — no CAD for you today. For our example, assume you're in the Chicago area, minimum R-value of 30, tapered insulation and 24 feet from the drain to the wall.

First, draft and show the roof deck and your wall, roof edge and studs. Now you're ready to start your detail. First go to your roof plan, where you have shown all the tapered insulation, and calculate what the thickness will be at your studs. Remember, code requires thickness within 4 feet of the drain. For our detail, you're near Chicago and thus the height of a tapered insulation layout might be as follows. For the R-30 at the roof drain with a substrate board, insulation and cover board, let say for simplicity it's 6.5 inches (1/2-inch cover board + 5.4 inches of code-required insulation + 1/2-inch cover board). Now you need to calculate the tapered insulation. For our example, the distance from drain to wall is exactly 24 feet. With a taper of 1/4-inch per foot tapered that is 6.5 inches (1/4 inch x 24 feet = 6 inches, plus the 1/2-inch starting thickness of the tapered). If you plan to use foam adhesive, add 3/8 inch per layer of foam, and be sure you understand all the layers in a tapered system. So, at the wall, the insulation will be approximately 13 inches. With the screw and plate anchor say, 2 inches above the insulation surface, we have a height of 15 inches. So, let's say we need a substrate capable of pull-outs at least 18 inches in height from the roof deck.

Now, I know you are thinking, "OMG, 18 inches — I can cut in a little 6-inch strip at the top of the insulation." Don't do it. The strip will not have any continuity or strength and will often buckle under load. Additionally, this continuous substrate piece needs to be placed on the stud.

Back to your drafting board. Draw in against your stud a continuous 16-, 18- or 20-gauge galvanized steel plate. Depending if the membrane is to be taken up and over the stud wall or terminated some distance above the roofing, the rest of the wall can be clad in less robust materials. Pick any substrate that is roofing membrane compatible and place it over the continuous steel plate and studs above. Tell the contractor how often you want the substrate anchored.

Draw in your substrate board, vapor retarder, insulation (and don't forget to show and call out the spray foam seal between the insulation and

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Figure 2

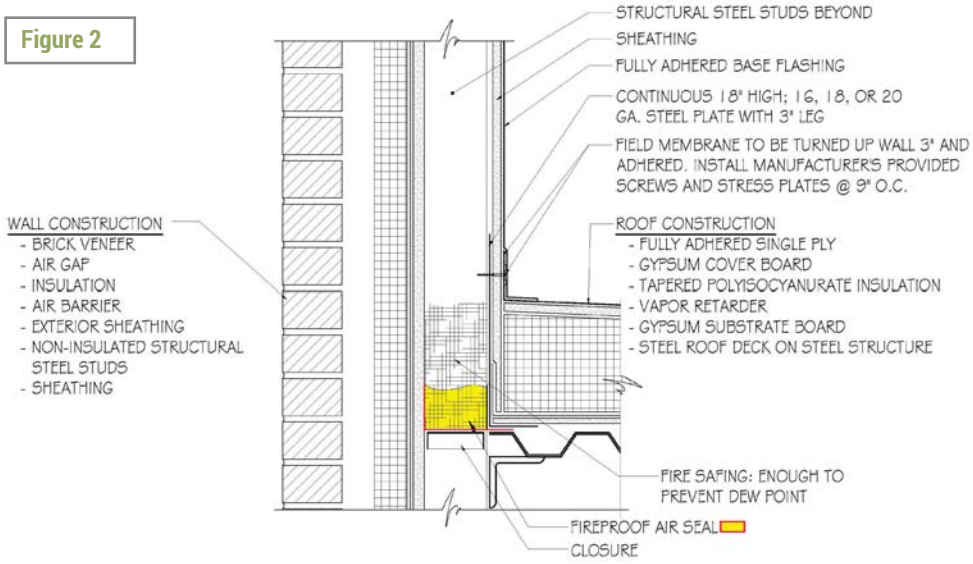

Figure 2 Design of a stud wall parapet includes delineating all the components and tells the contractor what is expected. Burying such information in the specification does no one any good, as the architect most likely will not know to review the shop drawings to those requirements.

Figure 3

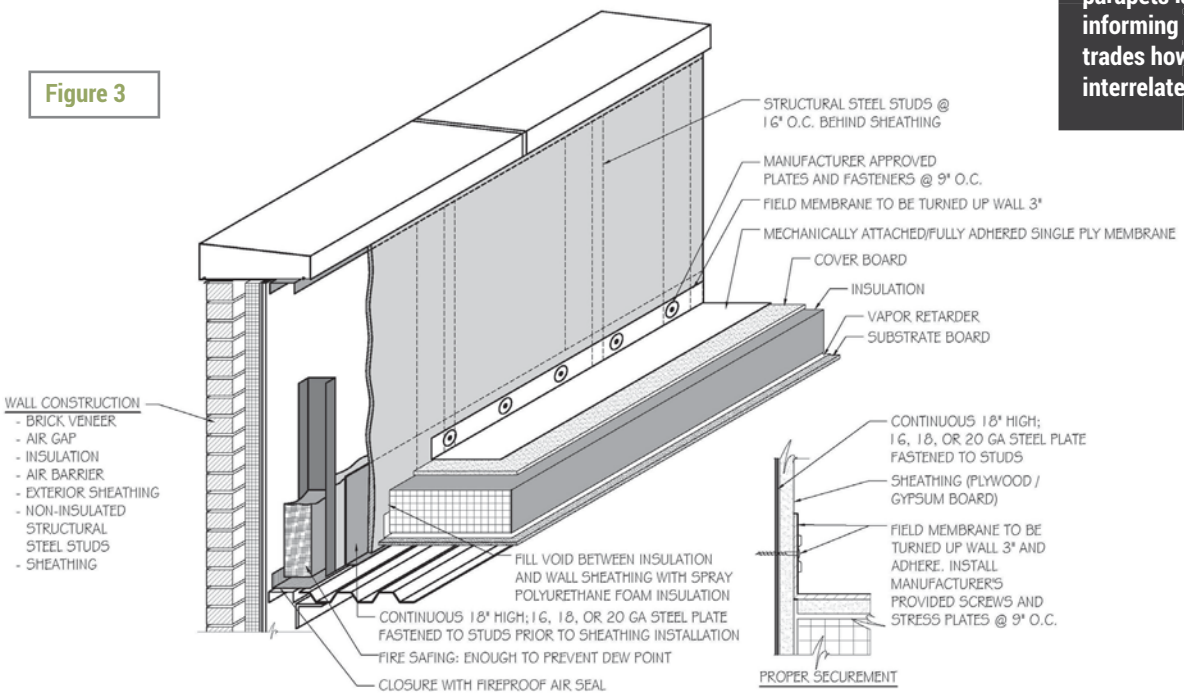

Figure 3 We often find that a simple isometric drawing showing the construction of stud wall parapets is helpful in informing all the related trades how their work interrelates.

wall, as there is often a void). Bring your membrane to the wall, turn it up 3 inches fully adhered to the substrate and show a plate and screw. Call this plate and screw out and note the spacing on the drawing; I've never seen a spec up on the roof. The base flashing can now be delineated coming down over the anchors and out onto the flat. Depending on the material, show a weld or seam tape. Now compare your detail to Figures 2 and 3. Who has properly designed the condition?

REMEMBER

There are many issues and concerns with steel stud walls and roofing. This issue with substrate cladding in regard to the interface with the roofing system is only one that I see again and again on projects that have wind damage issues. By carefully designing the roof termination conditions, taking into account all the possible impacts and then detailing the conditions properly, your standard of care can be met and the owner well served. R

ABOUT THE AUTHOR: *Thomas W. Hutchinson, AIA, FRCI, RRC, CSI, RRP, is a principal of Hutchinson Design Group Ltd. in Barrington, Illinois. For more information, visit www.hutchinsondesigngroup.com.*

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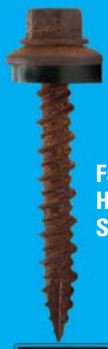

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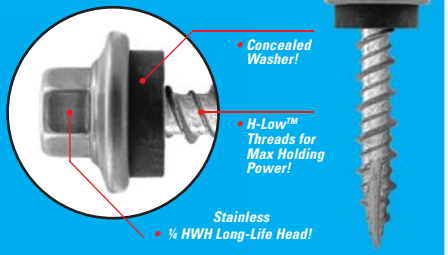

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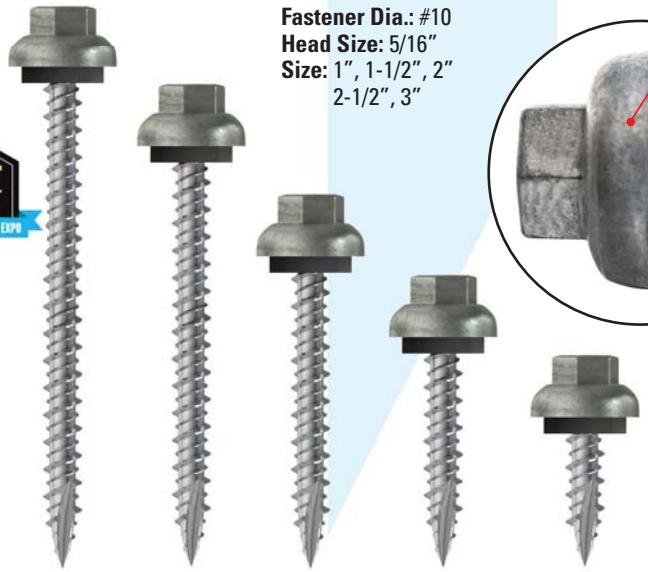

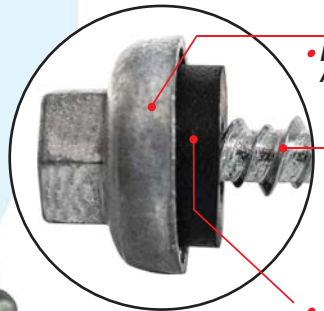

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WRITTEN BY **TRENT COTNEY**

The Future of Construction Projects:

Geofencing, BIM and Smart Contracts

The modern-day construction project is quickly moving into the future. Within the next few years, an automated materials delivery truck will deliver an order of lumber to a project site without the need for physical labor, and as the material is incorporated into the project a 3D model will be automatically generated and stored on blockchain. Three technologies that roofing contractors and those involved in the construction industry need to be aware of are geofencing, Building Information Modeling (BIM) and smart contracts. Together, these three technologies will forever alter the modern construction project landscape.

WHAT IS GEOFENCING?

Geofencing is a virtual perimeter around a single point with predefined boundaries created for a real-world area such as a construction site.[1] Geofencing uses either Global Positioning System (GPS) or Radio Frequency Identification (RFID) to map the boundaries and track objects traveling in and out of the virtual perimeter.

GPS is a satellite-based global navigation system that provides geolocation anywhere on Earth where there is an unobstructed line of sight to four or more GPS satellites. Geofencing with GPS works well when applied to construction projects due to its ability to be used anywhere in the world. GPS technology works with geofencing software to track equipment and people, as well as sending real-time alerts and notifications to project managers and contractors.

RFID uses electromagnetic fields to automatically identify and track tags attached to objects. The most common use of RFID is tracking large retail store product movement and inventory. In fact, RFID technology has replaced the old barcode system because it is more efficient. RFID tags may be attached to heavy equipment and/or on employee's personal protective equipment (PPE) to track their movements in order to give contractors a deeper understanding of the project workflow and needs.

Tags or other electronic communication tools (i.e., GPS, iPhone, etc.) placed on/in physical objects communicate instantly with administrators using geofencing software. Geofencing software installed on computers, iPads, and other electronic devices allows the user to receive real-time information on who and what has entered or left the geo-fenced area, as well as other information such as object height and time spent in the area. The devices with geofencing software can receive text messages, email notifications, phone calls, and other forms of communication indicating when an object has left or entered a geo-fenced area.

Programs that incorporate the geofencing software may be programmed to set up "triggers" that notify the administrators when an object has left the geo-fenced area. For example, heavy equipment can be retrofitted with a RFID tag that is set to trigger when it leaves a geo-fenced area and instantaneously send

a notification to a project manager's phone or tablet, allowing the manager to immediately act upon the information.

HOW CAN GEOFENCING TECHNOLOGY BE USED BY CONTRACTORS?

Contractors can apply geofencing technology to a number of different aspects related to most construction projects. Fortunately, most contractors already supply project managers and other supervisors with mobile devices capable of using geofence software, making implementation of geofence programs an easy next step. Purchasing RFID tags and GPS equipment is one of the only primary costs associated with this new technology.

· **SECURITY:** An obvious and practical application geofencing provides contractors and equipment owners with is security. Heavy equipment, expensive machinery, and other tools can be equipped with RFID tags that, when moved outside the geo-fenced area, will immediately send a notification to a project manager or owner, via text message or other, informing them that the equipment has moved. This gives the party receiving the alert an opportunity to immediately call emergency services and report a theft-in-progress, rather than discovering the theft at a later date and reporting it at that time. Further, with stolen vehicle technology, a contractor, project manager, or equipment owner may also disable the equipment to fully prevent the theft.

Installing RFID tags on expensive construction equipment provides those with vested interests in construction projects with the ability to lower costs related to theft and theft recovery. Further, preventing construction project theft will lower the high costs associated with project delays caused by replacing equipment.

· **MATERIAL SUPPLY:** Geofencing software will allow contractors and project managers to have ample electronic data to monitor the progress of construction projects. For one, geofencing software will specify when supplies have been delivered to the project, how long they have been on site before incorporation into the project, and where the materials have been incorporated. This allows contractors and project managers to better allocate materials to reduce the amount of overstock and loss or damage of materials due to non-use. As will be discussed in much greater detail later in the article, combining geofencing technology with smart contracts will heavily reduce costs associated with material delivery and payment problems.

· **FLEET MANAGEMENT:** Geofencing can also be used to monitor the arrival and departure of trucks on a project. Placing RFID tags or installing geofencing software on the trucks navigation system will allow for easy monitoring of the truck's movement. Project managers can receive immediate notification when a fleet truck arrives or departs from the project. This will allow the contractor to save on administrative expenses related to tracking fleet movement. Geofencing will also allow fleet owners to monitor the amount of time trucks take to move from point A to point B in order to better coordinate the fleet in the future.

· **LABOR SAVINGS AND MONITORING:** The data collected from geofencing software can be used to supplement claims for overtime and the amount of labor used during a construction project. Often contractors are forced to litigate issues relating to the number of employees working on a jobsite, the number of hours worked, and when the workers were on site. Geofence technology will allow contractors to store and compile labor information in an easy-to-use format to save on expensive litigation costs.

Further, project managers will be able to monitor whether employees remain within the authorized project perimeter. This allows contractors to ensure employees remain diligent and focused on their work and reduce labor costs due to inefficient labor. In addition, if/when disputes arise as to whether employees worked a number of hours of overtime, both parties will have the geofencing data to quickly resolve the dispute and return to business as usual. All that is necessary to achieve the aforementioned benefits is placement of RFID tags on PPE or installation of geofencing applications on employees' smart phones.

· **SITE GRADING:** Geofencing software installed on heavy equipment can help track with greater accuracy and increase progress towards proper grade, as opposed to using traditional methods such as survey stakes. A GPS device may also be installed within the heavy equipment's cabin, allowing the operator to accurately monitor his or her progress. All of this information can be relayed to the project manager to better assist in deciding when to order supplies and labor to move on to the next phase of the construction project.

· **INCREASED SAFETY:** Geofencing perimeters can be created around hazardous work areas to prevent unauthorized employees from entering the area and risking injury. This can be accomplished by creating the perimeter and setting RFID tags to send an alert to a project manager when unauthorized personnel enters the dangerous area. The project manager can then contact the foreman to ensure that the employee moves to a safer location or trigger an onsite siren. Contractors who utilize geofencing software for all employees, via their

Geofence technology will allow contractors to store and compile labor information in an easy-to-use format to save on expensive litigation costs.

smart phones, can even have an alert sent to the specific employee who has entered the unsafe area, warning them to leave immediately.

Geofencing tags located on mobile equipment can also monitor the speed that the equipment is traveling. If the equipment exceeds the safe speed limit, a foreperson can be notified.

As it should be clear, geofencing technology offers contractors an abundance of benefits that will drive down costs and time associated with project completion. While geofencing will have a positive impact on projects, there still will be costs associated with implementing and using the new technology.

THE COSTS OF GEOFENCING TECHNOLOGY

As previously stated, most contractors already supply project managers and other supervisors with the equipment necessary to implement geofencing (i.e., tablets, smart phones, and laptops). Therefore, one of the largest drawbacks, that being the initial cost of implementation, is already at least partially covered.

The next step contractors wishing to implement geofencing technology must take is purchasing software compatible with the hardware already in the hands of project managers. The software will need to be implemented by a third party specializing in geofencing. The price of this software will likely pay for itself with the savings associated with geofencing. Further, resources previously allocated towards expensive and time-consuming data analysis will be no longer necessary as geofencing software will automatically compile the data on its own.

One initial drawback will be training project managers and other employees to use the geofencing software. Contractors and project managers will need to initially educate themselves through third-party geofencing professionals on the ins-and-outs of using the technology. The next step will be educating employees on the intricacies of geofencing technology. If contractors opt to use geofencing software on smart phones, tablets, and other electronic devices, the employees will need to know how to respond and comprehend alerts and notifications sent to their devices. This requires a review and update of the employee manual.

Any change to the workflow of a construction project will have its obvious costs and adaptation period; however, the future is fast approaching and contractors should prepare to embrace this new technology.

BUILDING INFORMATION MODELING (BIM)

In addition to creating a better understanding of material movement and location, RFID and other geofencing tech can be combined with BIM to supplement 3D models of a construction project. According to the U.S. National Building Information Model Standard Project Committee, BIM is "a digital representation of physical and functional characteristics of a facility" that can be used as a "reliable basis for decisions ... from earliest conception to demolition."[2] For example, RFID tags may be placed on decking material, and as the decking material is placed on the structural components of a building, a real-time 3D model is augmented to reflect the addition.

Before BIM, building design was reliant on computer-aided design (CAD). CAD creates a model of a building using three dimensions (width, height and depth), which are in turn used by roofing contractors to complete roofing projects. BIM uses CAD concepts and adds more dimensions, such as time and cost, to give project managers a more complete understanding of project workflow.

The entire project can be modeled prior to construction beginning by using BIM, allowing for better preconstruction coordination among roofing contractors and other parties on the project. A roofing contractor can have a better understanding of materials and labor needed, as opposed to using older and simpler CAD technology. Further, project managers can use BIM software in concert with smart contracts to automate most of the project. A more detailed discussion of smart contracts and BIM is included later in the article; however, a better understanding of smart contracts and blockchain is necessary before delving into that discussion.

BLOCKCHAIN AND SMART CONTRACTS

The advantages offered by geofencing technology are abundantly clear. As previously mentioned this article, two of the technologies that will forever reshape the construction project landscape are geofencing and smart contracts. To better understand what smart contracts are and how they will also help drive the construction industry into the modern era, a basic understanding of blockchain is necessary.

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Through the use of blockchain technology, smart contracts, BIM and geofencing, construction projects could enter into a new, technology-driven, risk aduerse system that reduces disputes and increases the likelihood of prompt payment and project efficiency.

If you've ever used Google Drive or Microsoft OneDrive, then you already have a basic understanding of blockchain. Certain cloud-based programs allow a number of users to access a document at the same time, and as each user edits or adds to the document, all of the other users are able to view these changes and additions in real time. Blockchains work in an analogous manner. They are a database that tracks transactions, in the order they occur, and creates a record of each transaction.

By combining blockchains with smart contracts, as well as BIM, a new form of project management can be, and already has been, created. In its simplest form, a smart contract is "a computer program that works on the if/then principle."[3] For example, if a roofing contractor has installed decking on a building, then an inspection is requested to ensure the decking has been properly installed. If the roof deck passes inspection, then the roofing contractor is paid for his work and can be given authorization to continue to the next phase of the roofing installation. All of the different smart contract sections, as well as changes made to them, will be permanently recorded on the blockchain, eliminating a number of different issues inherent with typical project management.

Smart contracts work together on what is known as a Decentralized Autonomous Organization (DAO). The DAO is an organization that is run through rules encoded as the smart contracts. The DAO provides the ability of blockchain to deliver a secure record of the different transactions that occur. This enables roofing contractors and other individuals involved on a construction project to view the current status of the project on a fixed record that encompasses all of the transactions that have taken place.

SMART CONTRACTS AND GEOFENCING

Geofencing data, RFID triggers, and notifications can be used as a supplement to smart contracts that govern a construction project. Working together, these two dynamic technologies can increase project efficiency and lower project costs.

- **MATERIALS:** One of the biggest geofencing and smart contract applications is through material purchase, delivery, use, and payment. All contractors are familiar with the problems inherent in construction projects regarding payment. Subcontractors who finish their work want to be promptly paid, they want to have regular disbursements of payment if the payment isn't to be made in full at project end, and they want the retainage held by the general contractor/owner. General contractors want to ensure that the work performed by their subcontractors passes inspection before releasing funds and will hold on to the retainage until such inspection is passed. When disputes arise as to the quality or progress of work performed, late payment issues will inevitably rear their ugly heads. With blockchain, many of these issues can be avoided, or at the very least mitigated, through the use of smart contracts which automatically provide payment when different aspects of a project are completed.

Just as with subcontractors and general contractors, the same issues arise between subs, general contractors, and their material suppliers. Issues arise over the delivery timing, prompt payment, payment amount, and a host of related problems. Combining smart contracts and geofencing, many of these problems can be alleviated.

Using the if/then principle and site grading example mentioned previously, if the site grading equipment communicates to the project manager that proper grade has been achieved, then materials, such as concrete and steel, can automatically be ordered for delivery to begin the fill process. Once materials arrive on the site, and a project manager verifies that they are as contracted for, a trigger will be sent to the blockchain automatically sending payment to the material supplier. Further, if the materials arrive on time, labor may be directed to complete the site grading and filling process of the construction project. This simple example demonstrates the amount of resources saved and increased project efficiency from use of this new technology.

- **LABOR:** Another symbiotic effect from combining geofencing technology with smart contracts has to do with paying employees for their labor. As previously stated, geofencing allows contractors to monitor when and for what amount of time employees are on-site. Smart contracts allow employees to be paid automatically for labor performed.

Employees who wear geofencing RFID tags or have geofencing software applications installed on their smart phones will be able to have their clock-in and clock-out times automatically recorded based on their entering the geofence perimeter. The geofencing software can communicate this information to the smart contract, and release payment according to the specific terms programmed in the contract. This removes the clerical and human error often found in standard time-keeping tools used today.

- **REDUCED "PAPER TRAIL" LITIGATION:** Owners and suppliers have become well aware of the legalities involved in most construction projects and are

often ready to take advantage of the unprepared roofing contractor. When a construction project ends up in litigation, the party with most detailed and descriptive paper trail will typically be the most successful in the courtroom.

Most contractors know to keep accurate written records of all communications involving disagreements over workmanship, material arrival or other potential information that is involved in claims on a project. These written records can include change orders, emails, text messages, and other correspondence.

Geofencing and smart contracts will work to remove a number of the costs associated with litigating disputes between contractors and their employees when it comes to overtime and other employment related issues, as the data will be stored on the blockchain. A blockchain is "essentially a distributed database of records, or public ledger of all transactions or digital events that have been executed and shared among participating parties."[4] Once a record has been created on the blockchain, it can never be deleted. This allows for instant verification that a transaction has occurred and allows for participants to view the transaction. Blockchain removes uncertainty from the playing field and allows for consensus between parties. All those involved with a construction project will be able to view transactions as they happen, eliminating uncertainty that usually comes with whether an employee was on-site and for what amount of time.

SMART CONTRACTS, GEOFENCING AND BIM

Smart contracts and geofencing information can be used even further by being embedded within a BIM model that is secured by blockchain. BIM software allows data inputs from multiple sources. These sources can include smart contracts and geofencing data.

As stated earlier, BIM can incorporate more than just the three standard dimensions of width, height, and depth. BIM can incorporate time and cost. The dimensions of time and cost can

be further supplemented with smart contracts within the BIM software so that the entire project is centered on one convenient application. Building on the prior example of placing RFID tags on roof deck materials, once the roof deck has been installed, BIM software can work with the smart contract if/then principle to automatically send payment for completion of a portion of the scope of work, and request the next phase of the project to begin.

Through the use of blockchain technology, smart contracts, BIM and geofencing, construction projects could enter into a new, technology-driven, risk adverse system that reduces disputes and increases the likelihood of prompt payment and project efficiency. Roofing contractors and the rest of the construction industry will need to work together over the coming years to adapt to this new phase of construction projects. Soon all aspects of a construction project will be included in a singular platform that allows all those involved, including contractors, government officials, lawyers, and so on to work dynamically to reach project completion. R

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AUTHOR'S NOTE

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WRITTEN BY **CHRIS KING**

Super-Flexible Spaces

At the Ace Hotel, Versatile Rooftop Terraces Capture the Imagination

The Ace Hotel is located in Chicago's Fulton Market Historic District. It features 159 guestrooms and amenities including rooftop event spaces with stunning views of the city. The complex features several vegetative roofs, including a large fifth-floor terrace and a seventh-floor rooftop bar. The fifth-floor terrace incorporates a sculpture that visitors can climb on and areas that can easily adapt to host a variety of events, from corporate meetings to yoga classes.

The team at site design group ltd., the Chicago landscape architect on the project, worked closely with the lead architect, GREC Architects, and the Ace Hotel team to determine the key design goals for the rooftop spaces. Hana Ishikawa, design principal at site design group, notes the client was looking for an understated design. "In this project, what they really wanted was a prairie

PHOTOS: SCOTT SHIGLEY FOR SITE DESIGN GROUP LTD.

Located in Chicago's Fulton Market Historic District, the Ace Hotel features several vegetative roofs and a rooftop bar.

that kind of got left on the roof," she says "So, that's where the project got started."

On the fifth-floor terrace, the materials and plants chosen are meant to evoke a natural prairie landscape, while a section topped with pavers serves as a versatile event space. "We were really focused on creating a space that was super flexible," Ishikawa says. "You'll notice there's a really large pavement area in the front, and they hold all kinds of interesting events there. That's used pretty frequently, whether it be yoga or the little markets they hold up there. One of the primary functions we needed was a lot of flexibility, and that area works well for that."

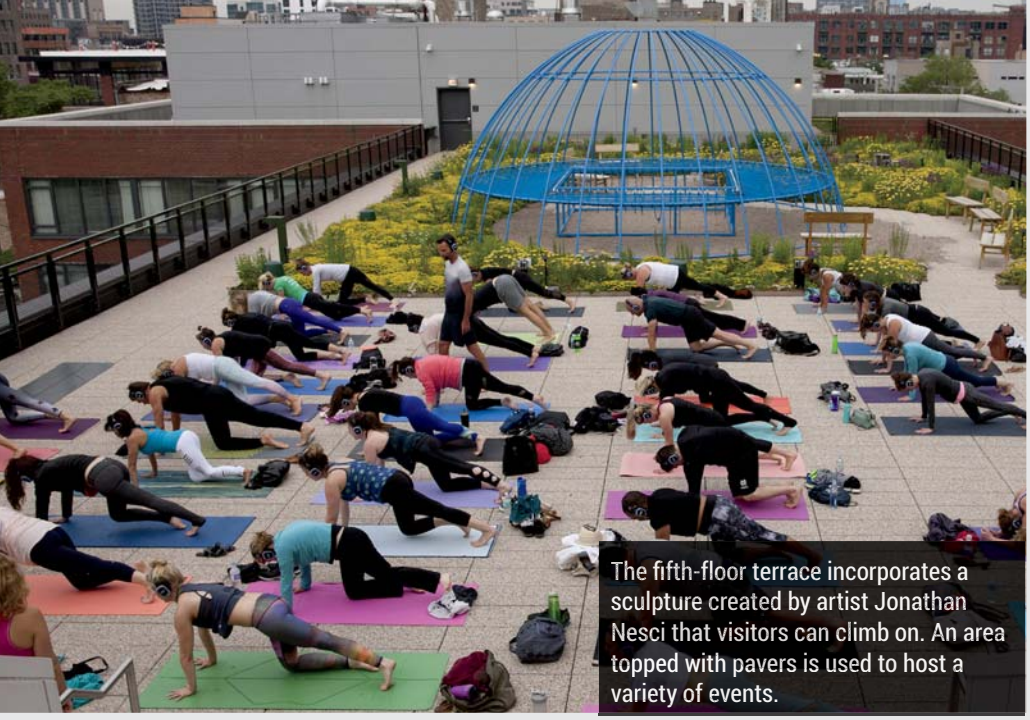
Other roof sections that were not open to the public had different needs. It took a talented team of design, manufacturing and construction professionals to turn the vision for the hotel's rooftop spaces into reality — and provide the single-source warranty the architect and owner desired.

A VERSATILE ROOF SYSTEM

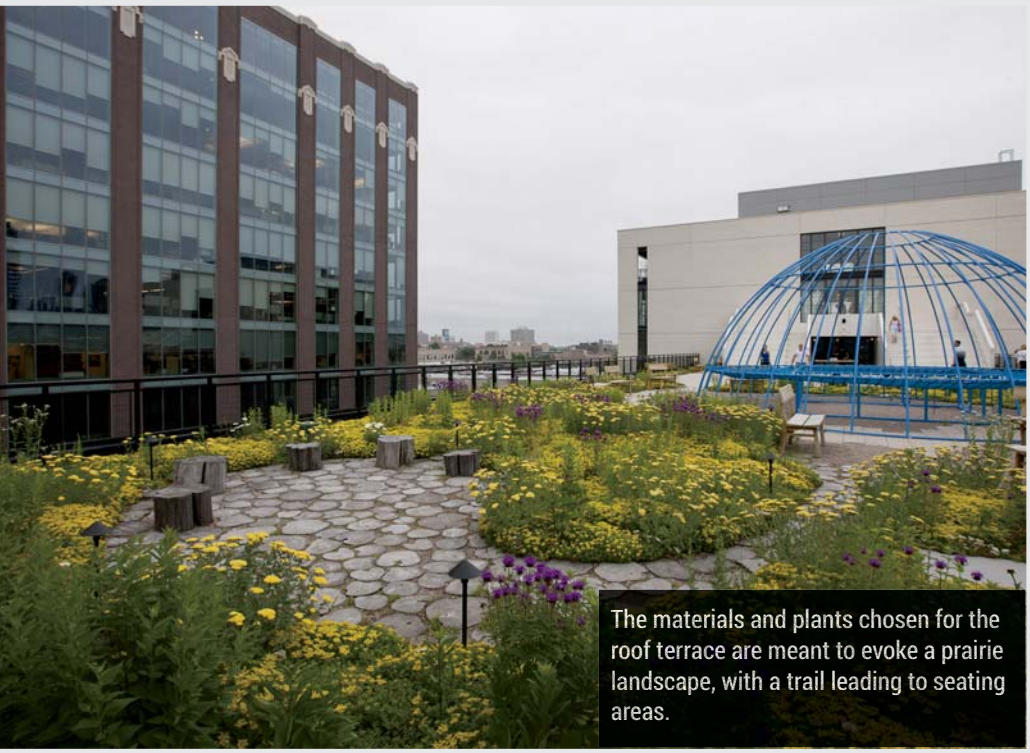
The roof system specified for every roof level was a variation of Hydrotech's protected membrane roof (PMR) assembly. According to Dennis Yanez, American Hydrotech's national marketing manager, the foundation of the PMR assembly consists of Hydrotech's Monolithic Membrane 6125, a hot fluid-applied rubberized asphalt membrane, which is applied directly to the deck and topped with Dow Styrofoam insulation. The system can then incorporate a variety of options including pavers, ballast, and extensive and intensive roof gardens. "The basics — the roofing/waterproofing membrane and the Dow Styrofoam — don't change," Yanez says. "One of the advantages of this system is once you apply the membrane and insulation in the field, you can mix and match all of these options and you aren't changing the integrity of keeping that structure watertight."

Kevin Serena, Hydrotech's garden roofing technical sales coordinator for the central region, worked with the building owner and design team to select the products and systems for each rooftop section.

"They have a few different roof levels, and there was a different design intent for each area," Serena says. "There are a few upper roofs that only the occupants of adjacent buildings will see, so what they wanted there was low-maintenance vegetation with good coverage. They went with a sedum mat material. It's pre-grown outside for over a year, so it's a very hardy material, and once it becomes established it needs little to no maintenance. That was a goal of theirs for those upper roofs since not a lot of people would be accessing those areas."



The fifth-floor terrace incorporates a sculpture created by artist Jonathan Nesci that visitors can climb on. An area topped with pavers is used to host a variety of events.



The materials and plants chosen for the roof terrace are meant to evoke a prairie landscape, with a trail leading to seating areas.

For the large podium deck that was open to the public, the owners wanted to add more interesting vegetation along with other features. "They integrated stone walkways, and they used a more expansive plant palette," Serena notes. "They used the same sedum carpet as a base planting, and then added some different perennials and grasses throughout the mat to give it some vertical interest and add some biodiversity to the roof."

Serena also worked closely with the roof system installer, Bennett & Brosseau Roofing Inc., of Romeoville, Illinois, an authorized Hydrotech applicator. "Bennett and Brosseau is one of the best contractors in the area," Serena says. "They have taken a real interest in doing not only the membrane but all the way up through the growing media and vegetation. They are really into doing the green roof, so they are exciting to work with. They really like doing this type of work, and they do a great job."

THE INSTALLATION

Bennett & Brosseau Roofing installed all of the roof systems on the project, as well as the material for the garden roofs. The company also fabricated and installed four custom colors of sheet metal on the project.

"We had grade-level to roof-level waterproofing on this project," notes Jim Brosseau, CEO and owner of Bennett & Brosseau Roofing. "On the grade level, we installed pavers and drainage components. We also planted plants and trees in the planters on the plaza and at the grade level as well."

The hotel was constructed at the site of a former cheese-making factory in the Fulton Market District. A part of the existing building was retained, including a wall with a historic mural, but the majority of the project was new construction with a concrete roof deck. "It was in a tight area where access was very limited at the jobsite," Brosseau notes. "All of the roofs were new, but the owner wanted to tie into an existing wall for historical value."

Bennett & Brosseau Roofing worked closely with Hydrotech to coordinate material deliveries, and access to the jobsite was eased by a couple of fortuitous events. "One of our vendors actually had some property behind the jobsite, so we were able to stage some material there," Brosseau recalls. "They also closed the street for some work at a building across the street, so we took advantage of that and were able to stage some material on the street and lift it up with our hoists."

Elevators did not reach every level, complicating the logistics. "Safety was a challenge," Brosseau says. "They had elevators at certain levels, but the rest we had to stage a second time for a double hoist. We had to have certified riggers and an approved lift plan. Every pallet is marked, and Hydrotech does an excellent job packaging material, so that helps the process."

Crews installed fall-protection barriers, which included the company's own engineered bracket system with two-by-fours, as well as a Garlock safety rail system. Roofing work began on the penthouse roofs and the tops of the elevator shafts. "All of the roofs received Hydrotech's hot fluid-applied

rubber," says Brosseau.

The membrane is installed in two coats. The first coat is 90 mils with fabric reinforcement on top. The second coat is 125 mils, for a total of 215 mils. The hot rubberized asphalt, which is heated to 350-375 degrees, cools as a solid, forming a monolithic membrane. "The membrane is adhered directly to the deck, and it forms one contiguous layer from parapet to parapet," Yanez says. "They basically make a bathtub up on top of that roof, and then with all of the other design elements, you can do structural construction on top of the Styrofoam. It's a much simpler, easier system, and the reality is there are fewer opportunities for it to fail because it's a very simplistic approach."

"Hydrotech's system is easy to work with," Brosseau notes. "The liquid is a very good product to work with on tough details. Another big advantage of the Hydrotech system, especially in this case, is that it isn't temperature sensitive."

LIVING ROOFS

Sections of the roof with limited access were topped with an extensive vegetative system featuring Hydrotech's InstaGreen sedum mat. River rock was applied as a perimeter border. "We'd get them watertight, and then we'd come back and install the garden systems after the other trades were done on the roof," Brosseau explains.

On the fifth-floor terrace, Bennett & Brosseau installed pavers, wood steppers and wood benches made from reclaimed Robinia. "We put down granite for pathways," Brosseau notes. "We had ballast, intensive garden, extensive garden, pavers, logs and the granite walkway. On Level 5, we had a lot going on."

The material changes and the ground changes were designed to represent an actual prairie, according to Ishikawa. "There is a little trail that goes off and creates a little circle of seating," she notes.

Native grasses were chosen to provide visual interest and survive Chicago's tough winters. These plants were plugged into the sedum mat to ensure the living roof would have complete coverage at the outset. "That was important to us so that the area wouldn't be trampled while the native grasses and flora were emerging," says Ishikawa.

Brosseau credits the support of the manufacturer before and during the project as the key to navigating all of the many details. "We regularly consult with Hydrotech's technical department on non-standard details," he says. "We'll brainstorm to determine what the best solution is. There is also a value beyond that, and that is it helps the owner and the general contractor to see Hydrotech come out and recommend different ways to attack a problem."

Bennett & Brosseau also installed edge metal, beam wraps, expansion joints, scuppers and downspouts. "The sheet metal was probably the most difficult part of it," Brosseau says, "We custom fabricated everything in our shop. No two details were the same. For the bar area on Level 7, we fabricated a stainless-steel bar top for them as well."

IT'S A JUNGLE GYM OUT THERE

Crowning the fifth-floor roof area is a Nesci dome, a climbable sculpture created by artist Jonathan Nesci that has been likened to an "adult jungle gym." According to Ishikawa, the blue metal design was inspired in part by the Louis Comfort Tiffany Dome in Chicago's Cultural Center. "That one is an absolutely gorgeous Tiffany Dome with mosaic tile and glass," Ishikawa notes. "This one is about the exact size and shape, so it's kind of a reference of that cultural institution on top of the Ace Hotel. It's meant to be a climbable, playful structure."

"This roof is really exciting to us because it's a very playful design," Ishikawa continues. "Our firm in general believes that playful design also makes really loved landscapes. We were very excited to work on that part of it."

Yanez points to the versatility and durability of the roof system as the key to a successful project that provides a long service life and the peace of mind of a single-source warranty. "We are happy to be able to give the market what it wants, and a lot of that hinges on the design creativity and pushing the envelope that the architects do," he says, "We are very good at adapting to that and offering them a rock-solid assembly that, if applied correctly, should last the lifetime of that structure." R

ACE HOTEL CHICAGO, ILLINOIS

TEAM

LEAD ARCHITECT: GREC Architects, Chicago, Illinois, http://grecstudio.com

LANDSCAPE ARCHITECT: site design group ltd., Chicago, Illinois, www.site-design.com

GENERAL CONTRACTOR: Power Construction Company, Chicago, Illinois, www.powerconstruction.net

ROOFING AND WATERPROOFING CONTRACTOR: Bennett & Brosseau Roofing Inc., Romeoville, Illinois, www.bennettandbrosseau.com

MATERIALS

ROOF MEMBRANE: Monolithic Membrane 6125-EV, Hydrotech, www.hydrotechusa.com

MEMBRANE REINFORCEMENT: Hydroflex RB II-Hydrotech

INSULATION: 60 PSI Extruded Polystyrene Insulation, Hydrotech/Dow, www.dow.com

DRAINAGE MATERIAL: GR30 Water Retention and System Filter, Hydrotech

FLASHING: Flex-Flash MB Granulated Flashing, Hydrotech

GROWTH MEDIA: Litetop Intensive Media, Hydrotech

VEGETATION: InstaGreen Sedum Carpet, Hydrotech

WRITTEN BY **CHRIS KING**

On the Waterfront

Wave-Inspired Canopies on Convention Center Pose Challenges

When Prince Edward Island Convention Centre was put out for public tender, Ashe Roofing jumped at the chance to work on the high-profile new construction project on the waterfront near the company's headquarters in Charlottetown.

Ashe Roofing has been in business for 27 years, specializing in commercial and industrial low-slope roof systems. When their bid was selected, the company got ready to install the roof systems for the structure's 42,000-square-foot main roof, as well as 10,000 square feet of canopies.

A two-ply, torch-applied modified bitumen system from IKO was specified for the main roof. According to Boyd Corcoran, general manager of Ashe Roofing, the system was chosen for its durability and its ability to withstand the areas tough winter weather. "It suits our climate," he notes. "It can stand up to snow and ice dropping from higher roof sections to lower ones."

The building's distinctly shaped canopies would be visible from the ground, and the architect insisted the canopy roofs match the EIFS wall color. Initially, a tan single-ply roof membrane was specified for the canopy roofs, but the schedule dictated that construction took place during the winter months, so the decision was made to use the same modified bitumen system used on the main roof.

PHOTOS: IKO

A smooth surface APP cap sheet was used so that the proper color could be attained using an elastomeric roof coating application.

THE INSTALLATION

The first phase of the project included setting up safety systems. "We used a railing system, and when we were doing the perimeter work, we had to tie off with a personal fall arrest system outside the rails," Corcoran notes.

Material was loaded with a telescopic fork lift. Work on the main roof began with installing the vapor barrier, which was covered with Trufoam EPS insulation and 1/4-inch protection board. The system was topped with IKO's Torchflex TP 180 FF base sheet and finished with the Torchflex TP 250 cap sheet in Frostone Grey.

Work on the main roof was installed in sections. Crews mechanically installed as much insulation and cover board as they could each day, and each section was topped off with the base sheet. "We'd make sure each section was watertight, and we kept going, one section at a time."

The cap sheet was installed after all of the roof sections were completed. The roof was installed over both metal and concrete decking. Portions of work over the concrete deck needed special care, as the area was designed to accommodate future expansion. "We could not use any adhesive," Corcoran explains. "They didn't want anything on the cement at the end of the day, foreseeing a time in the future when they might take the roof off and use that roof deck as a floor when they added hotel rooms."

Corcoran cited mechanically fastening these sections as the biggest challenge on the project. "We also had to install a tapered system on the whole thing because it was flat," he notes. "We ended up with a 10-inch base layer and then the tapered insulation, and had to drill an inch and a half into the cement, so it was hard to find bits long enough to do the job. It was pretty slow going."

After the main roof was dried in, crews tackled the canopies, which were made of wood. "There are wavy-style canopies on two sides, and there is a big canopy that goes up at a bit of an angle over the water," Corcoran explains. "In some sections of the canopies, the flashing had to be cut into 4-foot sections because of the curves. We put a restorative coating on top of the canopies to make sure the color matched the walls. The coating was applied with rollers."

The job went smoothly and finished on schedule, notes Corcoran, who credits his experienced crews for the orderly progress at the jobsite. "Installing the system on the uphill and downhill portions of the canopies posed a little bit of a challenge, but we have guys that have been installing these systems for 20-plus years," he says. "They get pretty good at it." R

The Prince Edward Island Convention Centre features distinctive curved canopies inspired by its waterfront location. The roofs of the canopies were covered with a coating to match sections of the walls.

PRINCE EDWARD ISLAND CONVENTION CENTRE

CHARLOTTETOWN, PRINCE EDWARD ISLAND, CANADA

TEAM

ROOFING CONTRACTOR: Ashe Roofing, Charlottetown, Prince Edward Island, www.asheroofing.com

GENERAL CONTRACTOR: Brighton Construction, Charlottetown, Prince Edward Island, www.brightonconstruction.ca

ARCHITECT: Chandler Architecture, Charlottetown, Prince Edward Island, http://wcarch.com

MATERIALS

ROOF MEMBRANE: Torchflex TP 180 FF base sheet, Torchflex TP 250 Frostone Grey cap sheet, IKO, www.iko.com

COVER BOARD: Protectoboard, IKO

INSULATION: Trufoam EPS, IKO

VAPOR BARRIER: MVP Vapour Barrier, IKO

WRITTEN BY **CHRIS KING**

PLAY BALL!

Contractor Shows Versatility During Spectrum Field Restoration

TarHeel Corporation was founded as TarHeel Roofing in 1981. Headquartered in St. Petersburg, Florida, the company specializes in commercial work including roofing, waterproofing, cladding, damp proofing, exterior renovations, lightning protection and sheet metal. According to John Looney, president and owner of TarHeel Corporation, the company's name was changed to better reflect its ability to work on the entire building envelope, including above- and below-grade waterproofing.

When nearby Spectrum Field needed roofing and waterproofing work, Looney saw the project as a perfect opportunity to show off the company's versatility. The stadium is home to the Philadelphia Phillies during spring training, and it also serves as the home field for the team's minor league affiliate, the Clearwater Threshers. "We've done a lot of sports complexes in the past," notes Looney.

TarHeel Roofing restored the roof two years ago, and this year the company waterproofed the walls. The scopes of work included cold-applied roofing, waterproofing, caulking, and glazing, as well as repairing the tie-ins to pedestrian deck areas. "There were a lot of little pieces here that were right in our wheelhouse," Looney says.

ROOFS AND WALLS

When the stadium's existing modified bitumen roof reached the end of its service life, the decision was made to restore it with Garland's Energizer K Plus FR. "We used Garland's Energizer system, a cold-applied system with polyester mesh and granule surfacing on it," Looney notes.

Some perimeter areas of the roof were removed and repaired after an infrared scan was used to detect any moisture, and then the entire roof surface was cleaned and primed. The fluid-applied system is installed in two coats with a polyester or fiberglass scrim sheet fully adhered into it. Immediately after the second coat, granules are broadcast over the entire surface. "The finished product is very good-looking," says Looney.

Work on the vertical surfaces began in September 2018. The complex

PHOTO: TARHEEL CORPORATION

features walls clad in an exterior insulation and finish system (EIFS), as well as concrete and concrete masonry unit (CMU) walls. "The EIFS, concrete, and CMU walls each required a different application, but the basic scope of work is the same for each, with some variations," Looney says.

The walls were first cleaned and repaired. After the walls were pressure washed, crews repaired and replaced caulking at windows, doors and other penetrations. Cracks were filled using Garland's Green-Lock Sealant XL, a polyether joint sealant with no VOCs. "We took care of cracks in the concrete and any breaks, including damage from baseballs hitting it," Looney says. "Once the surface was repaired, we moved on the coating application."

Crews applied Garland's Tuff-Coat acrylic architectural wall coating. The coating can be applied with either a sprayer or rollers. Both methods were used on the project, but the majority of the work was done with rollers. The tan color was a crucial concern for the owners, and up-front testing ensured the tint would match up perfectly on the various substrates. "There was also some striping involved for aesthetics," notes Looney. "We put on a band of a darker accent color."

The schedule was sometimes adjusted to accommodate concerts and other events. "The most unusual thing is the actual use of the building, obviously, being a baseball park with a lot of public access," he says. "It takes a beating from all of the use and people there."

Accessing some of the wall areas on the site was the biggest challenge on the project, according to Looney. "If you can picture the typical ballfield, you've got anything from ground-level vertical walls up to walls tucked behind seating up in the grandstand," he explains. "Logistically, the challenge was getting access to all of the areas, extending from public concourses all the way up to the owner's boxes and suites. A lot of that work was done from ground level, actually out on the field, reaching up with big Hi-Los that extended over two or three sections of seating."

When figuring out the best approach, safety is always the primary concern. "Safety is a big part of any project, beginning with preparation and layout," Looney says. "Once we were awarded the job, we weighed working from ladders, swing stages, and man lifts. In this project, we opted to do most of it from man lifts because of the safety concerns inherent in working from ladders, swing stages, or even scaffolding in some of these areas."

Major-league workmanship is the key to earning repeat business, says Looney. "We don't do much advertising," he says. "To us, that means every job has to be done well enough to be asked back. We pay a lot of attention to the details, including safety and the setup. To us, the finished product has to be great — that's a given — but also the journey, from the start to the completion, is important as well. We do a lot of work on hospitals, health care areas, and industrial sites where us being in the way really isn't an option. We are very familiar with working around the needs of businesses. So from a logistics and detail point of view, we are very sensitive to making sure the ride is as good as it can be." R

SPECTRUM FIELD

CLEARWATER, FLORIDA

TEAM

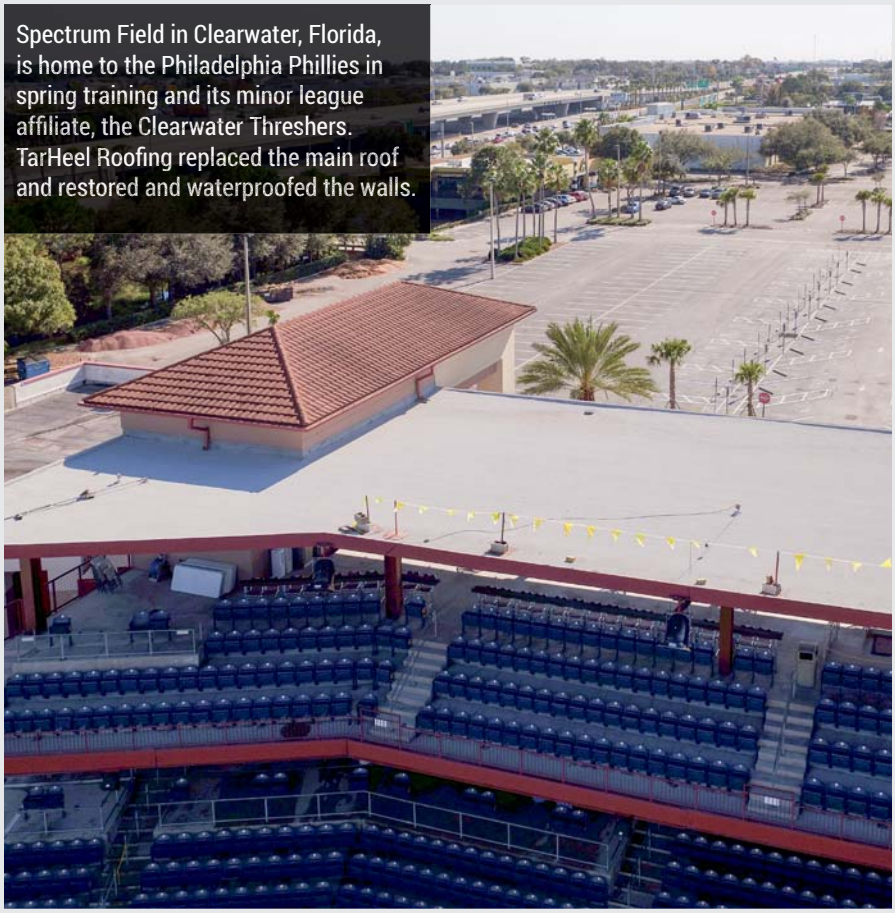
ROOFING AND WATERPROOFING CONTRACTOR: TarHeel Corporation, St. Petersburg, Florida, www.tarheelcorp.com

MATERIALS

ROOF RESTORATION SYSTEM: Energizer K Plus FR, The Garland Company Inc., www.garlandco.com

WALL COATING: Tuff-Coat, The Garland Company Inc.

JOINT SEALANT: Green-Lock Sealant XL, The Garland Company Inc.



Spectrum Field in Clearwater, Florida, is home to the Philadelphia Phillies in spring training and its minor league affiliate, the Clearwater Threshers. TarHeel Roofing replaced the main roof and restored and waterproofed the walls.

PHOTO: THE GARLAND COMPANY INC.

Low Country Luxury

South Carolina Resort's Metal Roof Complements Classic Low Country Architecture

The new Inn at Palmetto Bluff was inspired by a mansion built on the property in the early 1900s.

The recently expanded Palmetto Bluff Resort in Bluffton, South Carolina, now boasts a new 74-room inn designed by Dallas-based HKS Architects. The new Inn at Palmetto Bluff sits alongside an expanded lagoon waterway and was inspired by the R.T. Wilson Jr. mansion built on the property in the early 1900s. Located in the Low Country between Charleston and Savannah, Palmetto Bluff is one of the largest waterfront properties on the East Coast. The resort is set within the 20,000-acre Palmetto Bluff community and conservation preserve that features an array of Southern-style residential neighborhoods ranging from multi-million-dollar legacy family compounds to more traditionally sized single-family homes.

The inn is finished with artisan James Hardie siding on the exterior façade, and a Petersen standing seam metal roof was chosen to complement the classic Low Country architecture. The roof features PAC-CLAD Snap-Clad panels finished in custom color Patrician Bronze. Approximately 75,000 square feet of the 24-gauge Galvalume panels were installed on a tight deadline.

Don Harrier, principal at HKS, said one of the greatest challenges was complying with a long list of restrictions designed to keep additions within the scope of the original buildings, such as a mandated three-story height limit and rules regarding waterways. "It's easy to get into a site like this for construction, but in our world we have staging areas for materials, contractor trailers, etc., and because of the environment, we had to build another building first to house back-of-the-house areas, maintenance, administration and parking," Harrier says. "There were a lot of logistics involved as far as taking care of the site."

Installation of the Snap-Clad panels on the 154,000-square-foot luxury inn was done by Southern Roof & Wood Care in Hardeeville, South Carolina. "It was a complicated job with three adjoining sections of the roof and lots of different elevations and planes and dormers. The flashing details were complex," says David Swanson, president of SRWC.

Southern Roof & Wood Care has considerable experience with Petersen's PAC-CLAD profiles. "We like Snap-Clad because it doesn't require mechanical seaming. We use it whenever we can and when it meets the wind uplift requirements," Swanson notes. "Of course, we also install a lot of Tite-Loc and Tite-Loc Plus, too. We like using the PAC-CLAD products and we can be competitive in the marketplace. We're really happy with the Petersen relationship. They stand behind their products." The Snap-Clad panels were manufactured at Petersen's plant in Acworth, Georgia. The general contractor was Choate Construction in Savannah, Georgia. The Petersen distributor was Commercial Roofing Specialties in Savannah, Georgia. R

PHOTOS: NURNBERG PHOTOGRAPHY, WWW.NURNBERGPHOTOGRAPHY.COM

INN AT PALMETTO BLUFF

BLUFFTON, SOUTH CAROLINA

TEAM

ARCHITECT: HKS Architects, Dallas, Texas, www.hksinc.com

GENERAL CONTRACTOR: Choate Construction, Savannah, www.choateco.com

ROOFING CONTRACTOR: Southern Roof & Wood Care, Hardeeville, South Carolina, www.southernroof.com

DISTRIBUTOR: Commercial Roofing Specialties, Savannah, Georgia, www.crssupply.com

MATERIALS

ROOF PANELS: PAC-CLAD Snap-Clad panels in Patrician Bronze, Petersen, www.pac-clad.com

Protecting an Iconic Sports Coliseum

Roberto Durán Arena in Panama Poses Re-Roofing Challenges

The Roberto Durán Arena is one of the most iconic multipurpose sports coliseums in the Republic of Panama. Inaugurated in 1970, the arena was named in honor of one of Panama's best-known athletes, boxer Roberto "Mano de Piedra" Durán, world champion in four weight classes in the 1980s. One of his most acclaimed achievements was winning the 1980 world welterweight title against one of the most important boxers of the era, Sugar Ray Leonard.

The Roberto Durán Arena hosts a wide range of sporting and entertainment events. The 86,000-square-foot building was remodeled in 2009, which is when the original roof was replaced by an insulated roofing panel and modified bitumen membrane system. This system proved to be no match for the high heat, humidity and heavy rainfall in Panama summers. In 2018, Pandeportes, which governs all sports stadiums in Panama, hired SINCO Panama, a certified Firestone Building Products contractor in the country, to fortify the roof and work on the Level 100, 400 and dome slabs to ensure the arena was able to withstand local weather.

To fix the multiple leaks, the asphalt membrane in levels 100 and 400, was completely removed, and the slopes were repaired with lightweight concrete, which was covered with a protection geotextile. On top of all of that, crews mechanically attached a 45-mil Firestone UltraPly TPO membrane to provide a durable waterproofing system that met all building requirements. A similar process was completed on the dome, including perimeter metal drains.

The unique shape of the dome and the dilapidated state of the existing drainage system made this project a unique technical installation challenge for both Firestone Building Products and SINCO Panama. The team managed the changes needed by replacing the metal gutters and drains and covering them with the same TPO membrane throughout the interior to ensure a completely waterproof system.

The 86,000-square-foot re-roof was completed in two and a half months, with four weeks of work completed exclusively on the dome. The distinct curvature of the dome required the team to tailor-cut the TPO membrane to match the domed roof, leaving no wrinkles or loose membrane.

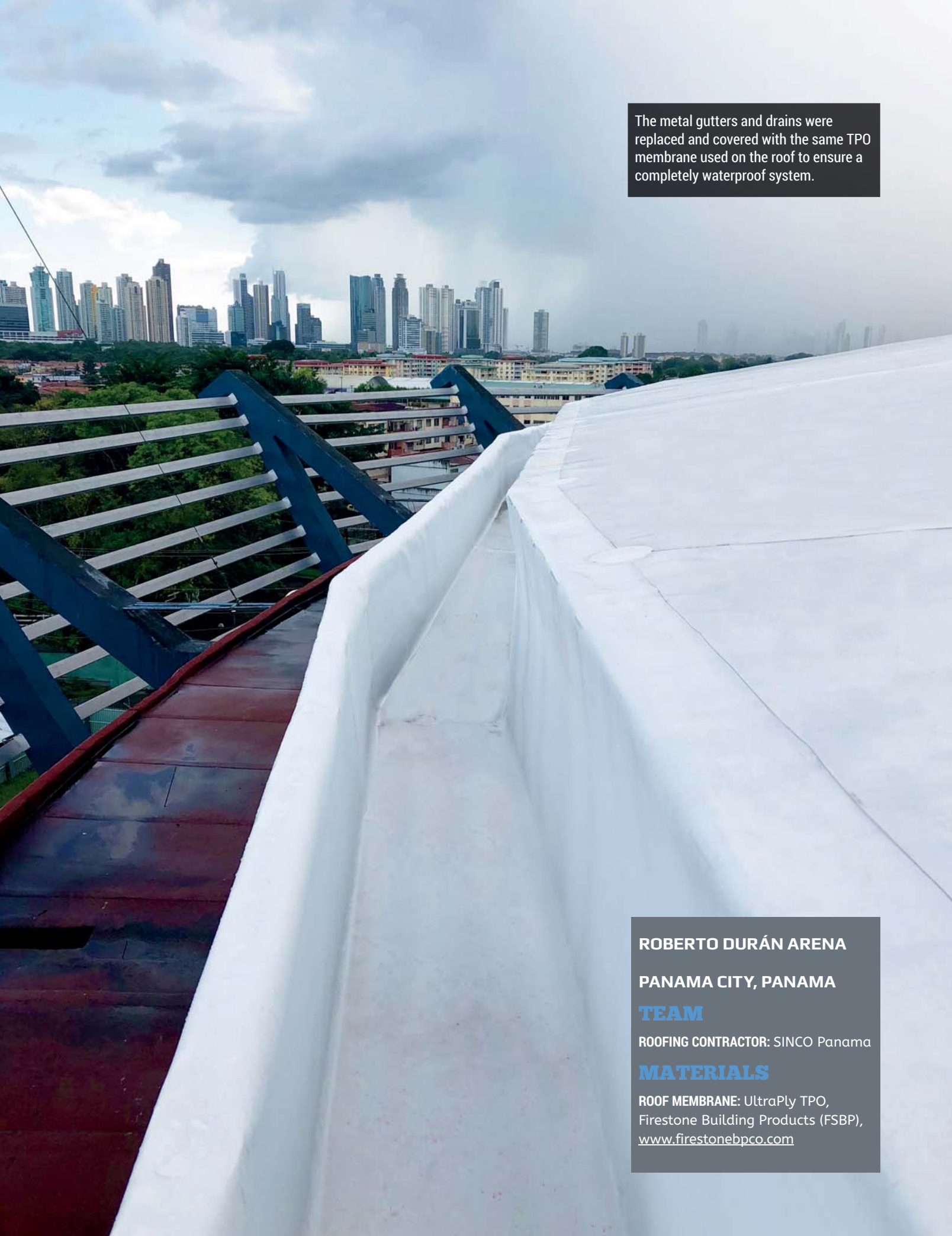
To ensure the most efficient and effective job possible, the technical department at Firestone Building Products and SINCO Panama first developed a 3D model to ensure the orientation of the membranes were as effective as possible, reducing waste and minimizing the number of joints in the membrane.

Beyond working with a uniquely shaped building requiring complex updates, the team also faced challenging weather conditions, including almost constant rain. Panama City, located North of the Equator, features a tropical climate including hot, muggy days with temperatures around 90 degrees Fahrenheit. The work coincided with the rainy season, which yields up to 60 inches of rainfall.

To ensure the work was completed on time, the teams worked extended hours and on weekends to take advantage of the few dry days available. The height of the dome also posed a challenge, as the team faced difficulties during installation due to high winds, but the roofing system attachment was designed to withstand winds of up to 87 miles per hour and an uplift pressure of approximately 110 psf, which made the installation possible.

The work of Firestone Building Products and SINCO Panama resulted in a new look for the coliseum and ensured the improved performance of the roof for years to come. Despite the challenges faced during the project, the teams completed the project without sacrificing quality, durability and resistance, all of which were key factors required by Pandeportes, the building owner. R

PHOTOS: FIRESTONE BUILDING PRODUCTS



The metal gutters and drains were replaced and covered with the same TPO membrane used on the roof to ensure a completely waterproof system.

ROBERTO DURÁN ARENA

PANAMA CITY, PANAMA

TEAM

ROOFING CONTRACTOR: SINCO Panama

MATERIALS

ROOF MEMBRANE: UltraPly TPO, Firestone Building Products (FSBP), www.firestonebpco.com

Fulfilling a Tall Order

Contractor Overcomes Challenging Logistics to Re-Roof 16-Story Westin Savannah

Were you to visit Savannah, Georgia, the Westin Savannah Harbor Golf Resort and Spa would be tough to miss. This landmark property, known for its 18-hole PGA golf course, secluded beach access and on-site spa, is the tallest building in the city at 16 stories. The aura of luxury surrounding the building was threatened, however, when Hurricane Matthew moved through the region, inundating the city with rainwater and causing the aging Westin Savannah roof to fail. With leaks resulting in the closure of a major portion of the hotel's upper floor, it was clear the building owners would need to move quickly to restore a waterproof seal atop their building.

The job would not be easy. The Westin Savannah is surrounded by the Savannah River on one side, a canal on another and the Savannah Convention Center on a third. The only feasible area left to stage and load the roofing material onto a crane was the front parking loop and valet area – an area that would typically be avoided with any other roofing project. "We only had one spot where we could set up, and that was the biggest challenge," says Larry Hoffman, the superintendent who oversaw the installation of the roof at the Westin Savannah on behalf of Whitco

The Westin Savannah site posed logistical challenges, as it is bordered by the Savannah River, a canal and the Savannah Convention Center.

Roofing, the Westin's chosen contractor. "We were very limited with regard to any mobility around that hotel, not to mention the fact that we had to get materials onto a roof that was 270 feet from the ground."

ENVISIONING AN APPROACH

The Whitco Roofing team also had to deal with challenging application conditions, given that the roof had many penetrations due to the presence of air conditioning units, towers, exhaust vents, lighting, walkways, ladders, staircases and other equipment. Special care would have to be given to the installation of the flashing to ensure no opportunities for leak formation remained after the roofing job was done. Recognizing that the use of a liquid flashing material was the best bet to keep the roofing layer monolithic despite all the penetrations, the Whitco Roofing team set about selecting the right compatible materials for the job.

"SOPREMA's SENTINEL P150 60-mil PVC-based roofing membrane was selected for the project because we wanted a durable roofing product that was compatible with a liquid flashing material for difficult base flashings encountered during this project," explains Henri Brickey, director of business development for Whitco Roofing. "We recommended the SOPREMA PVC membrane for several reasons, the first of which is the superior chemical and UV resistance PVC offers over TPO. Since we also intended to wrap the large quantity of concrete and metal support column bases with SOPREMA's ALSAN RS 230 Flash polymethyl methacrylate (PMMA) liquid resin, we made sure the PVC membrane was compatible and that we could include those areas under the roof's warranty."

THE INSTALLATION COMMENCES

The complex coordination required for a successful roofing installation began on the ground. One week's worth of material was staged at a time, then a crane was brought in to upload materials to the roof on the same day trash was being downloaded from the old roof tear-off process. All debris had to be carefully bagged and secured with tarps to avoid pollution in the nearby Savannah River, and the delivery and removal of four dumpsters at a time had to be carefully coordinated so that no dumpster was left on the premises overnight, blocking entry to the building. "You had to be out of there by five o'clock with everything, and it had to be done in a particular sequence, further complicating matters," explains Hoffman.

On the rooftop, existing asphalt-based roofing materials were stripped down to the concrete deck. SOPREMA SOPRA-ISO 3.5-inch polyisocyanurate insulation was adhered using SOPREMA DUOTACK 365 foam adhesive to provide improved R-value to the building. Next, the PVC membrane was bonded onto the insulation, providing both a reliable waterproofing layer and a reflective white finish that would help diminish heat absorption compared to the older materials. The liquid resin coating was then applied to prevent water intrusion at all exposed concrete column bases – extending up and coating metal base plates – and at vertical flashing points where air handling units tied into the building's walls. New tapered crickets were also installed between drains, improving the overall flow of water on the roof and reducing the opportunity for ponding water.

SAFETY AND COMMUNICATIONS PRIORITIZED

Throughout the project, OSHA guidelines had to be followed carefully on the rooftop and on the ground to ensure both workers and bystanders entering and exiting the hotel were safe. Flagging and ground guides were used around the staging area, and strict adherence to timelines for deliveries and mobilizations were also critical to the safe execution of the project. The Whitco Roofing team worked closely with the hotel management throughout the process to prevent interference with hotel operations and to minimize risks to guests.

The building now benefits from a superior roofing membrane that is Energy Star-compliant, upgraded insulation, a strong foam adhesive that helps resist uplift pressure during storms and a monolithic waterproofing layer thanks to the liquid flashing installed around all penetrations. "SOPREMA's single-ply membranes have a reputation for strength and durability," notes Brickey, "and especially with the inclusion of the liquid flashing system to deal with difficult flashing details, we were able to provide a long-lasting, warranted waterproofing solution for the Westin."

In all, more than 14,000 square feet of roofing material was replaced over the course of roughly a month by a large team of installers. In part because the hotel staff was so pleased with the way the job was planned, managed and executed, Whitco Roofing was brought back to install a new roof on a lower section of the building as well. That project was recently completed, positioning the Westin Savannah to resist the elements while serving as a relaxing getaway for the foreseeable future. R

THE WESTIN SAVANNAH HARBOR GOLF RESORT AND SPA

SAVANNAH, GEORGIA

TEAM

ROOFING CONTRACTOR: Whitco Roofing, Atlanta, Georgia, www.whitcoroofing.com

MATERIALS

ROOF MEMBRANE: SENTINEL P150 PVC, SOPREMA, www.soprema.us

INSULATION: SOPRA-ISO, SOPREMA

ADHESIVE: DUOTACK 365, SOPREMA

LIQUID FLASHING: ALSAN RS 230 Flash, SOPREMA

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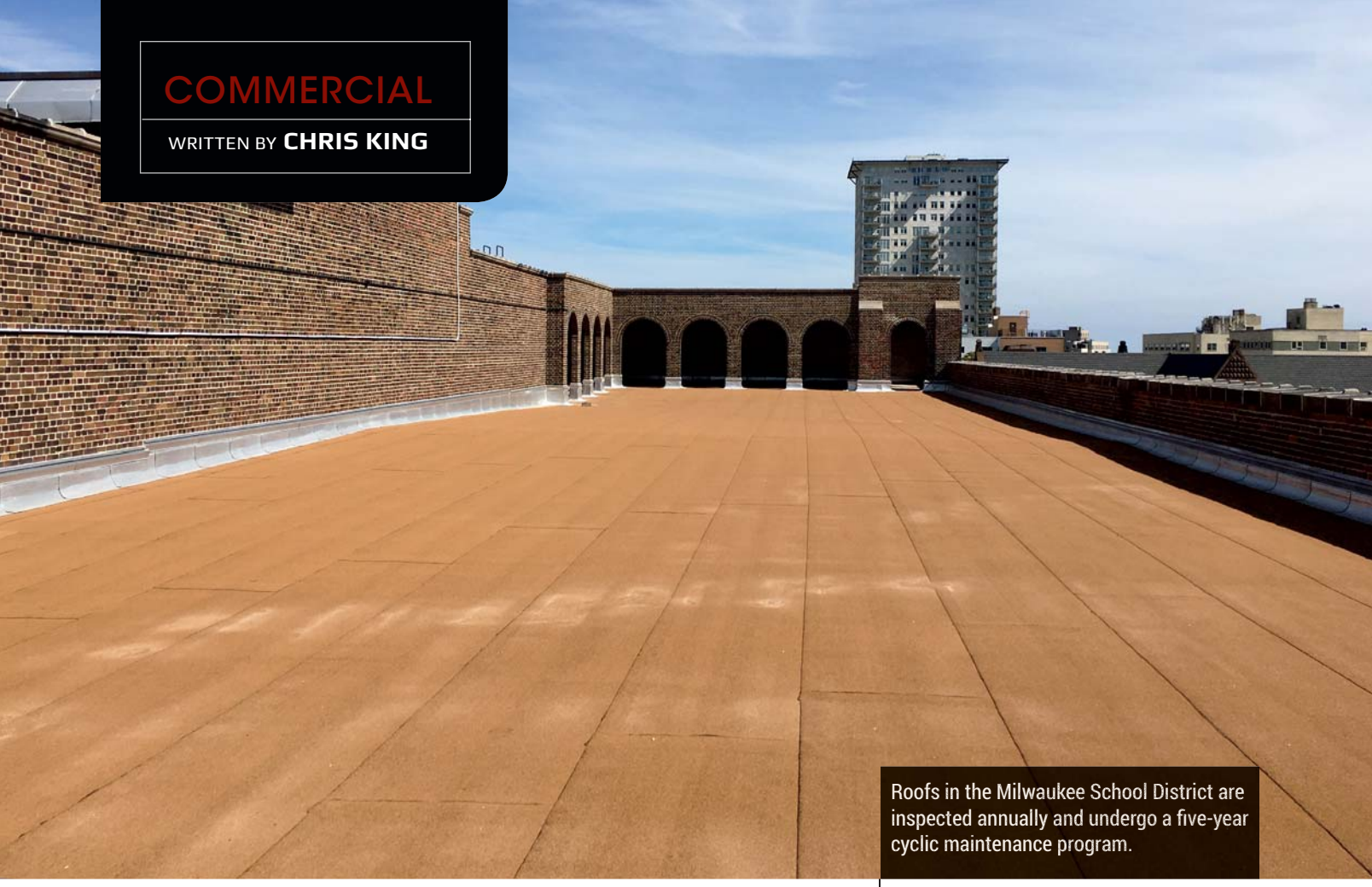
COMMERCIAL

WRITTEN BY **CHRIS KING**



Roofs in the Milwaukee School District are inspected annually and undergo a five-year cyclic maintenance program.

A Beautiful Friendship

Talented Team Helps School District Get the Most Out of Its Roof Assets

When Dennis Fula took over the roofing shop for the Milwaukee Public School District more than 20 years ago, many of the school's roofs were failing, and some buildings were in danger of being condemned. He reached out to a manufacturer to help him institute a program to inspect and prioritize roof repairs and replacements – and set up specifications to ensure the roofs he installed would last longer and need fewer repairs.

Today, Dennis Fula's son, Ryan Fula, is now in charge of the roofing shop at Milwaukee Public Schools (MPS), and he's realizing the benefits of the program his father helped set up more than two decades ago.

According to Ryan Fula, his father teamed up with Dan Dalle Nogare, an independent representative of Atlas Roofing Corporation, to address the school district's roofing issues some 23 years ago. The pair convinced the school system to adopt a comprehensive program to evaluate and maintain the district's roofs. A key part of the plan was the implementation of the Atlas Roofing Corporation Certified Drainage Program (CDP), a low-slope tapered insulation design service that focuses on eliminating ponding water on a roof's surface to extend the service life of the system.

"Atlas Roofing came in and did a presentation on how they can save money in the long run working with Milwaukee Public Schools by offering the Certified Drainage Program," Ryan Fula recalls. "So, we decided to take a shot at it and see how it might work out."

According to Fula, the results over the last two decades have been impressive. "It's been working out great ever since," he says. "It helps us with the budget, it's paying off now, and it will continue to pay off into the future."

PHOTOS: ATLAS ROOFING CORPORATION

The program has been embraced by the school district, the roof system manufacturer, and the contractors who work on the projects. Ryan Fula and others currently involved with the program — most of whom represent the second generation of employees at their companies working under the arrangement — shared their insights on how the program works and why it's effective. All of them cited it as a role model for other school districts across the country to follow.

THE SCHOOL DISTRICT

According to Ryan Fula, Milwaukee Public Schools encompasses more than 160 buildings with approximately 9 million square feet of roofing. The first priority of Fula and his roofing team is to fix and repair leaks, but their overall strategy involves taking a long-term approach to managing roof assets. The MPS roofing crew conducts annual inspections of each roof, and crew members clean up debris and check for problems. Every summer, the team conducts a five-year cyclic review, which includes routine maintenance, repairs, cleaning roofs and sometimes applying an aluminum roof coating. After 25 years of service, each roof is fully evaluated.

"We're all about planning for the future and preventative maintenance," Fula says. Most of the roofs in the school district are BUR or modified bitumen systems. "We like to keep our roofs smooth," Fula notes. "As a rule, we don't like gravel or ballast. The reason why is we only have four employees, and with the amount of square footage we have we don't have time to spud or remove ballast."

Each year, Fula goes over his list and determines which roofs need to be repaired or replaced. When a building needs a full roof replacement, the process works like this: The Atlas representative visits the project, meets with Fula, and takes field measurements. The CDP team puts together a budget and preliminary plan, and the project is sent out for bid. Once the job is awarded, the contractor chosen removes the existing roof system and installs a temporary roof to keep the building watertight. The rep then conducts a detailed auto-level survey that maps out the entire deck, recording any deck deflection and high and low areas. Then the team at CDP comes up with a tapered insulation plan to ensure proper drainage.

Fula is involved at every stage of the process and serves as the construction liaison to the administrators and teachers at the school. "I work directly with the schools and the construction contractor from start to finish as the roofing work takes place," Fula says. "I'll be the inspector on the job. I'm there on a daily basis. Our biggest priority is to make sure that we don't disrupt the school."

THE REP

One of the first people Fula contacts when it's time for a roof replacement is Brett Kaehler, his Atlas representative. Kaehler works at Adroit Marketing Inc., headquartered in Slinger, Wisconsin, which has represented Atlas since 1988. Working alongside Dan Dalle Nogare, who helped launch the program, Kaehler has worked on more than 20 projects with MPS.

Consultation typically begins in the budgeting stage. "If a roof needs a full replacement, they would already have plans for that roof, so we would go out and field measure the roof to verify the overall measurements, noting any penetrations or drains," Kaehler says. "We field verify everything and send that report down to our tapered team in Atlanta."

Six contractors are approved to bid on MPS projects, and they receive the preliminary roof plans and scope of work to help them prepare their bids. Once the job is awarded, the tear-off process begins. After the tear-off is complete and a temporary roof is installed, Kaehler meets with Fula to conduct the auto-level survey of the roof. "We grid out the roof in either 12-foot or 8-foot sections," Kaehler explains. "We shoot heights in each individual quadrant. If there are areas of concern with low spots, we might even tighten it up to a 6-foot or 4-foot grid. We take pictures and include those with the heights in our report to CDP."

The reports are turned around very quickly, notes Kaehler; the final plans are usually received within two days. The tapered insulation plan is logical and easy to follow, even for a new contractor, according to Kaehler. "It's like a puzzle," he says. "We give you the layout and tell you where to place each puzzle piece. It's pretty cut and dried. There is minimal waste. We try to keep it as simple as possible."

Every member of the team has the same end goal in mind. "At the end of the day, we want a perfectly pitched roof for Milwaukee Public Schools for their longevity," Kaehler says. "We want the contractor's name to be well represented. We want Atlas Roofing's

The Milwaukee Public Schools facilities management team includes (from left) John Linn, MPS Manager of Design and Construction; Dennis Fula, the previous crew leader of the MPS roofing shop; and Ryan Fula, the current crew leader.

The roof on the 88th St. School was replaced with a modified bitumen system utilizing plan tapered insulation with a four-way slope.

name to be well represented. It's a complex process, but we have it so fine-tuned it doesn't seem so complex. We all know it and understand it very well. There are a lot of moving parts, but it moves very smoothly. It's a well-oiled machine."

Kaehler commends Milwaukee Public Schools for their proactive approach. "They do a great job with preventative maintenance," he says. "Sometimes with an owner, a roof will be out of sight, out of mind — they won't look at it until it is leaking. Milwaukee Public Schools doesn't look at it that way. If something does come up, they nip it in the bud before it becomes a problem."

Kaehler monitors the project through completion and conducts a final inspection. "I'm on the site regularly," he says. "We do a roof inspection to make sure everything is draining properly, preferably after a good rain to ensure there is no ponding water."

THE TAPERED DESIGN TEAM

Shaun Kerschen is the director of Private Label and Tapered Services for Atlas Roofing, based in Atlanta, Georgia. He joined the company in 2002 and began designing tapered polyiso insulation systems for commercial projects in 2003. Some of his first projects were for the Certified Drainage Program on MPS buildings. He's since been promoted to oversee the tapered insulation design team, which has four full-time designers, including Jennifer Tyree, who has handled MPS projects since 2008. "We review the plan sets and work up quotes for tapered insulation systems," Kerschen notes. "After the project is sent out for bid and the job is awarded, we work up shop drawings and installation plans. The material is delivered to the jobsite and installed by the contractor."

Measuring the actual roof deck is critical, notes Kerschen, as there can be surprises that emerge as the tear-off is executed, especially on older buildings. "Over the last 16 years I've seen some pretty crazy things," he says. "On one section of roof that had been involved in several additions over the years, we found five different deck heights. We had to fill in several sections with insulation before we could even begin to install the taper."

The tapered insulation plan has some typical design requirements. "As part of the certification process, we agree to provide a tapered insulation system to provide positive drainage and void substantial ponding water within 24 hours," says Kerschen. "The system has to be designed with four-way slope. We do not allow two-way slope with saddles or crickets, except in very unusual circumstances. The minimum requirement is a 3/16 inch per foot slope; that allows us to correct a lot of issues. In some cases, we will require 1/4 inch per foot slope."

Once the tear-off is executed, the final plan must be completed very quickly, according to Tyree, but the detailed reports and advance planning help speed the process. "The reps are my eyes in the field," Tyree says. "They'll identify the drains and anything that might be an issue. They'll point out anything I need to know, such as height issues on windows, for example. Then I work up the plan. The biggest thing is to take meticulous notes, keep everything organized, and turn it around very quickly when the time comes."

Everyone on the team knows their part in the process, notes Tyree. "The goal is putting on a good roof that lasts, with quality workmanship from certified contractors," she says. "Our reps are out there, hands-on, from the very beginning. They check how the roof performs after a rain. We provide more peace of mind for the owner."

THE CONTRACTOR

The program also makes life easier for the installing contractor, notes Doug Biggar, project manager for Langer Roofing & Sheet Metal Inc., a union-affiliated commercial roofing contractor headquartered in Milwaukee. Langer Roofing is one of the companies approved to work on MPS projects. Biggar took over as the point man on MPS projects after the retirement of Dave Novak a few years ago, and he is another admirer of the smooth-running system his predecessors put in place.

"The biggest benefit of the Certified Drainage Program is that it provides a higher-quality product in the end," Biggar says. "It's a great team, and it

also makes it easier when you are working with a more involved owner. If we are working over an occupied building, I don't have to sit down and explain everything to the principal; that's all handled by the MPS people. We have one point of contact, and it's Ryan. Every day our foreman connects with Ryan at the beginning of the day and they go over the plan. Ryan lets the principals and the teachers know what's going on. It makes our lives so much easier."

The plans from CDP ensure the quality and longevity of the system, and the communication of every member of the team saves the contractor time and minimizes confusion. "Ultimately, it's a higher-quality product, and the process streamlines things," Biggar explains. "When the roof is put on, we don't have punch-list items, and we don't have ponding water."

Biggar credits his company's experience and union training as the keys to quality workmanship. "It's a great team from top to bottom," he says. "We're a union shop, so we are all well trained. I have the ability to sell any type of system, any type of service work. We're certified with every major manufacturer out there. It all boils down to the ability of our guys in the field and our equipment. We have a full-time safety director. There are a lot of years of experience in our project management team. We do things right around here."

INVESTMENT PAYS OFF

According to Fula, the investment in the roof asset management program is paying big dividends. The team effort helps ensure the roofs meet their maximum life cycle while minimizing emergency repairs. Fula's advice for other school districts is to determine the full life-cycle cost of a roof system — not just the initial cost.

"We are making the investment up front," he says. "When these roofs are coming around to be replaced, we are completely ripping them off down to the deck. We're installing a vapor barrier. Atlas will come in with the Certified Drainage Program, and they will guarantee that the water will be off our roof in 24 hours. So now we are energy efficient, we are up to code, but we also have the guarantee that the water is gone. If we do have a leak, we won't have standing water there to cause further damage to the system."

"Ponding water is the number one cause of problems for low-slope roofs," notes Fula, "so making sure the roofs have proper drainage is critical." He has seen the proof with his own eyes.

"Now, with the Certified Drainage Program in place, we are really able to see how the roofs are doing and how our investment is paying off there," Fula says. "The roofs we designed and installed are lasting longer. In the past, just about every 25-year-old roof was put into our deferred maintenance program to be repaired or replaced. Now I'm looking at 20-year-old roofs, and they look brand new." R

Beautiful Views

Metal Panels Highlight Rooftop Area of Washington Apartment Building

The brand-new Reed Row apartments in the Adams Morgan neighborhood of Washington, D.C., offers an eclectic, urban sophistication that is reflective of the area. Adams Morgan is well known for its broad mix of cultures and activities. The five-story apartment community includes 132 residential units in 100,000 square feet of space.

The site, located about 1.5 miles from the White House, was previously a parking garage. The developer demolished everything above grade but was able to retain portions of the below-grade structure.

The exterior expression of the architectural design, created by R2L:Architects, Washington, D.C., is influenced by the materials and scale of the traditional masonry buildings found in nearby districts. "We wanted to pay homage to the historic neighborhood with a material palette that offered the proper aesthetic fit," says Donrico Washington, R2L project designer/manager.

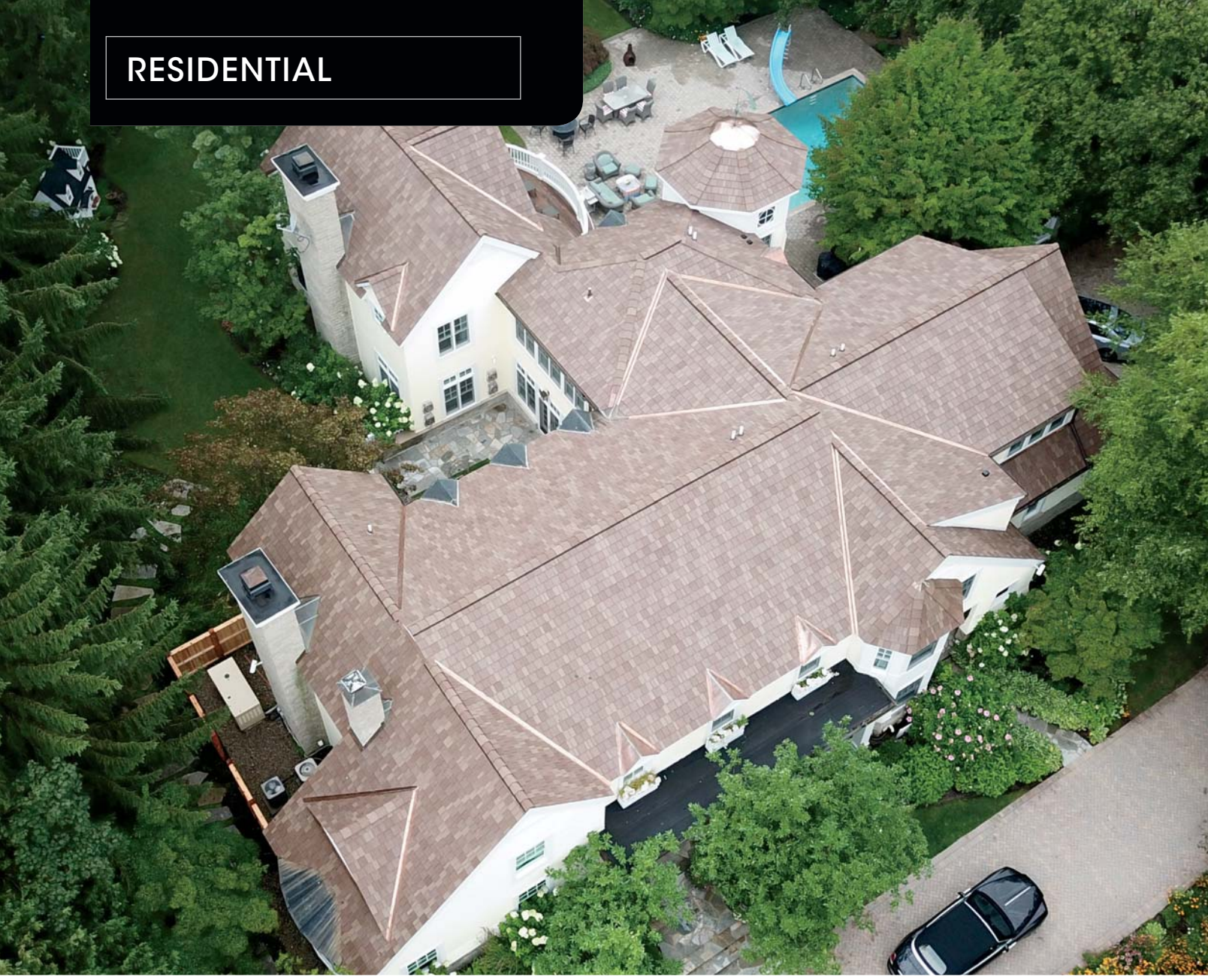
Two different Rheinzink profiles were specified for application in an "intimate, exterior amenity space," Washington notes. The area is an inviting rooftop common area that provides residents with social space and a great view of the city. Approximately 3,000 square feet of Rheinzink prePATINA graphite-grey Flat Lock Tiles and 1,000 square feet of Rheinzink Standing Seam Panels highlight the rooftop amenity. "In the early stages of our design process, we noticed that numerous nearby buildings had mansard roofs with diamond-shaped tiles and shingles. That's what led to our selection of the Rheinzink Flat Lock Tiles," Washington says.

The Rheinzink Standing Seam Panels were used to clad sloped roofs over stairways in the units below the roof deck leading up to outdoor terraces. "The reaction to the Rheinzink from the residents has been outstanding," says Washington. "Everyone loves it because it's a material that's not typically seen."

Installation of the panels was done by MSM Roofing, Hampstead, Maryland. David Peterson, owner of MSM, described the installation as "a piece of cake." R

PHOTO: RHEINZINK

Approximately 3,000 square feet of Rheinzink Flat Lock Tiles and 1,000 square feet of Rheinzink Standing Seam Panels were used to highlight the rooftop amenity.



Finding the Best Option

Michigan Homeowners Embrace Composite Shake Roofing

Homeowners can be faced with difficult decisions when it's time to replace their roof. That's when knowledgeable, dedicated contractors can provide crucial assistance by explaining the best options for their particular circumstances. Mark Dalrymple, president of steep roofing operations for Butcher and Butcher Construction Co. Inc., headquartered in Rochester Hills, Michigan, points to one homeowner's decision to replace their cedar shake roof as an example.

"Ten years ago, our company maintained and restored the original cedar roof on this house because the homeowners loved their real cedar shake so much," says Dalrymple. "The goal was to get it to last another decade, which was achieved. However, now it's 10 years later. The homeowners came back to us because they knew their old cedar shake roof had reached the end of its lifespan."

At the client's request, Dalrymple explained other roofing system options. "They wanted a recommendation for a roof alternative that would outperform real cedar, but still give the authentic appearance of cedar shakes," he recalls. "We recommended composite shake roofing from DaVinci Roofscapes."

According to Dalrymple, the homeowners immediately approved of the DaVinci Multi-Width Shake product suggested by Butcher and Butcher.

PHOTOS: BUTCHER AND BUTCHER CONSTRUCTION CO. INC.

"They were impressed with the authentic look of the composite shake tiles," he says. "The Autumn color was a great match for the weathering effect they were seeking. These homeowners were also extremely pleased with the features of the DaVinci tiles and liked the idea that long-term roof maintenance will be much easier than with real cedar shakes."

ROOFERS THAT CARE

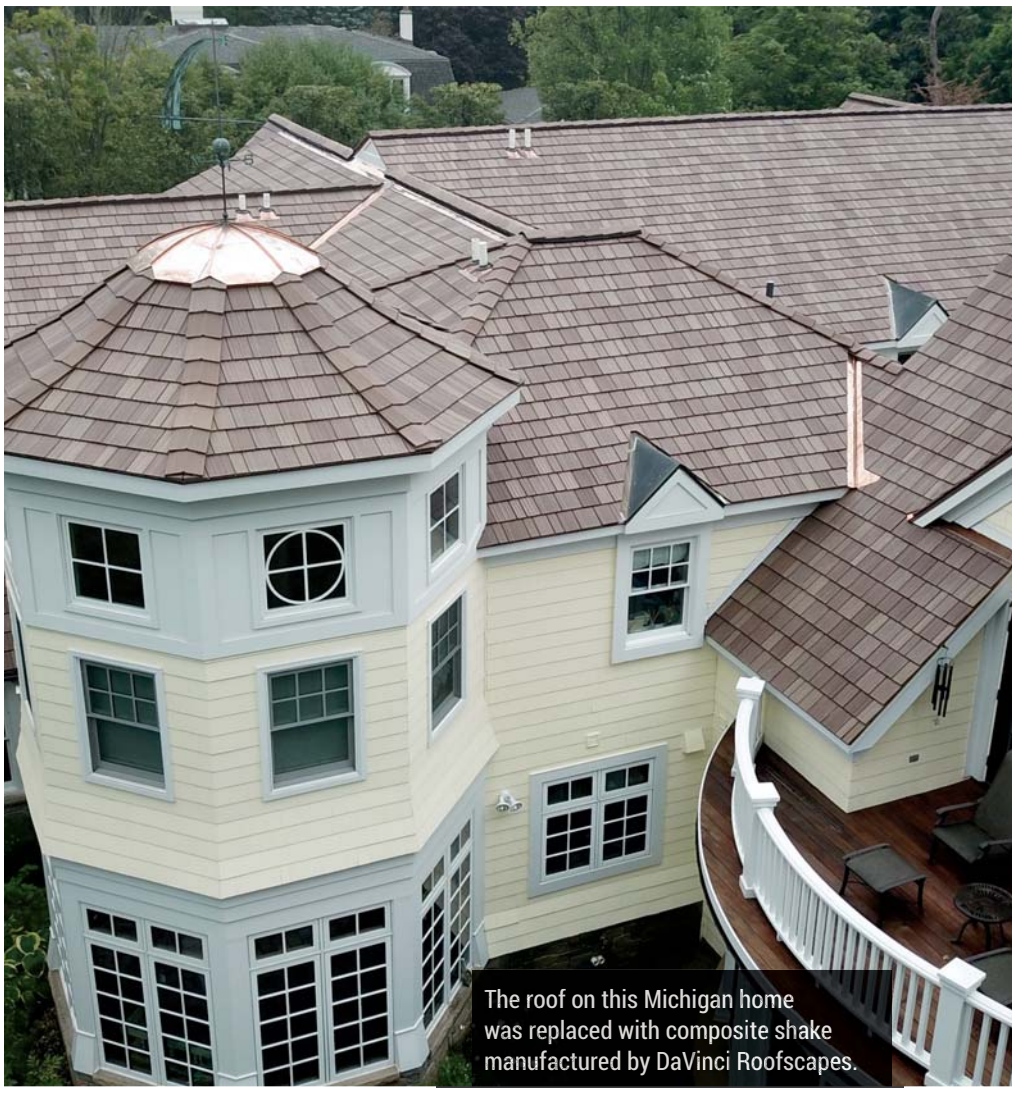
Butcher and Butcher completed the massive re-roofing project in July of 2018. The project included installation of 85 squares of roofing material with special applications around a turret and multiple chimneys.

"We've been installing DaVinci composite roofs for 18 years so we're very familiar with the product," says Dalrymple, whose company has locations in both Michigan and Florida. "For this project, we used extra caution to protect the home's meticulously manicured landscaping, courtyard and pool area. We were careful in both removal of the old roof and installation of the new roof. Everything from flowering shrubs around the house to flowers in window boxes had to be protected."

Located in the prestigious area near Cranbrook Schools, a National Historic Landmark site, the newly re-roofed home sits in the Bloomfield Hills community of Michigan. Butcher and Butcher has worked in this area since the company started in 1972.

"This is a neighborhood of quiet, rural residential properties," Dalrymple notes. "For us it's an honor to help these homeowners have composite roofing installed on their homes. We know that this roofing material will help both protect the home from severe weather and add distinct curb appeal value to a property."

According to Dalrymple, the homeowners were very pleased with the end result. "For this project, the homeowners truly love the fact that the composite shake looks so much like natural cedar roofing," he says. "They're excited with the roof's performance so far and the idea that this DaVinci roof will far outlast their old natural cedar roof." R



The roof on this Michigan home was replaced with composite shake manufactured by DaVinci Roofscapes.

SAFETY

WRITTEN BY **CHRIS LAFFERTY**

Understanding the New OSHA Regulations for Fixed Ladders

AS OF NOVEMBER 19, 2018, the U.S. Department of Labor's Occupational Health and Safety Administration (OSHA) implemented new requirements for fixed ladders on buildings. Understanding these new ladder regulations can be confusing, and you can spend a great deal of time referencing the standard interpretations pages on the OSHA website and still not find the answers you need.

In this article, we will be referencing the OSHA fixed ladder rules found under Occupational Health and Safety Standards, Subpart D, Standard 1910.28, "Duty to Have Fall Protection and Falling Object Protection." We will address some of the most frequently asked questions about the regulations for fixed ladders and include some tips

and links to other resources for more information.

WHAT HAS OSHA CHANGED?

The first and primary change is the phasing out of cages on fixed ladders. Many see this as a step forward for ladder safety. The reality is that cages offer little in the way of fall protection. In fact, they can increase the risk of injury during a fall.

SHOULD WE ORDER OUR NEW LADDER WITH A CAGE OR NOT?

Under the new rules, cages are not required or recommended for any new ladder installation. We will get deeper into what this means for existing ladders later in this article.

The next question is if OSHA takes away cages, how are they planning to protect people from falls? This is accomplished using a personal fall arrest system (PFAS) or ladder safety system. These come in wide variety of designs.

Three primary types are:

1. Bolt-on cable systems (with a cable grab fall arrester)
2. Track systems (with a climbing trolley)
3. Top-mounted self-retracting lifelines

Of course, each type has its advantages and disadvantages. The key is that each must meet the minimum OSHA requirements outlined in section 1926.502(d) of the OSHA codes.

WHEN IS A PFAS REQUIRED?

Under the new regulations, a ladder over 24 feet high will require a personal fall arrest system or ladder safety system. You can choose any PFAS provided it meets the OSHA requirements in section 1926.502(d).

Please note: A ladder that is less than 24 feet high does not require a fall arrest system of any sort.

WHAT ABOUT LANDING PLATFORMS?

Multi-section ladders with a climb of 24 feet or more require rest points. These are meant to protect climbers as they ascend. Previously, a fixed ladder with a cage required a landing platform at a maximum interval of 30 feet.

The new regulations change this requirement dramatically. Fixed ladders without cages must now have a landing platform at maximum intervals of 150 feet. Ladders with cages must now have a landing platform at maximum intervals of 50 feet.

HOW DO THE NEW RULES AFFECT EXISTING LADDERS?

Under the new rules, the modification of an existing ladder or replacement of a ladder section requires that the modified or replaced section be equipped with a fall arrest system.

By November 18, 2036, all ladders 24 feet or higher must be retrofitted with a

PFAS or ladder safety system.

Here's the confusing part: Will all existing ladders with cages have to be replaced, or at least have the cages removed? No. The existing caged ladder can stay. But as outlined above, a fall arrest system of some type will have to be retrofitted.

In such cases, the cage must not interfere with whatever fall arrest system is installed. Choosing the right type fall arrest is critical in these retrofit situations.

WHAT QUESTIONS SHOULD I ASK THEN CHOOSING A FALL ARREST SYSTEM?

While the fall arrest systems themselves are not that complicated, the burden often falls on the purchaser to try to figure out all the parts and pieces needed to make their ladder OSHA compliant.

It's not uncommon to select a fall arrest system, only to find out the product or that the accessories needed to make it compliant might be discontinued or out of stock. This leads to a list of questions that you need to ask prior to picking a fall arrest system:

- Will this system work with my ladder and the height of my climb?
- What is the system's load capacity?
- Will the system allow for only one or for multiple climbers? How many?
- What is the true product cost? You need to gather information on the cost of not only the base components, but any accessories needed to make the system OSHA compliant, such as harnesses, cable grabs, trolleys, carabiners, etc.
- Is the system, and all its accessories, readily available?
- Will replacement parts be available in the future?

WHERE CAN I TURN FOR MORE INFORMATION ABOUT LADDER REGULATIONS?

Reputable manufacturers and suppliers of ladders and fall protection equipment should have experienced personnel on hand that can help you navigate the new OSHA regulations. The OSHA website includes the regulations cited above, as well as a Q and A section that covers fixed ladders (https://www.osha.gov/walking-working-surfaces/faq.html). Contractors can also contact their area OSHA representative for assistance.

Other OSHA ladder resources available online include: https://www.osha.gov/stopfalls/trainingresources.html and https://www.osha.gov/dcsp/alliances/alliance_products.html#Ladder.

The American Ladder Safety Institute also provides an online ladder safety training resource: https://www.laddersafetytraining.org/ R

ABOUT THE AUTHOR: *Chris Lafferty is a sales and marketing associate with Design Components Inc., a full-service provider of fixed ladders and fall protection accessories. For more information, visit www.designcomponents.com.*

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Assessing Retrofit Single-Ply Roof Systems Installed Over Existing Metal Panel Roof Systems
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Performance Retrofit Considerations and Solutions for Existing Multifamily Buildings: Roofs, Walls, and Windows

Sunday

International Codes Updates
Good Codes vs. Durable Roofs – Which Is the Missing Link? Where Is the Sweet Spot?
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Monday

How to Build a Sustainable, High-Performing Workforce: The NRCA ProCertification Program
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Continuous Insulation: Research, Applications, and Resources for Walls, Roofs, and Foundations
In the Dark: A Practical Approach to Keeping Low-Slope Wood Deck Roof Systems Dry
StuccoMetrics: ASTM C1861 – New Paradigms for Stucco Lathing Accessories
Roof Consultants' New Challenge: OSHA's 1910 Walking-Working Surface Standard
Wind Pressures on Low-Slope Roofs: ASCE 7-16 Standard and Fourth Edition of RCIF Monograph
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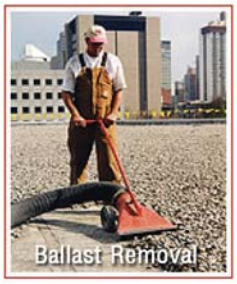

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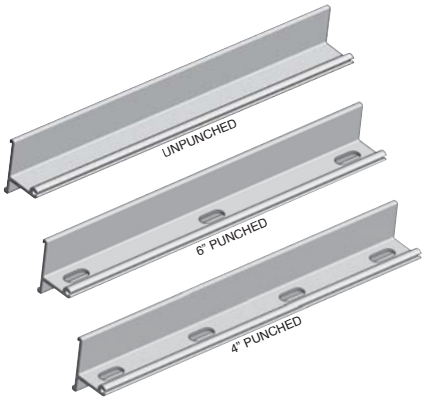

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