

March | April 2018

Vol. 9 | Issue 2

# Roofing

THE INDUSTRY'S VOICE

## Local Gem

Custom Home Showcases Green  
& Sustainable Roof Systems

### → BUSINESS SENSE

Changes to Tax Laws Could Affect  
Your Bottom Line

### → TECH POINT

Studies Prove It Pays to Invest  
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### → DETAILS

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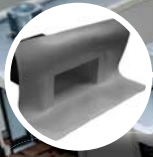
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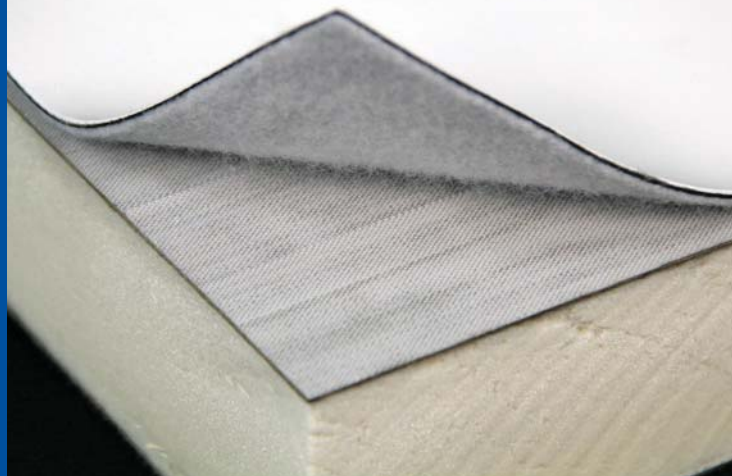
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1. Few elements are as damaging as moisture which is why every effort should be taken to avoid exposure before, during, and after installation. Damage or reduction in performance resulting from more than an incidental amount of moisture is NOT covered by the limited warranty for DensDeck® Roof Boards. Visit [densdeck.com](https://densdeck.com) for additional information on installation guidelines and product warranty.

2. Based on roof boards published manufacturing specifications as of December 1, 2017.

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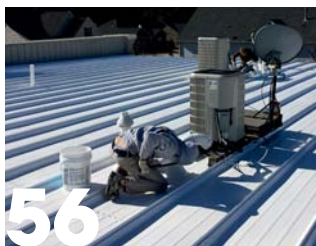
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Green and sustainable roof systems are the focal points of a custom home in a historic section of Durham, North Carolina.

# Roofing

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This custom home on a corner lot in the historic Cleveland-Holloway neighborhood of Durham, North Carolina, features a green roof, solar panels and other sustainable materials supplied and installed by local companies.

Photo: David Solow





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*Roofing* welcomes letters to the editor. Letters must be signed and include a return address/email and telephone number. *Roofing* reserves the right to edit letters for clarity and length. Send letters to [Chris@RoofingMagazine.com](mailto: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](mailto:chris@roofingmagazine.com); post a comment on our website; and/or Facebook and tweet us. This magazine—and your peers—are counting on you!**

# IRE and R&D



**T**he conventional wisdom is that when the overall economy is strong, manufacturers feel more comfortable investing their resources in research and development of new products. I don't have hard numbers to back that assertion up, but in my experience, at least anecdotally, it seems to be borne out. During the Great Recession years of the last decade, the number of new products coming to market seemed to decline. If the array of new products I saw at this year's International Roofing Expo (IRE) in New Orleans is any indication,

we could be in for a banner year.

The IRE makes it easy to keep tabs on new developments with its New Product Pavilion. The depth and breadth of offerings in that area was impressive, but I saw products being unveiled all over the show floor. Time will tell if they will turn out be a flash in the pan, a category-changing development, or something in between – but for the *Roofing* team, it was a very interesting show to cover, as there were a lot of excited responses when we asked, “What's new?”

Innovative products on display included a pre-weathered fastener from Lakeside Construction Fasteners that matches aged Corten panels, so installation and repairs don't leave bright silver dots on the rust-colored surface.

Carlisle showcased its Rapid Lock Technology, which uses a Velcro attachment system to secure the company's EPDM and TPO membranes without using a bonding adhesive, doing away with temperature restrictions.

OMG Roofing Products unveiled its RhinoBond Hand Welder, which can be used to install the company's induction welding fastening system in hard-to-reach areas, such as spaces below signs, pipes and rooftop equipment.

Georgia-Pacific showed off enhancements to DensDeck Prime that make the cover boards more resistant to water and increase their vertical pull strength.

Roof Sentry announced the launch of a solar-powered roof vent that provides moisture detection and data monitoring services. It can also remove moisture from low-slope roof systems.

On the residential side, new developments included GAF's shingles with StainGuard Plus, which uses copper granules with time-release technology to fight algae growth.

Tie Down Engineering offered the Ergo Stripper, an ergonomically designed tool for removing shingles that improves leverage and eases strain on the back.

The Roof Umbrella is rooftop canopy system designed to be installed in less than 30 minutes on jobsites to prevent weather delays. It can be customized with the contractor's logo.

These are just a few of the items that caught our eye at the IRE. We will be showcasing them in this issue and future issues of the magazine as part of our editorial mission to keep readers up to date on new products hitting the market. If you saw a new product you'd like us to be aware of, just email me at [chris@roofingmagazine.com](mailto:chris@roofingmagazine.com). **R**





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# CONTRIBUTORS



**Todd Jones** is the founding partner of Raleigh-based Anderson Jones, PLLC. He is recognized as a Legal Elite attorney who practices general civil litigation with a concentration on all aspects of construction law. In "Business Sense," page 30, he explores recent changes in tax laws and details how they might affect taxpayers.



**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 34, Helbig explains how sales management strategies can backfire.



**Louisa Hart** is the director of communications for the Washington-based EPDM Roofing Association (ERA). In "Tech Point," page 38, she examines how a report on mitigation strategies from the National Institute of Building Sciences demonstrates how investing in resilient buildings pays big dividends.



**Michael Russo** is a consultant to various roofing manufacturers and industry associations. He was the editor of *Roofing/Siding/Insulation Magazine* from 1980 to 2005. Russo has been reporting on the low-slope roofing industry for more than 36 years. In "Details," page 42, he provides an overview the benefits of asphalt-based roofing assemblies.

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## ARMA Honors Top Asphalt Projects With QARC Awards

**THE ASPHALT** Roofing Manufacturers Association (ARMA) recognized a historic music hall, a home with a roof built to withstand high-wind events, and a museum dedicated to the United States' fight for independence as 2017's top asphalt roofing installations. ARMA's annual Quality Asphalt Roofing Case-Study (QARC) Awards Program awarded the projects that exemplify the most beautiful, affordable and reliable asphalt roofing systems in North America.

Imbus Roofing Co. Inc. received the Gold QARC Award for its new roof installation on the 225,000 square-foot, 139-year-old Cincinnati Music Hall. The Kentucky-based contractor installed designer asphalt shingles to replicate the Music Hall's slate tile roof, while also providing crucial durability against Cincinnati's tough climate.

Reliant Roofing Inc. was honored with the Silver QARC Award for its completion of Topsail Residence, a 10,600-square-foot asphalt shingle roofing system designed to endure high-wind events in Ponte Vedra, Florida. This high-performance roofing system not only provided the homeowners with a durable option, but also a visually stunning roof for years to come.

The Bronze QARC Award was given to Thomas Company Inc. of Egg Harbor Township, New Jersey, for its low-slope installation on Philadelphia's Museum of the American Revolution. Designed to achieve LEED Gold certification, the project featured a high-quality modified bitumen roof membrane to prevent water penetration and create a more stable surface for the facility's vegetative roof.

According to ARMA, the 2018 QARC Award program received some of the most impressive and innovative submissions of asphalt roofing installations to date. "This year's submissions demonstrated asphalt's ability to provide a durable and reliable roofing system against harsh weather while simultaneously offering an array of beautiful colors, designs and installation options," said Ralph Vasami, ARMA's acting executive vice president.

The QARC Award recipients are shown below. For more information, visit [www.asphaltroofing.org](http://www.asphaltroofing.org).



### GOLD

**PROJECT NAME:** The Cincinnati Music Hall

**COMPANY:** Imbus Roofing Co. Inc.

**PROJECT DESCRIPTION:** This steep-slope roof was installed with CertainTeed's Grand Manor luxury asphalt shingles in the colors Stonegate Gray and Brownstone, as well as DiamondDeck and WinterGuard underlayments. The size, complexity and steepness of the project presented a great challenge to the contractor, who managed to install a durable asphalt roofing system that was also visually stunning.

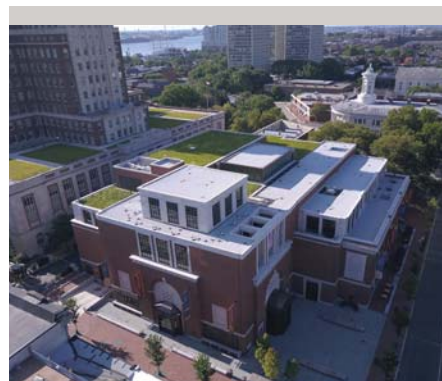


### SILVER

**PROJECT NAME:** Topsail Residence

**COMPANY:** Reliant Roofing Inc.

**PROJECT DESCRIPTION:** GAF Grand Canyon Lifetime Designer Shingles in the color Stone Wood was selected not only for its beauty, but its superior high-wind protection. Hand sealed Timbertex Premium Ridge Cap Shingles and GAF self-adhering Leak Barrier were also installed for added leak prevention.



### BRONZE

**PROJECT NAME:** Museum of the American Revolution

**COMPANY:** The Thomas Company Inc.

**PROJECT DESCRIPTION:** The historic project required a high-quality roofing membrane that offered an aesthetic appeal to the building. Thomas Company chose SOPREMA's SBS Modified Base Ply — ELASTOPHENE Flam with the SBS Modified Bitumen Flashing Base Ply — SOPRALENE Flam 180 to keep the roof water-resistant year-round, protect the roof membrane and enhance the appearance.



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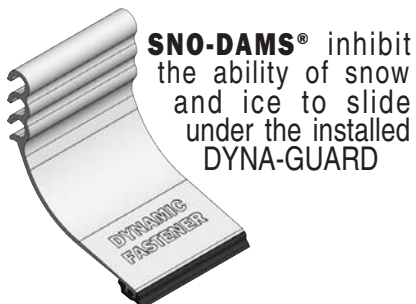
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## NRCA Names New Officers and Directors

**THE NRCA** announced its 2018-19 slate of officers and directors at its 131st Annual Convention, held Feb. 6-8 in New Orleans.

Kent Schwickert, senior vice president, Schwickert's Tecta America of Mankato LLC, Mankato, Minnesota, has been elected NRCA chairman of the board, and Nick Sabino, president of Deer Park Roofing Inc., Cincinnati, was elected chairman of the board-elect. Elected vice chairmen were Monica Cameron, vice president of Diamond Roofing, Dodge City, Kansas; Scott Kawulok, executive project manager, B & M Roofing of Colorado Inc., Frederick, Colorado; Rod Petrick, president of Ridgeworth Roofing Co. Inc., Frankfort, Illinois; and Kelly Van Winkle, vice president of contracts, King of Texas Roofing Co. LP, Grand Prairie, Texas.

Additionally, the following were elected NRCA directors:

- Randy Adams, chairman/CEO of R. Adams Roofing Inc., Indianapolis
- Troy Baker, vice president of sales and marketing at SRS Distribution Inc., McKinney, Texas
- Tim Blue, president of Blue's Roofing Co., Milpitas, California
- Dick Bus, president of ATAS International Inc., Allentown, Pennsylvania
- Mark DeFreitas, vice president and national sales manager at SOPREMA Inc., Wadsworth, Ohio
- Helen Hardy Pierce, vice president of technical services, codes and industry relations at GAF, Parsippany, New Jersey
- Steve Harvey, president of J & S Building Exteriors Inc., Attleboro, Massachusetts
- Gary Howes, COO of The Durable Slate Co., Columbus, Ohio
- Michael Johannes, president of Nations Roof East LLC, Yonkers, New York
- Jason Lewinski, contractor network leader at Owens Corning Inc., Toledo, Ohio
- Mark MacDonald, sales/marketing manager at Sherwin-Williams Coil Coating, Cleveland
- Sherri Miles, vice president of J.D. Miles & Sons Inc., Chesapeake, Virginia
- Monica Murphy, director of operations at Ray Nolan Roofing Co., Louisville, Kentucky
- Brian Schaut, senior vice president at F.J.A. Christiansen Roofing Co. Inc., a Tecta America company, Milwaukee
- Stephen Teal, manager at Flynn Group of Companies, Rockyville, Alberta, Canada
- Kyle Thomas, owner/vice president of Thomas Roofing Co. Inc., Mobile, Alabama
- David Tilsen, president of Tilsen Roofing Co. Inc., Madison, Wisconsin
- Elizabeth Walters, marketing manager at Derbigum Americas Inc, Kansas City, Missouri

All 2018-19 officers and directors will assume their roles June 1, 2018.

## NRCA Releases 2018 Manual Volume and Boxed Set

The NRCA now offers *The NRCA Roofing Manual: Architectural Metal Flashing and Condensation and Air Leakage Control – 2018*. The 2018 volume and boxed set can be purchased in hardbound versions or downloaded for free in electronic format to NRCA members at [www.shop.nrca.net](http://www.shop.nrca.net).



Bruce McCrory (left) presents the 2018 J.A. Piper Award to Robert McNamara.

### Robert McNamara Receives the 2018 J.A. Piper Award

**Robert McNamara, president of F.J.A. Christiansen Roofing Co. Inc.,** a Tecta America company, is the 71st recipient of the NRCA's annual J.A. Piper Award. The award was presented at the association's 131st Annual Convention. The J.A. Piper award is the industry's most prestigious honor, recognizing roofing professionals who have devoted constant outstanding service to NRCA and the roofing industry.

McNamara served as NRCA president in 2009-10 and most recently served as the chairman of the association's Long-term Investment Committee in 2016-17. Prior serving as NRCA president, McNamara served as NRCA senior vice president from 2009-10; vice chairman from 2006-08; and director from 1996-99, 2002-06 and 2009-10.

"As NRCA president he successfully guided NRCA through the apex of the great recession, while setting an example of optimism during that difficult time," said fellow former NRCA President and 2017 J.A. Piper Award Bruce McCrory, operations/business development manager at Nations Roof, Gulf Coast LLC.





# Snap Decision

"Snap-Clad is a popular panel that we like to use because of the wind rating and the aesthetics of it and because it doesn't require mechanical seaming."

-Phillip Jorgenson, Project Manager, Ameritech Roofing



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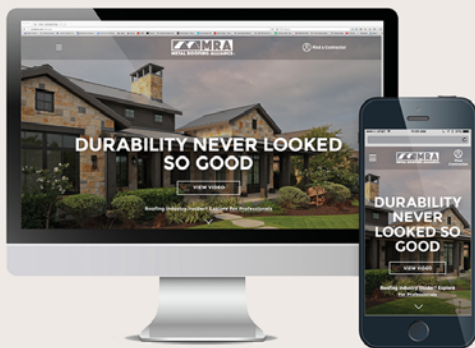
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## New MRA Website Helps Contractors Capitalize on Metal Market

The **Metal Roofing Alliance (MRA)** has launched a revamped website, [www.metalroofing.com](http://www.metalroofing.com), that offers member contractors real-time quality lead retrieval, sophisticated marketing benefits and greater membership opportunities all in a mobile-friendly, streamlined and easy-to-use platform. MRA's new site gives members the ability to showcase their company with detailed profile information, a customizable project portfolio and contact resources. A new, simplified reporting system allows members to find, filter and access leads from anywhere, while a built-in system tracks project status, details and notes about prospective customers.

## Ventco Makes New Technical Catalog Available Online

**Ventco Inc.** has published its 2018 Technical Catalog and made it available for download on a revamped website. The 54-page catalog, which can be downloaded and printed, also includes information on Hip&RidgeVent, Contractors' Choice, The RidgeVent and Mongoose ridge vent for asphalt, slate and cedar shingle roofs. The catalog features testing information and proper installation instructions for all Ventco products. The new Technical Catalog and other Ventco brochures can be downloaded at [www.profilevent.com](http://www.profilevent.com).



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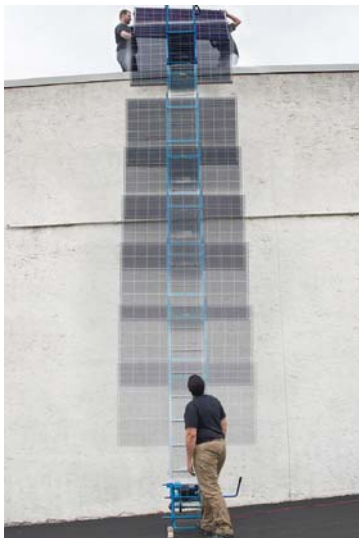
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# EVENTS

## MARCH 2018

19

### NRCA'S FOR FOREMEN CLASS LEVEL 1

*Rosemont, Illinois*

National Roofing Contractors Association

[www.NRCA.net](http://www.NRCA.net)

20

### ROOFING INDUSTRY FALL PROTECTION FROM A TO Z

*Rosemont, Illinois*

National Roofing Contractors Association

[www.NRCA.net](http://www.NRCA.net)

21-23

### RICOWI SPRING SEMINAR

*Houston*

Roofing Industry Committee on Weather  
Issues Inc.

[www.RICOWI.com](http://www.RICOWI.com)

22-27

### RCI INTERNATIONAL CONVENTION & TRADE SHOW

*Houston*

RCI Inc.

[www.RCI-online.org](http://www.RCI-online.org)

28-29

### NERCA 2018 CONVENTION

*Boston*

North/East Roofing Contractors  
Association

[www.NERCA.org](http://www.NERCA.org)

## APRIL

5

### CERTA TRAIN-THE-TRAINER AUTHORIZATION

*Rosemont, Illinois*

National Roofing Contractors Association  
[www.NRCA.net](http://www.NRCA.net)

8-9

### EXECUTIVE MANAGEMENT INSTITUTE (EMI)

*Chicago*

National Roofing Contractors Association  
[www.NRCA.net](http://www.NRCA.net)

23-25

### THE 2018 ASC ANNUAL SPRING CONVENTION & EXPO

*Miami*

The Adhesive and Sealant Council

[www.AScouncil.org](http://www.AScouncil.org)

25-26

### NRCA PROCERTIFICATION QUALIFIED TRAINER COURSE

*Joliet, Illinois*

National Roofing Contractors Association

[www.NRCA.net](http://www.NRCA.net)

29-May 2

### NCCA ANNUAL MEETING

*San Antonio, Texas*

National Coil Coating Association

[www.CoilCoating.org](http://www.CoilCoating.org)

## MAY

9-10

### INTERNATIONAL REFLECTIVE INSULATION MANUFACTURERS (I-RIM) CONFERENCE

*Puntarenas, Costa Rica*

International Reflective Insulation  
Manufacturers

[www.RIMInternational.org](http://www.RIMInternational.org)

16-17

### NRCA PROCERTIFICATION QUALIFIED TRAINER COURSE

*Winter Park, Florida*

National Roofing Contractors Association

[www.NRCA.net](http://www.NRCA.net)

28-30

### CHINA INTERNATIONAL ROOFING & WATERPROOFING EXPO 2018

*Shanghai, China*

China National Building Waterproof  
Association

[www.Chinaroofexpo.cn](http://www.Chinaroofexpo.cn)

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# MATERIALS & GADGETS



## Pre-Weathered Fastener Matches Corten Panels

↑ **Lakeside Construction Fasteners** offers the new high-strength COR-10 WOOD-X fastener, which is engineered to secure Corten metal panels into hardwood decking substrates. It is pre-weathered for an exact Corten metal panel color match, eliminating the need to wait for fasteners to be painted or weathered to match. The fastener is available in sizes from 1 inch to 3 inches, and it features an EPDM washer to ensure a sealed protective barrier. According to the manufacturer, its high-low threads and sharp T-17 cut point allows the fastener to quickly penetrate the Corten metal panel for low-cost installation.

[www.Lakeside-Fasteners.com](http://www.Lakeside-Fasteners.com) | Circle No. 16



## Portable RhinoBond Hand Welder Designed for Use in Tight Spaces

↑ **OMG Roofing Products** introduces the RhinoBond Hand Welder. Based on patented Sinch Technology, the portable RhinoBond Hand Welder is designed to help roofers weld RhinoBond Plates in tight spaces, such as under raised rooftop equipment, and on vertical surfaces. The ergonomically designed tool features a vibrating handle and an indicator light that lets roofers know when the tool is activated and when the weld cycle is complete. The base is recessed and features centering indicator lines to help users properly align the tool over installed RhinoBond Plates for optimum bonding and improved productivity.

[www.OMGRoofing.com](http://www.OMGRoofing.com) | Circle No. 18



## Asphalt Shingles Offer Algae Resistance Warranty

↑ **PABCO Roofing Products** announces its new premium asphalt shingles featuring Algae Defender with an algae resistance warranty. Shingles and accessories featuring Algae Defender prevent black streaks caused by algae from forming on the roof. According to the company, when moisture contacts the Algae Defender-protected roof in the form of dew or rain, copper ions are gradually released over time to provide reliable protection from black streaks caused by blue-green algae. PABCO shingles with Algae Defender are available in most markets where PABCO is sold.

[www.PABCOroofing.com](http://www.PABCOroofing.com) | Circle No. 17



## Roof Board Offers Enhanced Water Resistance

➔ **Georgia-Pacific Gypsum** unveils DensDeck Prime Roof Board with EONIC Technology, which offers enhanced water resistance and increased vertical pull strength. According to the manufacturer, DensDeck Prime Roof Boards with EONIC Technology have manufacturing specifications that include a surface water absorption rate of 1 gram, and a total water absorption rate of 5 percent. According to the company, in independent testing of total water absorption, alternative coated glass mat gypsum roof boards absorbed 76 percent more water more water than 1/2-inch DensDeck Prime Roof Boards with EONIC Technology, while 1/2-inch gypsum fiber boards absorbed 132 percent more.

[www.DensDeck.com](http://www.DensDeck.com) | Circle No. 19





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**Traditional Remove & Reroof**

March	April	May	June	July	August

**Silicone Roof Coating Restoration**

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday

# MATERIALS & GADGETS



## 3-D Modeling Tool Aids in Solar Design Projects

↑ **Aurora Solar Inc.**, a solar design software company, offers SmartRoof, a tool that allows anyone to accurately and easily model residential and commercial sites for solar projects. According to the company, SmartRoof intelligently infers the internal structure of a roof after a few clicks, reducing solar design time and difficulty. According to the company, SmartRoof requires just an outline of the perimeter of the roof to automatically infer its internal structure. It allows solar designers to drag and drop dormers into the model. The remote site modeling tool enables designers to intersect multiple roof structures, making modeling of complex roof structures significantly easier.

[www.AuroraSolar.com](http://www.AuroraSolar.com) | Circle No. 21



## High-Visibility Primer Improves Adhesion for Acrylic Coatings

↑ **KM Coatings** offers KM SP 1000, a VOC-compliant, solvent-based primer designed to improve the adhesion of acrylic coatings to most aged TPO and PVC membranes. According to the manufacturer, using this primer with a KM-approved acrylic coating provides excellent coverage and long-term protection. Its orange color enables strong identification for the applicator to achieve complete monolithic surface application.

[www.KMcoatings.us](http://www.KMcoatings.us) | Circle No. 23

## Perforated Starter Shingle Designed to Save Time, Reduce Waste



➔ **TAMKO Building Products** introduces the Perforated Starter shingle to its roofing product line. Made from fiberglass mat coated with asphalt and surfaced with ceramic granules, the Perforated Starter course shingle is the answer to roofing contractors need for an easy to install starter strip prior to shingle application. The perforation ensures that contractors no longer lose time field cutting shingles to the appropriate size while reducing related waste. The product can be used with TAMKO's full line of asphalt shingles, including the Heritage series laminated asphalt shingles and Elite Glass-Seal 3-Tab shingles.

[www.TAMKO.com](http://www.TAMKO.com) | Circle No. 22



## High-Performance Adhesive/Sealant Anchors Rooftop Supports

↑ **Green Link** offers a new adhesive/sealant designed for use with the company's KnuckleHead Rooftop Support System. The product bonds and seals the KnuckleHead Universal Base and is effective on a wide range of roof surfaces. The new adhesive/sealant has been specially formulated to adhere to PVC, EPDM, TPO, and modified bitumen, as well as the KnuckleHead base itself, which is composed of glass-reinforced nylon. According to the company, it will not discolor from UV exposure, can be applied at temperatures as low as 32 degrees, and is capable of joint movement in excess of 35 percent.

[www.Greenlinkengineering.com](http://www.Greenlinkengineering.com) | Circle No. 24





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CIRCLE NO. 25 / RoofingMagazine.com



## Solar Mounting Platform Designed for Exposed Fastener Panels



➔ **S-5!** introduces the SolarFoot, a mounting platform designed for exposed fastener metal roofing. With four points of attachment, it provides an ideal mounting platform to attach the L-Foot of a rail-mounted solar system or other ancillaries to the roof. According to the manufacturer, the SolarFoot ensures a durable, weathertight solution for the life of the solar system and the roof. Each piece contains two reservoirs of a factory-applied butyl co-polymeric sealant, allowing a water-tested seal. Simply peel the release paper from the butyl sealant and fasten through the predrilled holes in the base of the SolarFoot.

[www.S-5.com](http://www.S-5.com) | Circle No. 26



## Composite Shake Shingles Offered in New Colors

⬆ **DaVinci Roofscapes** launches the Nature Crafted Collection of composite shake shingles, which includes three realistic, nature-inspired colors: Aged Cedar, Mossy Cedar and Black Oak. According to the manufacturer, each new color reflects different progressive aging processes found on real shake shingles. Each tile has been crafted to resist fire and impact, along with high winds, mold, algae, fungus and insects. The Nature Crafted Collection is available on all DaVinci Multi-Width and Single-Width Shake composite roofing tiles.

[www.DaVinciRoofscapes.com](http://www.DaVinciRoofscapes.com) | Circle No. 27



## Railing System Provides Temporary Fall Protection

⬆ **Alupro** announces the immediate availability of the Parapet Bridge for the temporary fall protection AluFix EVO. In 2015, the company introduced the temporary fall protection railing system AluFix EVO for highly secure roof work. The new Parapet Bridge serves as an additional, outer safety railing, with which the temporary fall protection AluFix EVO can be extended quickly, easily and tool-free. According to the manufacturer, the Parapet Bridge creates additional freedom of movement because it increases the available working space beyond the parapet. It consists of a sturdy, high-quality aluminum construction.

[www.Alupro.com](http://www.Alupro.com) | Circle No. 28

## Multi-Purpose Joint Sealant Adheres to Damp Surfaces

➔ **Kemper System America Inc.** offers GreatSeal PE-150, a single-component joint sealant designed for long-lasting weathertight seals. According to the manufacturer, it is ideal for sealing joints in roofing, walls and masonry, as well as gaps around penetrations, flashings, windows and doors.

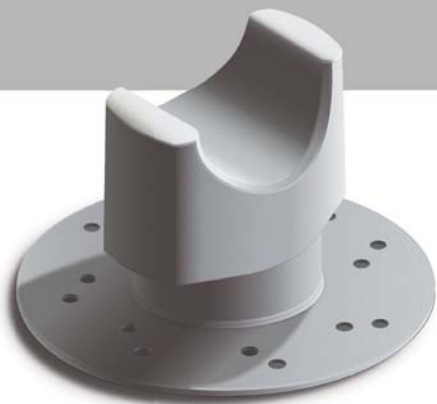
According to the company, the product adheres even on damp surfaces, can be applied in cold weather, and in most cases, without a primer. It bonds aggressively to most building materials, including wood, vinyl, glass, fiberglass, foam insulation, asphalt, modified bitumen, EPDM, PVC, PIB rubber, and Kynar coatings, as well as painted, galvanized and anodized metals.

[www.Kempersystem.net](http://www.Kempersystem.net) | Circle No. 29





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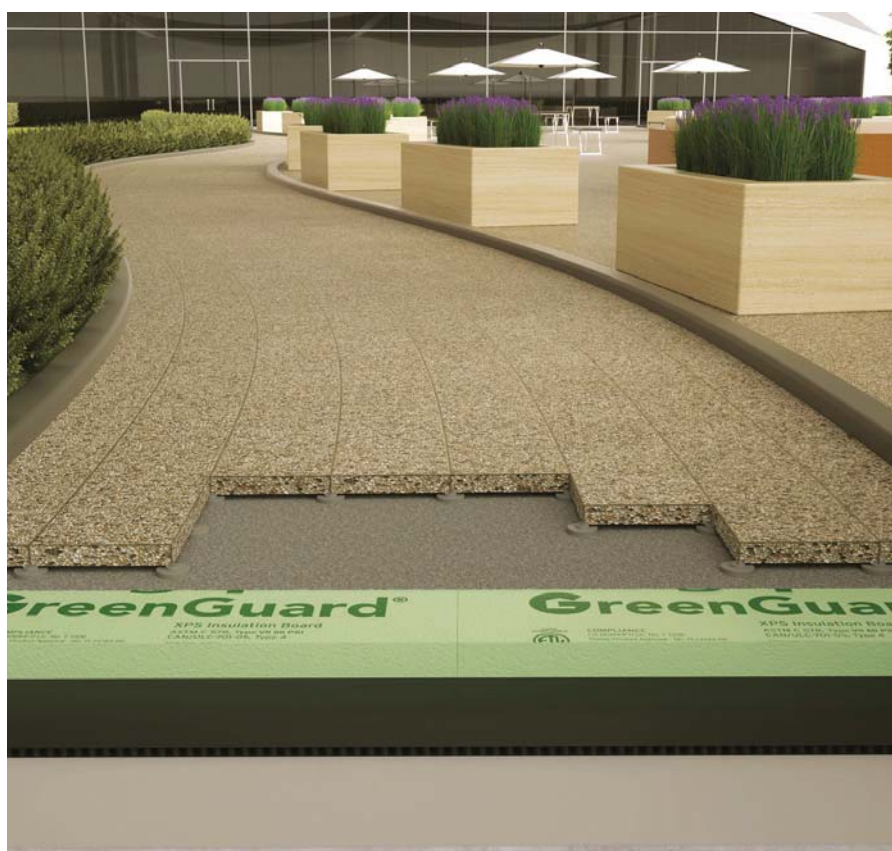
CIRCLE NO. 30 / [RoofingMagazine.com](http://RoofingMagazine.com)

## New Commercial Insulation Board Designed for High Load-Bearing Applications

**K**ingspan Insulation has expanded its commercial product offering by introducing GreenGuard Type VII XPS Insulation Board. The product is designed for high load-bearing engineered applications requiring insulation with a minimum compressive strength of 60 psi. According to the manufacturer, Type VII XPS is primarily used in commercial roofing applications, such as protected membrane and pedestal paver systems.

According to the manufacturer, the insulation board offers an R-value of 5.0 per inch of thickness and meets ASTM C578 Type VII requirements. The product retains its insulating properties over time, has high water resistance and is HCFC-free. In addition to commercial roofing applications, it also is suitable for low-temperature freezer floors, cold-storage facility floors, ice rinks and parking decks.

"Kingspan continues to be committed to our customers and expanding our product offerings to the North American market," said Ryan Sullivan, managing director, Kingspan Insulation North America. "Our recent investment into a new, state-of-the-art XPS insulation manufacturing line is allowing us to increase capacity and expand our GreenGuard XPS product portfolio to include insulation board with higher compressive strengths." **R**



**"Our recent investment into a new, state-of-the-art XPS insulation manufacturing line is allowing us to increase capacity and expand our GreenGuard XPS product portfolio to include insulation board with higher compressive strengths."**



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 November/December 2017 issue.

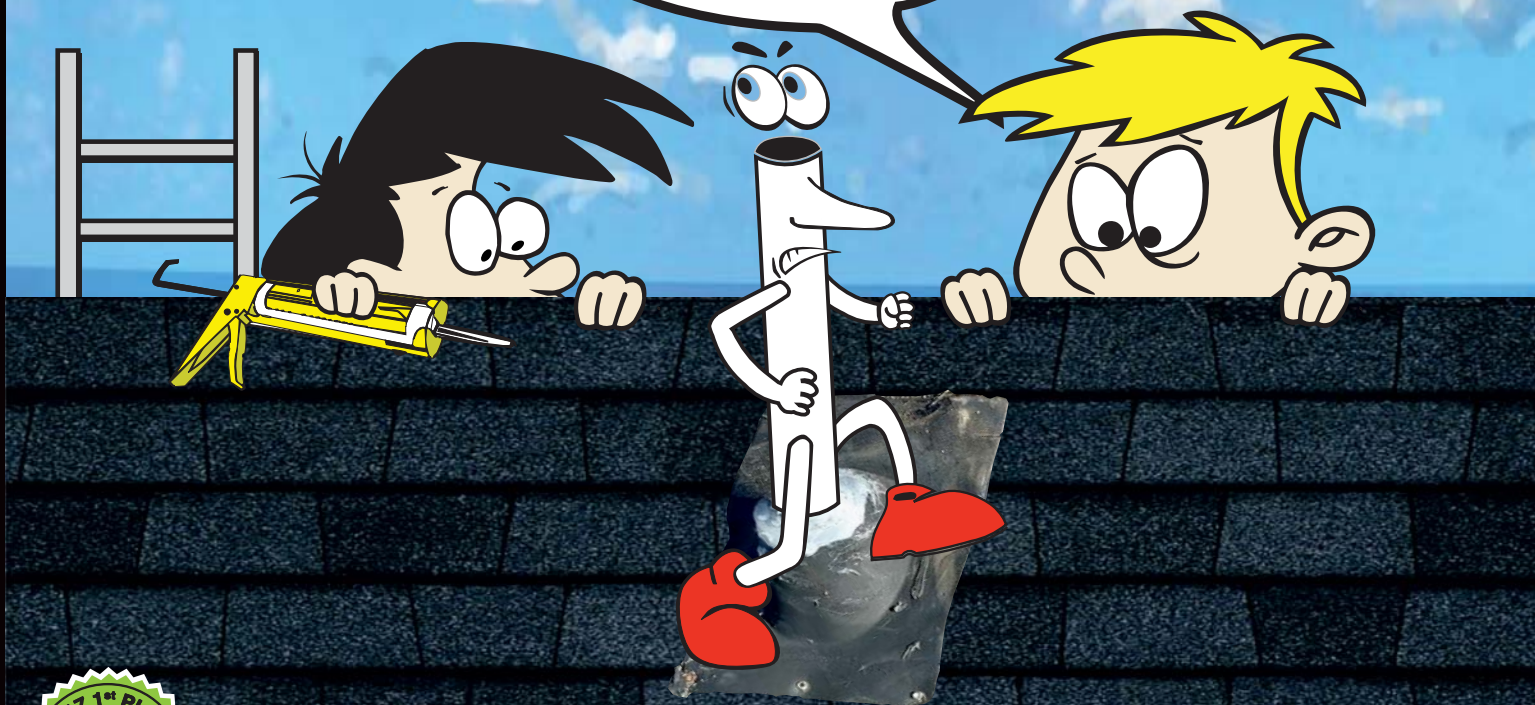
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# Be Aware of the New Tax Laws

## Recent Changes in Tax Legislation Could Save You or Cost You Beginning in 2018

**T**he recently enacted *Tax Cuts and Jobs Act (TCJA)* is a sweeping tax package. Everyone in business – including roofers – should have at least a passing knowledge of what to expect beginning in tax year 2018. Most of the changes are effective for tax years beginning in 2018 and lasting through 2025.

### **TAX RATES — PERSONAL AND CORPORATE.**

The new law imposes a new tax rate structure with seven tax brackets: 10 percent, 12 percent, 22 percent, 24 percent, 32 percent, 35 percent, and 37 percent. The top rate was reduced from

39.6 percent to 37 percent and applies to taxable income above \$500,000 for single taxpayers and \$600,000 for married couples filing jointly.

The corporate income tax rate used to be graduated with a maximum cap at 35 percent. It was reduced to a flat

21 percent. The corporate tax rate reduction puts the United States in line with most of the rest of other developed nations. The reduction is designed to increase spending, increase jobs, increase employee salaries, foster corporate improvements, and continue to incentivize the overall economy.

### **STANDARD DEDUCTION.**

The new law increases the standard deduction to \$24,000 for joint filers, \$18,000 for heads of household, and \$12,000 for singles and married taxpayers filing separately. Given these increases, many taxpayers will no longer be itemizing deductions. These figures



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## The corporate tax rate reduction puts the United States in line with most of the rest of other developed nations. The reduction is designed to increase spending, increase jobs, increase employee salaries, foster corporate improvements, and continue to incentivize the overall economy.

will be indexed for inflation after 2018.

### EXEMPTIONS.

The new law suspends the deduction for personal exemptions. Thus, starting in 2018, taxpayers can no longer claim personal or dependency exemptions. The rules for withholding income tax on wages will be adjusted to reflect this change, but IRS was given the discretion to leave the withholding unchanged for 2018.

### NEW DEDUCTION FOR "QUALIFIED BUSINESS INCOME."

Starting in 2018, taxpayers are allowed a deduction equal to 20 percent of "qualified business income," otherwise known as "pass-through" income, i.e., income from partnerships, S corporations, LLCs, and sole proprietorships. The income must be from a trade or business within the United States. Investment income does not qualify, nor do amounts received from an S corporation as reasonable compensation or from a partnership as a guaranteed payment for "services" provided to the trade or business. In other words, lawyers are out of luck! The deduction is not used in computing adjusted gross income, just taxable income. For taxpayers with taxable income above \$157,500 (\$315,000 for joint filers), (1) a limitation based on W-2 wages paid by the business and depreciable tangible property used in the business is phased in; and (2) income from the following trades or businesses is phased out of qualified business income: health, law, consulting, athletics, financial or brokerage services, or where the principal asset is the reputation or skill of one or more employees or owners.

### CHILD AND FAMILY TAX CREDIT.

The new law increases the credit for qualifying children (i.e., children under 17) to \$2,000 from \$1,000, and increases to \$1,400 the refundable portion of the credit. It also introduces a new (non-refundable) \$500 credit for a taxpayer's dependents who are not qualifying children. The adjusted gross income level at which the credits begin to be phased out has been increased to \$200,000 or \$400,000 for joint filers.

### STATE AND LOCAL PROPERTY TAXES.

The itemized deduction for state and local income and property taxes is limited to a total of \$10,000.00 starting in 2018.

### MORTGAGE INTEREST.

Under the new law, mortgage interest on loans used to acquire a principal residence and a second home is only deductible on debt up to \$750,000, starting with loans taken out in 2018. This sum is down from \$1 million. There is no longer any deduction for interest on home equity loans, regardless of when the debt was incurred.

### MISCELLANEOUS ITEMIZED DEDUCTIONS.

There is no longer a deduction for miscellaneous itemized deductions which were formerly deductible to the extent they exceeded 2 percent of adjusted gross income. This category included items such as tax preparation costs, investment expenses, union dues, and unreimbursed employee expenses.

### MEDICAL EXPENSES.

Under the new law, for 2017 and

2018, medical expenses are deductible to the extent they exceed 7.5 percent of adjusted gross income for all taxpayers. Previously, the adjusted gross income floor was 10 percent for most taxpayers.

### CASUALTY AND THEFT LOSSES.

The itemized deduction for casualty and theft losses has been suspended except for losses incurred in a federally declared disaster.

### OVERALL LIMITATION ON ITEMIZED DEDUCTIONS.

The new law suspends the overall limitation on itemized deductions that formerly applied to taxpayers whose adjusted gross income exceeded specified thresholds.

### MOVING EXPENSES.

The deduction for job-related moving expenses has been eliminated, except for certain military personnel. The exclusion for moving expense reimbursements has also been suspended.

### HEALTH CARE "INDIVIDUAL MANDATE."

Starting in 2019, there is no longer a penalty for individuals who fail to obtain minimum essential health coverage.

### ESTATE AND GIFT TAX EXEMPTION.

Effective for decedents dying, and gifts made, in 2018, the estate and gift tax exemption has been increased to roughly \$11.2 million (\$22.4 million for married couples).

A lot of the details of the simple descriptions listed above remain to be completely formalized, and some of it may still change. Stay aware of the tax revisions and consult with an attorney in your locale if you have any questions. **R**

### → AUTHOR'S NOTE

This article is not intended to give, and should not be relied upon for, legal advice. No action should be taken in reliance upon the information contained in this article without obtaining the advice of an attorney.

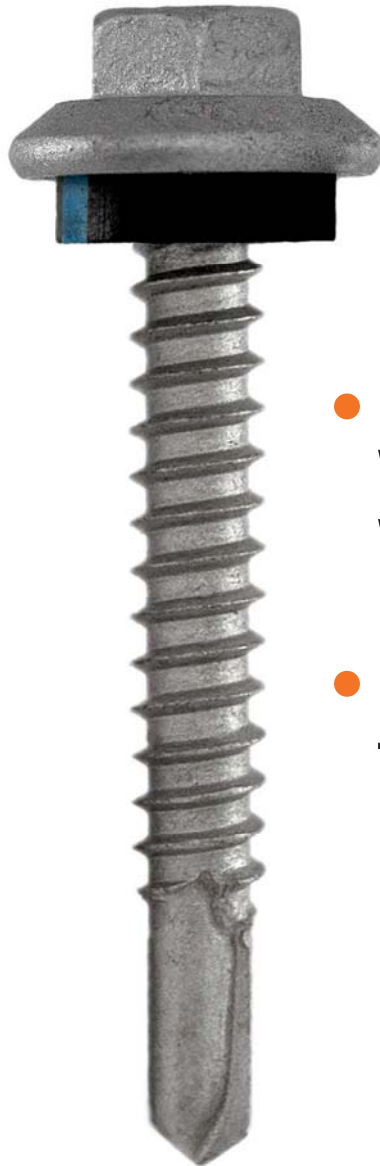




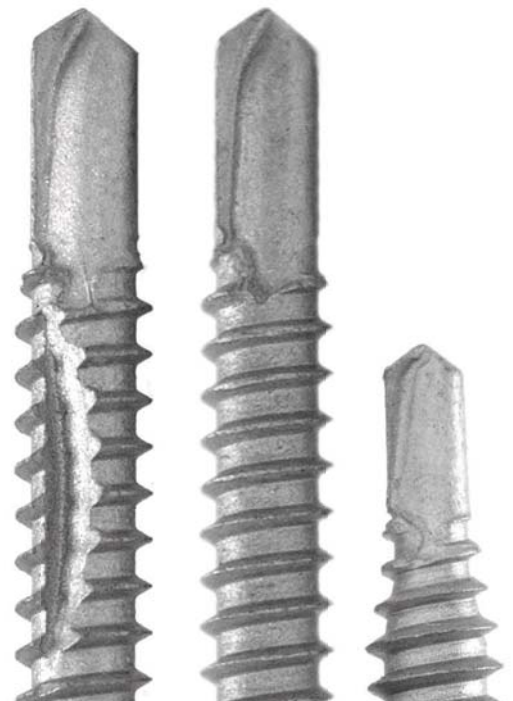
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CIRCLE NO. 34 / RoofingMagazine.com



# How Sales Management Can Hurt Sales

**T**here's a sales management philosophy in too many companies that is actually working against sales growth. And the salespeople know it. The philosophy goes like this:

- Walk in 40 doors a day.
- Make 40 calls a day.
- Hand your business card to everyone.
- Gather as many business cards as you can.
- Sell, sell, sell.

While this is a lot of activity and can look good on a sales report, it isn't usually productive. And it shifts the goal from getting business to participating in a specific behavior.

This usually happens because the owner or sales manager found great success using these methods. That's great for them! But it doesn't mean everyone is going to be successful doing it that way.

In addition, today's business environment doesn't really offer a welcoming landscape for this kind of behavior. The consumers are very well educated and are really looking for someone they trust. The salesperson is better off working on relationship building rather than tallying the number of doors knocked.

Many companies with this philosophy have a lot of turnover in the sales department. And do you know why? Because people join the company with the best of intentions and in many cases a great method for gaining sales. When they discover that they can't implement their method, but rather have to engage in behavior that doesn't work for them, they don't hit their sales goals. So, they leave – either voluntarily or by request.

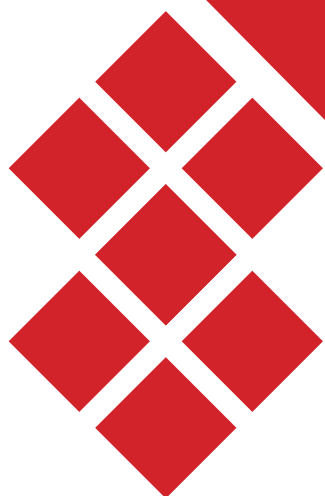
Either way, it's not good for the company. The cost alone of bringing on a new employee is significant. Think about it. You've got to run ads, sift through resumes, interview, hire, onboard, train, and then exit. Go ahead and put dollar values on each of those items, then add them up. Now include the lack of sales into the cost. All the business you didn't do! It's an expensive proposition.

### **BUILDING CONFIDENCE**

Another key concern is the image that develops of the company in the community. Think about things from the prospect or client's point of view. If, every time they turn around there's a new salesperson introducing themselves, you're telegraphing instability within your company. Is that really the message you are trying to send? Customers want confidence that the salesperson they've grown to trust will be there for



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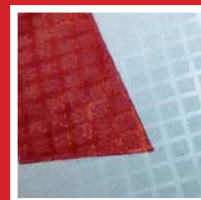
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more than a hot minute. If they keep seeing new salespeople, their trust goes down. That's never good.

So, I ask you, which is more important?

1. Engaging in a specific activity
2. Gaining new clients

I'd say No. 2. And if that really is more important, then it doesn't matter how it is done — as long as it is moral, legal, and ethical.

Sales managers would be better off sharing the vision and the goals of the company with their sales staff while leaving the sales strategy to each salesperson. Empower the sales team to develop their own process and then monitor their results. Give them the resources they need to be successful. Be there for them when they need advice, or training. And communicate with them on a regular basis about their

**Whenever we tell someone how to do something, we're really saying that we don't trust them to do it right. There's a confidence killer!**

results. As long as the results are there, the process shouldn't matter.

Think about why you hire someone. Is it because you believe they have the skills and personality necessary to succeed at sales? Probably. And if so, don't you owe it to them to trust them to do the job? Whenever we tell someone how to do something, we're really saying that we don't trust them to do it right. There's a confidence killer!

It's like hiring someone for their great attitude and then squashing that attitude. Makes no sense. Respecting the sales staff means talking with them, not at them. It means listening to what they have to say, respecting their ability, and expecting them to deliver. Period. The best way to disrespect the sales staff is to tell them to do things your way. Then you are telling them that you don't trust them to do it right, or well, or successfully. Believe me when I tell you, you won't get what you are wanting if you engage in this sort of "management." Instead, lead your team. Help them be the best they can be.

After all, sales is about relationships, not dialing for dollars. Let your salespeople network and develop relationships with referral partners, prospects, and clients. Their time will be better spent, the results will be there, and everyone will be happier. If one of the salespeople decides to make 40 calls a day, great! That is their preferred method. It should be more important to make sure your salespeople have a strategy that makes sense to them than to have a strategy that only makes sense to the sales manager. **R**

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# It Pays to Invest in Resilient Roofing

## Updated NIBS Study Proves Mitigation Is a Sound Investment

**M**ore than a decade ago, the National Institute of Building Sciences (NIBS), a non-profit mandated by Congress to improve building process and facility performance, issued a landmark report which changed the conversation about the value of resilience. The 2005 report, *Natural Hazard Mitigation Saves*, was authored by NIBS' Multihazard Mitigation Council (MMC), which promotes collaboration to achieve resilience objectives among a broad spectrum of stakeholders. Working from data provided by the Federal Emergency Management Agency (FEMA), the report found that every \$1 of natural hazard mitigation funded by the FEMA between 1993 and 2003 saved the American people an average of \$4 in future

losses. That one to four ratio of investment to returns was widely quoted at the time that the report was published, and has been cited repeatedly during the past decade as interest in resilience grown. This report was among the first to demonstrate that investment in mitigation could deliver significant returns.

During the intervening years, as the frequency and severity of natural disasters has intensified, MMC leadership recognized the need to update and expand the 2005 study. Philip Schneider, AIA, Director of the MMC, explains that the "disaster landscape" has changed since 2005, necessitating a new report. "Our hazard maps, particularly, for earthquake and wind, have had several updates based on more research and better data. Our codes and standards are much improved for creating disaster resistance than they were over ten years ago. Our exposure to disasters,

especially, building in disaster-prone areas, has increased substantially. We also have better methods for determining vulnerability to disasters than we had then, and more sophisticated economic analysis tools." In fact, as part of the changed "disaster landscape" that Schneider references, 2017 set unwelcome records related to climate and weather events. According to a report released by the National Oceanic and Atmospheric Administration (NOAA) in early January, the U.S. experienced 16 separate billion-dollar disaster events, matching 2011 for the record number of billion-dollar disasters for an entire calendar year. Together, these events cost the country more than \$300 billion dollars, a new annual record for the United States. While this data was released after the publication of the MMC report, it underscores the urgent need to lessen the financial impact of



these increasingly frequent disasters.

After a year-long effort, the MMC released its updated report in January of this year. Natural Hazard Mitigation Saves: 2017 Interim Report examined two specific mitigation strategies and found that mitigation is of even greater value now than it was when the first report was released. First, based on updated data on the impact of FEMA grants, the report stated that society now saves \$6 for every \$1 spent on mitigation. Looking at a second mitigation strategy, the report found a corresponding “benefit-cost” ratio of four to one for spending that exceeded select provisions of the 2015 International Code Council building codes. In summarizing its findings for both strategies, the MMC stated that, “Mitigation represents a sound financial investment.” (For the purposes of this study mitigation and resilience have similar meanings. Schneider says, “For both terms there is no one universal definition; they both are broadly defined with considerable overlap. However, resilience tends to be more community-based, taking into account a wider range of infrastructure, economic, environmental and social issues. Mitigation tends to be more building centric, but still can pertain to a subset or even the same set of wider range issues.”)

The report points out that while mitigation strategies deliver financial rewards, they would also provide other significant benefits. Implementing the two sets of mitigation strategies detailed in the report “would prevent 600 deaths, 1 million nonfatal injuries

and 4,000 new cases of post-traumatic stress disorder in the long term.” Additionally, the report projects that designing new buildings to exceed the model ICC building codes would help fuel economic growth, “resulting in 87,000 new, long-term jobs, and an approximate 1 percent increase in utilization of domestically produced construction material.”

## NATURAL DISASTERS

The report specifically looked at four potentially cataclysmic natural forces: hurricane winds, earthquakes, riverine floods and hurricane surges. Then they looked at five stakeholder groups that would bear the costs and enjoy the benefits of mitigation for the four natural hazards under consideration. These stakeholder groups are:

- 1. DEVELOPERS:** corporations that invest in and build new buildings, and usually sell those buildings once they are completed, owning them only for months or a few years
- 2. TITLE HOLDERS:** people or corporations who own existing buildings, generally buying them from developers or prior owners
- 3. LENDERS:** people or corporations that lend a title holder the money to buy a building
- 4. TENANTS:** people or corporations who occupy the building, whether they own it or not






**5. COMMUNITY:** people, corporations, local government, emergency service providers, and everyone else associated with the building or who does business with the tenant

The study reports that when the cost each group bears to mitigate a loss is subtracted from the positive benefits it enjoys, the “net benefit” is positive in each category. In other words, the value of investing in mitigation is spread broadly across the construction business and the people it serves.

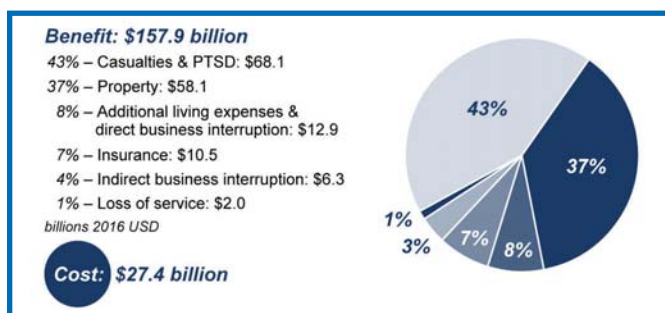
The authors of the report are careful to point out that the cited benefit-cost ratios, or BCRs, are generated from two very specific mitigation strategies: those used by FEMA, and those incorporating designs that exceed provisions of ICC codes. Noting that the results from the 2005 study represented only a single, very narrow set of strategies but were incorrectly used to justify “all types of mitigation strategies,” the authors of the study specifically say that they did not provide an aggregate number in the updated study, but elected to provide BCRs for the two strategies individually. Moving forward, providing an aggregate number is definitely one of their goals: “Once the project team has identified BCRs for a sufficient number of mitigation strategies, it will provide an aggregated number representing the overall benefit of mitigation.” To help achieve that goal, multiple studies are being conducted by the MCC to examine the value of many kinds of natural hazard mitigation at the national level, and more studies are being planned, pending the acquisition of funding.

## FOCUSING ON THE ROOF

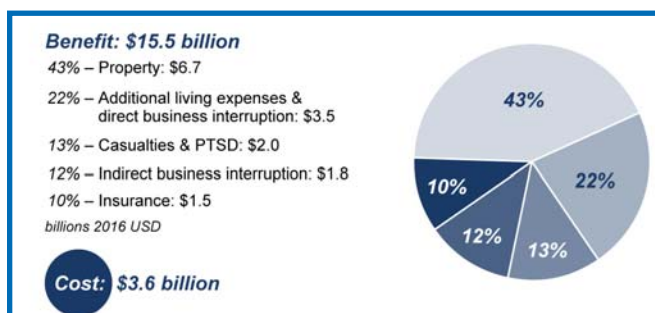
What do the results of this study mean for those who focus on the integrity of a roofing system to help create a resilient structure? Schneider underscores the importance of a resilient roof as

National Benefit-Cost Ratio Per Peril <small>*BCR numbers in this study have been rounded</small>		Federally Funded	Beyond Code Requirements
Overall Hazard Benefit-Cost Ratio		6:1	4:1
 <b>Riverine Flood</b>		7:1	5:1
 <b>Hurricane Surge</b>		Too few grants	7:1
 <b>Wind</b>		5:1	5:1
 <b>Earthquake</b>		3:1	4:1
 <b>Wildland-Urban Interface Fire</b>		3:1	4:1

**TABLE 1.** Benefit-cost ratio by hazard and mitigation measure. Courtesy of the National Institute of Building Sciences.



**FIGURE 1.** Total costs and benefits of 23 years of federal mitigation grants.



**FIGURE 2.** Total costs and benefits of new design to exceed 2015 I-Code requirements.

a component of an overall mitigation strategy. “If the roofing system is compromised in either a windstorm or wildfire, the building or home is subject to total loss.” He also observes that achieving resilience, either in an entire community or in an individual structure, will be a combined effort. “Resilience will be best implemented when states and communities develop and effect resilience plans. Communities, particularly, need to address zoning. Codes and standards organizations need to constantly be updating their documents to address resilience, and architects, engineers, developers and contractors should be building to resilience standards. Manufacturers have their part in providing more resilient products and systems.”

The NIBS report is being praised as an important tool to help in decision-making about investment in resilience, and influential stakeholders are supporting its approach. Executive Director Paul Kovacs of the Toronto-based Institute for Catastrophic Loss Reduction says, “Findings of the 2005 report, that resilience offers a societal payback of \$4 for every \$1 invested in mitigation, made an extremely important contribution to the argument that building resilience towards natural hazards is not costly in the mid- to long-term and, in fact, offers a solid Return on Investment. The 4:1 ratio became the most commonly cited metric to show that resilience works, that such things as building codes work. The updated study released yesterday puts a finer point on the metrics

and continues to offer overwhelming evidence that building resilience is key to avoiding death, injuries, property damage and disruption.”

Mike DuCharme, Chairman of the EPDM Roofing Association (ERA), adds support from the manufacturers’ point of view. “We know that our EPDM products can play an essential role in helping to create more resilient roofing systems. With this new report showing the economic advantages of resilience, we can provide the construction industry with materials that can not only enhance the performance of a resilient roofing system, but also provide financial advantages as well.”

The NIBS report concludes by pointing out that, “Not everyone is willing or able to bear the up-front construction costs for more resilient buildings, even if the long-term benefits exceed the up-front costs,” and suggests that some creative incentives might be needed “to align competing interests of different groups.”

FEMA, the source of the statistics for the NIBS report, is addressing this very issue and has just released its Draft National Mitigation Investment Strategy at the request of the Department of Homeland Security. This strategy is meant to address the lack of coordination in mitigation investment and is organized to achieve these six outcomes:

1. Coordination of risk mitigation and management improves between and among public, private, and non-profit sector entities.
2. The private and nonprofit sectors

increase their investments in and innovations related to mitigation.

3. State, local, tribal and territorial governments are increasingly empowered to lead risk reduction activities and share responsibility and accountability with the federal government.

4. Public, private, and nonprofit sector entities develop and share more of the data and tools needed to make risk-informed mitigation investments.

5. Public, private, and nonprofit sector entities improve risk communication, leading to more risk-informed mitigation investments by individuals and communities.

6. The built environment – whether grey or nature-based infrastructure, and including lifeline infrastructure, buildings, and homes – becomes more resilient

This Draft report is now available for comment and FEMA will continue to research the issue before releasing its final recommendations.

This increasing focus on the issue of resilience has moved the debate forward, beyond where it was just a year ago at this time. The question is no longer whether resilience is needed; the daunting statistics of 2017 confirm that cataclysmic weather events are on the increase and can cause staggering damage to the built environment. The NIBS report provides hard evidence that resilience is an investment in the future that will pay dividends for years to come. The debate now moves forward to the best ways to finance these mitigation efforts, so that those future dividends can be realized. **R**



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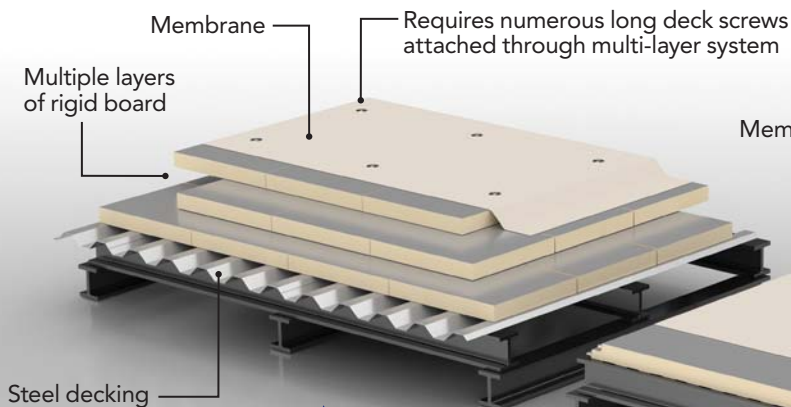
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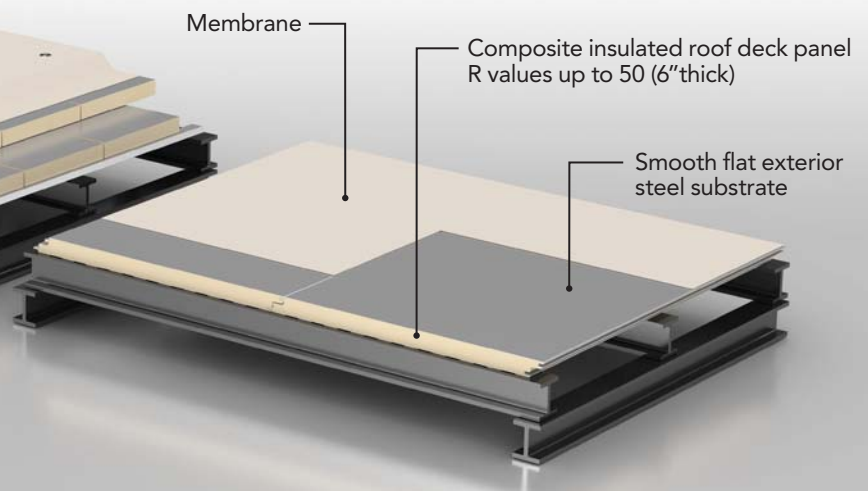
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# Building to Last With Asphalt-Based Roofing

**T**he advantages of a built-up roofing (BUR), modified bitumen, or hybrid roofing assembly include long life, a variety of maintenance options, and outstanding puncture resistance. This durability means property owners will spend less time worrying about fixing leaking roofs and the associated hassles — lost productivity, disruption in operations, slips and falls, repair bills, and other liabilities.

Recommending clients install a roof system that gives them the best chance of eliminating unproductive distractions is a good business decision for design/construction professionals. A more durable roof will enable property owners to focus on making profits instead of dealing with the aftermath of a roof leak.

“I have no problem endorsing asphalt-based roofing,” says Luther Mock, RRC, FRCI and founder of building envelope consultants Foursquare Solutions

Inc. “The redundancy created by multiple plies of roofing is really what sets systems like BUR and modified bitumen apart.”

One can argue BUR’s closest cousin — the modified bitumen (mod bit) assembly — is actually a built-up roof made on a manufacturing line. The reality is the plies of a BUR create a redundancy that can help mitigate any potential oversights in rooftop workmanship.

“I’ve replaced BURs for clients I worked with 30 years ago,” says Mock.



The property owner of this building opted for a BUR/modified-bitumen hybrid system with reflective white coating.



“We recently replaced [a BUR] specified in the early 1980s. And the only reason was because some of the tectum deck panels had fallen out of the assembly. Meanwhile, the roof was still performing well after 30 years.”

According to the Quality Commercial Asphalt Roofing Council of the Asphalt Roofing Manufacturers Association (ARMA), one of the main drivers of the demand for BUR systems is the desire of building owners for long life cycles for their roofs.

“A solid core of building owners and roofing professionals in North America continue to advocate asphalt-based roofing systems because of their long lives,” says Reed Hitchcock, ARMA’s executive director.

### **BENEFITS OF ASPHALT-BASED ROOFING**

Over the years, asphalt-based roofing assemblies have earned a reputation for reliability with building owners, roofing consultants, architects, engineers, and

commercial roofing contractors. The original price tag tends to be greater than other low-slope roofing options, but these assemblies offer competitive life-cycle costs. BUR enjoys a track record spanning more than 150 years; it provides a thick, durable roof covering and can be used in a broad range of building waterproofing applications.

Available as part of fire-, wind-, and/or hail-rated systems, BUR and modified bitumen assemblies offer proven waterproofing capabilities, high tensile strength, long-term warranties, and a wide choice of top surfacings (including ‘cool’ options). Their components include the deck, vapor retarder, insulation, membrane, flashings, and surfacing material. The roofing membrane can be made up of a variety of components, including up to four high-strength roofing felts, modified bitumen membranes (hybrid systems) and standard or modified asphalt. Hot-applied asphalt typically serves as the waterproofing agent and adhesive for the system.

The roofing membrane is protected from the elements by a surfacing layer – either a cap sheet, gravel embedded in bitumen, or a coating material. Surfacings can also enhance the roofing system’s fire performance and reflectivity ratings.

Another surfacing option is gravel, commonly used in Canadian applications where the existing roof structure can handle the extra weight. There are also several smooth-surface coating options, the most popular of which are aluminum or clay emulsion products offering greater reflectivity than a smooth, black, non-gravel-surfaced roof. These reflective roof coating options are typically used in warmer regions when required by code. Reflective white roof coatings are also becoming more popular.

### **COLD-PROCESS BUR**

Cold application of BUR has provided an alternative to traditional hot-applied systems for more than 48 years. The term ‘cold-applied’ means the BUR roofing system is assembled using multiple plies of reinforcement applied





BUR systems are offered in a variety of attractive and reflective options with a proven track record of performance.

with a liquid adhesive instead of hot asphalt. These cold adhesives are used between reinforced base/ply sheets to provide a weatherproof membrane.

In BUR cold-process roof systems, manufacturers typically require that only fully coated, non-porous felts (such as standard base sheets) are used as base and ply sheets. Generally, an aggregate surfacing or a coating is then applied over the completed membrane to provide surface protection and a fire rating for the roof system.

“In the re-roofing market, we’re definitely seeing more cold-applied systems being specified, particularly with modified bitumen,” says Mock. “It’s a natural alternative when a building may be occupied during the reroofing process and hot asphalt is not an option.”

Adhesives can be manually applied with a squeegee, brush, or spray application equipment. When numerous roof penetrations or rooftop access become issues, manual application of

adhesives is usually the best option. Proper coverage rates are vital to a successful, long-term, cold-applied roof system. Both spray and manual application methods require the proper amount of adhesive material be installed. If too little adhesive is applied, there is a potential for an improper bond to be formed between the felts. If too much is applied, then the potential for longer setup times and membrane slippage is increased. Additionally, ambient temperatures must be 40 degrees Fahrenheit (5°C) and rising before installation. This limits, but does not preclude, use of cold-process BUR in much of the northern United States and Canada.

“I’m also comfortable specifying BUR, because I’m confident I will have a seasoned contractor on the job,” says Mock. “The commitment in terms of skilled labor and equipment is simply too great for these contractors to be first-timers.”

Flashings are another critical component of every roofing system,

particularly in cold-weather applications. Four-ply BURs use modified bitumen flashings almost exclusively. These membranes are predominantly styrene butadiene styrene (SBS)-modified and offer greater elongation in frigid climates where it counts most – at the interface of the roof system with other building components.

Use of a modified-bitumen base ply is one way of handling general flashing requirements, although modified bitumen cap sheets are more common.

## BUR REPAIR AND MAINTENANCE

Like all roof systems to some extent, the life expectancy of a BUR system depends on the property owner’s commitment to routine maintenance. All roof systems can benefit from an owner willing to undertake a proactive management plan. BUR installed over an insulation package lends itself well to non-destructive testing in the future (e.g., infrared) as a means to maximize service life.



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“Asphalt roofing systems have the potential for a very long life, and preventive maintenance is the key to realizing that potential,” says Hitchcock.

The goal is for problem areas to be detected and fixed before they develop into leaks. Inspections can reveal potentially troublesome situations, such as a loss of gravel surfacing, which could lead to felt erosion or brittleness. Less commonly, punctures and cuts to the membrane can occur, so it is wise to remove sharp objects and debris from the roof. Clogged drains or poorly sealed flashings also present problems that are repaired easily. The effects of chemical exhausts on roofing materials should also be monitored.

Preventive maintenance actions can help catch problems before they damage larger areas of the roof system. Inspections should be performed not only on aging roofs, but also on newly-installed roofs to guard against errors in installation, design, or specifications.

BUR and modified bitumen also have a long history of proven performance in the northern United States and Canada, where snow and ice buildup

are common. Perhaps more than any other roof membrane, the BUR system shrugs off minor abuse.

BUR has proven to be a low-maintenance roofing system, and it can also be effectively repaired when needed. This means property owners can usually get more life out of a BUR. The ability to enhance the performance of existing BUR membranes with coatings, mod bit cap sheets, or flood coats of asphalt explain the long service lives of these systems in demanding applications.

“Property owners rarely have to replace a four-ply BUR until it is absolutely, positively worn out,” says one roofing contractor who asked to remain anonymous. “Based on experience, these asphalt-based systems ‘hang in there’ longer than less-robust roof options.”

#### **WHEN BUR IS NOT THE BEST OPTION**

There is no roofing product solution that will fit every building specification, and that certainly holds true for BUR. Probably more than any other roofing system (except spray polyurethane foam), the built-up roofing

application is more of a skill than a science. As alternative systems have been introduced into the market, the job of finding experienced BUR contractors has become more difficult. This is especially true for the hot mopping of multi-ply BUR systems.

BURs are labor intensive and their installed cost will fluctuate with crude oil prices. However, as oil prices have continued to fall, BUR manufacturers have enjoyed the lowest asphalt pricing since the 2008-09 recession. (The price of oil peaked at about \$117 a barrel in September 2012 and is \$50 a barrel at this writing.) Typically BUR manufacturers will pass on a portion of these savings to their customers.

BUR has always held up well in life-cycle cost analyses. However, if a roof is not expected to last 20 years or more, it usually does not make sense to specify a premium four-ply BUR.

On larger projects, gravel-surfaced BURs are typically not practical from a cost standpoint unless a source of gravel is available locally. Projects where roof access is difficult often present challenges when roofing kettles are used. And despite the preponderance of low-fuming asphalts and kettles, re-roofing occupied buildings is often unacceptable to neighbors and/or the property owner.

Built-up roofing systems have sufficient strength to resist normal expansion and contraction forces that are exerted on a roof; however, they typically have a low ability to accommodate excessive building or substrate movement. Rephrased, if the roof must be used to “hold the walls” together or if the use of “loose-laid insulation” has a benefit, then a traditional three- or four-ply built-up roofing system is not a good choice.

A built-up roof typically provides high tensile strength with low elongation. Guidelines about where expansion joints should be installed in the roofing system should not be ignored by the designer. These guidelines include installing expansion joints where the deck changes direction, approximately every 200 feet (61 meters), although many consider that this dimension can



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be expanded for single-ply roofing membranes; where there is a change in deck material; and, anywhere there is a structural expansion joint, etc. Based on these requirements, on some projects it simply isn't practical to use a BUR.

BUR materials must be kept dry before and during installation to prevent blistering in the roof system. Proper storage is the key: Do not overstock the roof; use breathable tarps to cover material on the roof; store material on pallets to minimize the possibility of material sitting in water; and store rolls on-end to prevent crushing. In general, polymeric single-ply membranes like TPO (thermoplastic polyolefin) are less susceptible to storage issues.

Many roof consultants and product manufacturers clearly state that there should be no phased construction of a built-up roof. If phasing is required, then a BUR should not be specified. This is a clean and simple rule

to understand; if the roof being constructed is a four-ply BUR, then only as much insulation should be installed as can be covered the same day with all four of the plies in the built-up roofing membrane. Phased construction of a built-up roof greatly increases the potential for blistering of the membrane and does not allow for the total number of plies to be installed in a shingled fashion. Phased application contains other perils, such as roofing over a small amount of overnight precipitation or dew that, even with the best of intentions, can cause harm.

As stated above, costlier modified bitumen materials should be specified for flashings and to strip in metal. Stripping in two plies of felt will most likely result in splitting at the joints in a gravel stop because the two-ply application cannot accommodate the movement in the edge metal. On new or existing buildings where significant expansion/contraction is expected, a TPO, PVC or EPDM roof membrane can

save the property owners money and eliminate premature roof failure due to roof splitting.

## CONCLUSION

Manufacturers across North America are making asphalt roofing systems like BUR better and more versatile for architects, builders, contractors, roofing consultants, and building owner/managers. Thanks especially to the addition of polymers that add stretch and strength, architects can now specify a commercial, low-slope roof as part of a multi-ply BUR system any way they want it – hot, cold, torch, or self-adhered (hybrid BUR) – to meet the individual low-slope roofing project's needs.

Most importantly, asphalt-based roofing products offer exceptional life-cycle cost performance. They have proven to be reliable, easy to maintain, and are trusted to perform exceptionally well in extreme weather conditions. **R**

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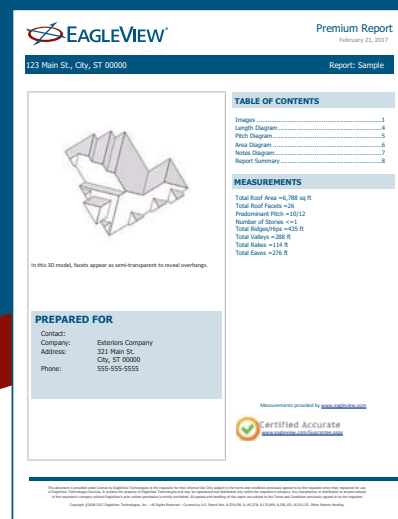
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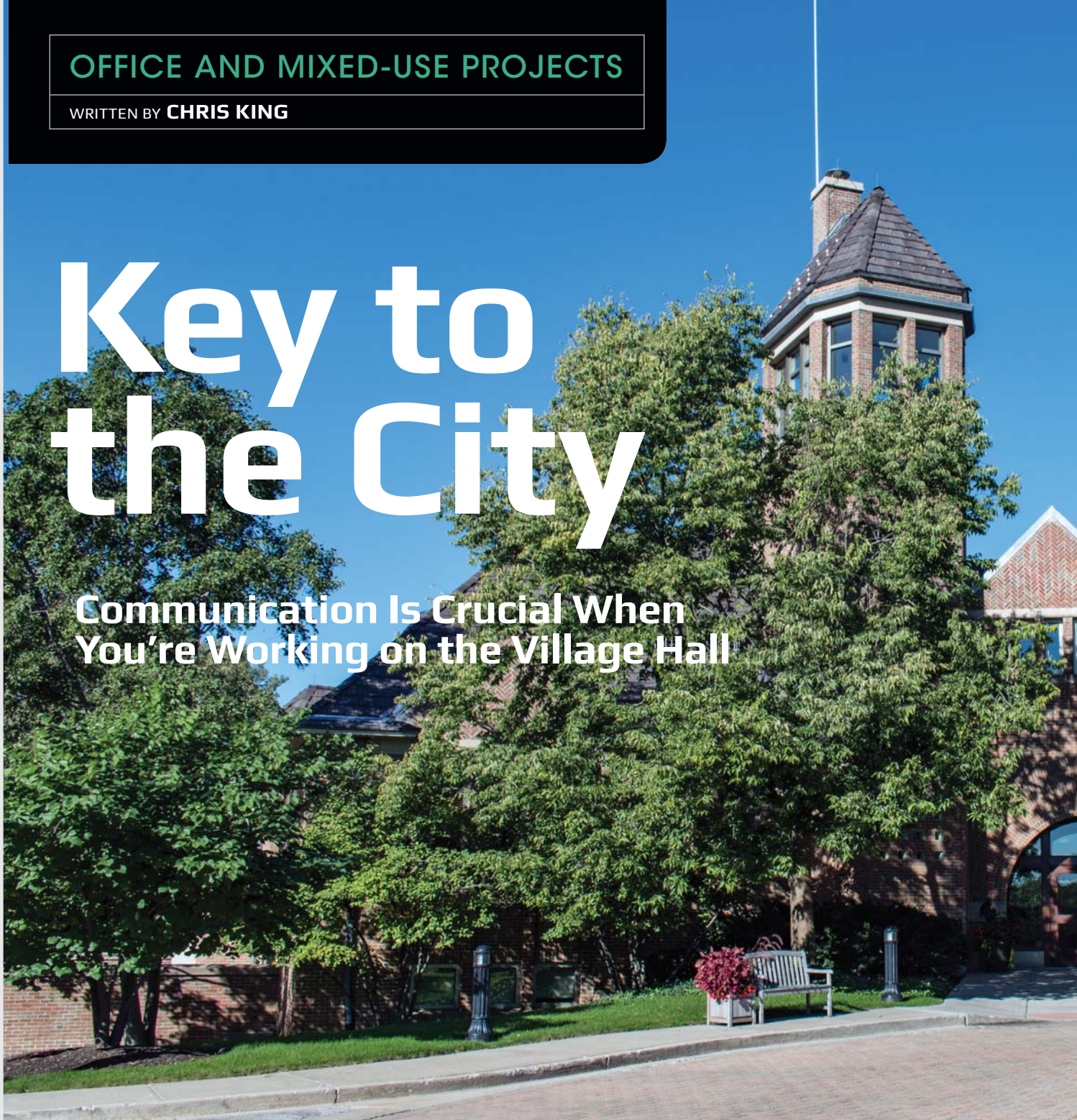
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# Key to the City

Communication Is Crucial When You're Working on the Village Hall



**T**he Lincolnshire Village Hall, located in Lincolnshire, Illinois, houses city departments and the offices of elected officials, as well as the Lincolnshire Police Station. When its natural cedar shake roof and inlaid gutter system began to fail, city officials looked for a solution that would provide the desired aesthetics but last longer and require less maintenance.

Dale Pole of All American Exterior Solutions, a full-service union roofing contractor headquartered in Lake Zurich, Illinois, thought he had the answer. Pole, a 32-year industry veteran who is now the company's vice president of operations, dropped off samples of a synthetic shake roofing tile manufactured by DaVinci Roofscapes and asked if city officials wanted to give it a try.

All American was awarded the job

in 2016. The scope of work consisted of a complete re-roof of the complex, including the steep-slope roof system on the hall and tower. The project also included five sections of flat roofing and replacement of the copper gutter system. The job was complex, but All American was up to the challenge. The company worked in conjunction with Illinois Roof Consulting Associates, located in McHenry, Illinois.

PHOTOS: DAVINCI ROOFSCAPES





Lincolnshire Village Hall houses city offices and a police station. The structure's roof and gutter systems were recently replaced by All American Exterior Solutions.

### THE STEEP-SLOPE SYSTEM

The building's signature feature is the observatory tower over the main entrance, which extends approximately 45 feet in the air. The main roof features a pitch change at the rear of the building, where the roof goes from 4:12 to 12:12. All American installed approximately 23,000 square feet of the DaVinci product, BellaForté Shake in Tahoe, a blend of four colors. The company also

fabricated the new gutter system out of 20-ounce lead-coated copper with soldered seams. Approximately 600 feet of new gutters were installed.

Work began in late spring, and the 23-year-old existing roof was torn off in sections. GAF Weather Watch Water & Ice Shield was applied as a leak barrier, followed by Proof Synthetic Underlayment from ABC Supply. "We couldn't install the tiles until the inlaid

gutter was in place, so we used a synthetic underlayment to keep everything watertight during the tear-off process," says Pole.

Gutters were installed in an 8-inch-by-8-inch trough. "There was a course or two of the DaVinci, and then the inlaid gutters were set into the roof, and the roof starts again," notes Pole. "The trough area was also layered with ice and water shield before the copper gutters were put in."

Transitions and flashings were also made of copper. "Everything on this job was 20-ounce lead-coated copper," notes Pole. "All of the valleys, transition flashing, and the gutters were all lead-coated copper."

The DaVinci synthetic shake tiles were easy to install, according to Pole. "They are nailed in place," he says. "You can use stainless steel nails or hot-dip galvanized nails. In this case, we used 1-1/2-inch stainless steel ring shank nails."

### LOW-SLOPE AREAS

The low-slope roofs were covered with a GAF two-ply modified bitumen system. Michael McCory, project manager, headed up the crews on the five low-slope sections, which totaled approximately 2,700 square feet.

The low-slope sections had different substrates. Two balconies had concrete decks, while two canopies and an area over the garage had wooden decks. Some of the flat roofs had paver systems, which had to be removed and replaced after the new system was installed.

Half-inch DensDeck Prime cover board from Georgia-Pacific was installed over the wood and concrete decks. The GAF mod bit system consisted of a Ruberoid 20 base sheet and Ruberoid Granular FR cap sheet in white. "It was applied in a cold-process adhesive," says McCory. "No torches were used. A manufacturer's inspection was part of the process for a 20-year warranty."

The upper level of the tower features a small walk-out balcony. "That was probably the most difficult area," notes McCory. "It was covered with pavers and





The complex is located right next to a large pond and bordered by mature trees, so the jobsite limited access to sections of the roof.



difficult to reach. We had to remove the pavers and store them in the stairwell during the installation.”

### A CHALLENGING JOBSITE

Logistics at the jobsite posed a few problems. “The hardest part was the observatory tower by the front entry,” Pole recalls, noting an 80-foot man

lift was used to remove the existing cedar and install the synthetic shake. “On the tower, it was all lift work. For other parts of the project, workers on both the steep-slope and the low-slope portions of the roof were tied off at all times.”

The building is bordered by mature trees and a large pond, limiting roof

access. “On the west side of the structure, the pond comes right up against the building,” Pole says. “We had to use a lift that could stretch over that pond to get that end of the roof.”

An Equipter mechanized debris hauler was used to get around narrow grassy areas near the building. “We used an Equipter, which is like a gas-powered, mobile dumpster, to drive around the building and enter the courtyard for our debris,” Pole says. “We have two of those pieces of equipment, which we use on a lot of our jobs to get the shingles out. They don’t damage lawns and help protect the landscaping.”

The building was occupied during the installation, so care had to be taken to ensure business was not disrupted and passers-by would be safe. “The village offices were open for business while we were working, and the police station was open as well,” notes McCory. “The tower and front entryway had to be completed on the weekend, as that was the only walkway for the public to get in.”



The police station had several doors, so crews had to coordinate with officers while replacing the roof on that section and let them know where they were setting up the crane. The courtyard area was also restricted at times.

"We obviously had to keep everything neat and organized and make sure we cleaned up every day to make sure nothing would bother the people working in the building and the residents who came in to the village hall to get permits or whatever the case may be," McCorry says. "You don't want police cars getting flat tires."

## LINCOLNSHIRE VILLAGE HALL

### LINCOLNSHIRE, ILLINOIS TEAM

**ROOFING CONTRACTOR:** All American Exterior Solutions, Lake Zurich, Illinois  
[www.aaexs.com](http://www.aaexs.com)

**ROOF CONSULTANT:** Illinois Roof Consulting Associates, McHenry, Illinois  
[www.irca.com](http://www.irca.com)

## MATERIALS

### STEEP-SLOPE ROOF SYSTEM

**SYNTHETIC SHAKE:** BellaForté Shake in Tahoe, DaVinci Roofscapes  
[www.DaVinciRoofscapes.com](http://www.DaVinciRoofscapes.com)

**UNDERLAYMENT:** Proof Synthetic Underlayment, ABC Supply Co. Inc.  
[www.ABCsupply.com](http://www.ABCsupply.com)

**LEAK BARRIER:** Weather Watch Water & Ice Shield, GAF  
[www.GAF.com](http://www.GAF.com)

### LOW-SLOPE ROOF SYSTEM

**MODIFIED BITUMEN BASE SHEET:** Ruberoid 20, GAF

**MODIFIED BITUMEN CAP SHEET:** Ruberoid Granular FR, GAF

**COVER BOARD:** DensDeck Prime, Georgia-Pacific  
[www.DensDeck.com](http://www.DensDeck.com)



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**“The system has the look they wanted. It looks like shake, they had a lot of colors to choose from, and they won’t have the maintenance issues that they did with the cedar. And it will last a lot longer.”**

— Dale Pole, All American Exterior Solutions

Communication is the key to meeting customers’ needs, especially with an occupied building. “Whoever the building owner is, I give him my cell number and make sure I have his,” Pole notes. “I try to stay in contact with them and let them know if anything is changing. I ask them if they have any

questions or issues, or if their schedule is changing. On this project, they said it was like we were never even there, and that’s what we like to hear.”

Feedback from the city has been positive, according to Pole. “They are very happy with it,” he says. “The system has the look they wanted. It looks like shake, they had a lot of colors to choose from, and they won’t have the maintenance issues that they did with the cedar. And it will last a lot longer. They will save a whole roof replacement phase in the life of the DaVinci product.”

Pole believes his company’s diverse portfolio gives it an edge. “We’re one of very few union companies that have their own shinglers, flat roofing crews, and sheet metal workers in house. We also do waterproofing, metal wall panels and insulation,” he says.

“This project shows our strength – we can do it all.” **R**



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At the Shoppes of Johnson's Landing in Angier, North Carolina, ACC applied a high-solids silicone roof coating on the 20-year-old metal roof to seal penetrations, restore the roof, and provide a white reflective coating.

**GLENN WUJCIK**, the owner of All-County Contracting (ACC), headquartered in Raleigh, North Carolina, has been fascinated with spray rigs since he and his brother first used one in 1979 to insulate a van with spray polyurethane foam (SPF). His company specializes in applying SPF and roof coatings on existing buildings. Lately, he's found silicone roof coatings are making up an increasing share of his company's workload.

"The coatings industry in general is booming right now," Wujcik says. "A lot of the TPO and EPDM roofs

are nearing the end of their service life, and instead of tearing them off, if you catch them in time, you can go over it with the silicone coating and get a new 10-year warranty. Silicones have a proven track record. When you put it on properly, it weathers really well. It has excellent elongation."

Wujcik characterizes himself as a hands-on owner who strives to be on the site for every job. He believes there is an art as well as a science to operating a spray rig properly, and experience is crucial. "I love doing this," he says. "I've been doing it for more than 30 years, my business partner's been

doing it more than 30 years, and our best sprayer has sprayed more than both of us combined. We know what we have to do, we know how long it's going to take, and we have the right equipment. We are really good about the preparation and the application."

Coatings and spray foam are excellent products, but only in the right situations, notes Wujcik. They should only be used on the proper substrates and applied in the right conditions. "In spraying, the most important thing is knowing when not to spray," he says. "Right now,



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I'm working on a job, and for the last two days, there have been 10-20 mph winds, and I haven't finished it yet. I told the owner, 'I haven't oversprayed anything yet, and I don't want to.' I'd rather do it right and not have any problems."

Wujcik points to a recent project on a mixed-use building in Angier, North

Carolina, to illustrate some of the benefits of a silicone roof coating. "It's a U-shaped building with about 14,000 square feet of roof space," Wujcik notes. "There's a bakery, a restaurant, a pharmacy, and a doctor's office, and there are a lot of penetrations on the roof."

The penetrations were the site of


multiple leaks. Wujcik decided to use a high-solids silicone coating, GE Enduris 3502, to prevent leaks and extend the life of the roof. The monolithic coating will seal the penetrations, and the white reflective surface will provide an additional benefit: reduced cooling bills in the summer. "Putting a white coating on it is going to reduce their energy load in the summer pretty substantially," he says.

### APPLYING THE COATING

On this project, the first step was to pressure wash the existing roof. "That's where most coating jobs fail – surface preparation," Wujcik states. "Washing the roof properly is one of the most important steps."

The company uses 4,000 psi belt-drive power washers, so care has to be taken not to damage the roof or skylights, which are covered and marked for safety reasons. The company follows all OSHA regulations, which in most cases means setting up safety lines 6 feet from the edge, with stanchions 10 feet apart, to establish a safety perimeter.

"Safety is my number one thing," Wujcik says, "I've been doing this a long time and I've never had a lost-time accident. I preach safety. That is absolutely the most important – and accidents are expensive."




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### SHOPPES OF JOHNSON'S LANDING

ANGIER, NORTH CAROLINA

### TEAM

**ROOFING CONTRACTOR:** All-County Contracting (ACC), Raleigh, North Carolina

### MATERIALS

**ROOF COATING:** Enduris by GE 3502, GE Performance Coatings  
[www.GE.com/silicones](http://www.GE.com/silicones)

**SEAM SEALER:** GE Seam Sealer, GE Performance Coatings



The next step is to apply the GE Seam Sealer at the penetrations. "When this roof was originally installed 20 years ago, they did it textbook perfect," Wujcik notes. "Each 4-inch pipe coming through had at least 20 fasteners holding it down."

However, over time, the rubber grommets on the fasteners can degrade, and expansion and contraction can take their toll. "We have really hot summers here, we've seen roofs where literally thousands of fasteners have backed out," he says.

The seam sealer is typically applied with a brush. "Any horizontal seams, any termination bars, any penetration that goes through the roof that has a screw, we apply the seam sealer," he says. "It goes on quite thick – at about 80 linear feet per gallon."

After the seam sealer cures for one day, the coating is applied. Spraying flat roofs with EPDM, TPO, and PVC membranes is a fairly straightforward process, according to Wujcik. "You basically spray it just like you would spray paint a wall," he says. "You overlap your spray pattern 50 percent. I've been doing it for so many years, and you get a feeling for how fast you can go."

A wet mil gauge is used to ensure the proper thickness. Wujcik notes the high-solids silicone formulation has very little shrinkage as it dries. "As we're spraying, we insert the gauge into the wet coating and it tells you how many mils you have sprayed down. In this case, we were applying to achieve 21 dry mils."

The spray rig is set up on the ground and operated by one man, while the sprayer and the hose man are working on the roof. "It's a minimum of a three-man crew per coating rig," he notes. "You're dealing with about 6,000–7,000 psi of pressure, so you need special hoses rated for at least 7,000 psi. You never want to kink them. If you busted a hose, by the time someone came down from the roof to the machine, you could pump out 20 gallons on the ground. That's why you need a ground man."

Flat roofs are sprayed perpendicular to the roof, but the standing seam



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metal roof on this project called for a different technique. "On metal roofs with high ridges, if you don't angle your gun you'll miss the sides of the ribs," Wujcik points out. "You have to do it from one direction, working one way, and then turn around and do it from the other direction, working the other way. If you try to spray straight down

on the roof, you're going to miss the nooks and crannies in all of those ribs."

The surface area of the ribs also has to be taken into account when calculating the amount of liquid that will be applied, notes Wujcik.

The final step in the process is to touch up the applications at the penetrations to ensure a clean look. On

vertical surfaces including parapet walls, crews ensure the coating is applied to a uniform height. "On the last day, we take up brushes and rollers and cut in straight lines," he says. "That really finishes the job. The detailing gives it that final touch."

## OPEN FOR BUSINESS

The active and open jobsite posed some challenges. "There were a lot of cars around the building, so we had to be very careful not to hit them with overspray," Wujcik notes. "When you're working on a plant, you might be able to move all of the cars to a different location, but at doctor's offices and restaurants, you have traffic in and out of the parking lot all of the time. We can use car covers if there are a few cars there, but when they are in and out like that, it's not practical, so you have to be very careful when you do the job."

The job was completed in the winter, and bad weather resulted in some delays. "A job like this in the summertime would have been a weeklong project at most," Wujcik notes. "This project took almost a month because we had an exceptionally cold winter with a lot of high winds. It took extra time, but that's my philosophy: If it's not the right conditions, I just won't do it."

The project qualified for a 10-year warranty, and when it expires ACC plans to be there to pressure wash and recoat the roof for another 10-year warranty.

"We inspect our jobs every year," Wujcik says. He notes that annual roof inspections and routine maintenance are the simplest and most cost-effective ways to ensure the roof's life span. Yet these steps are often neglected.

"It's amazing that some of these multi-million-dollar companies don't send their maintenance guys up on the roof for 10 minutes to check the drains," he says. "If a roof has 2 inches of pine needles around the drain, the whole roof has to have 2 inches of water on it before it begins to drain. That puts tremendous, tremendous stress on a roof. Keeping your drains clear is really important." **R**

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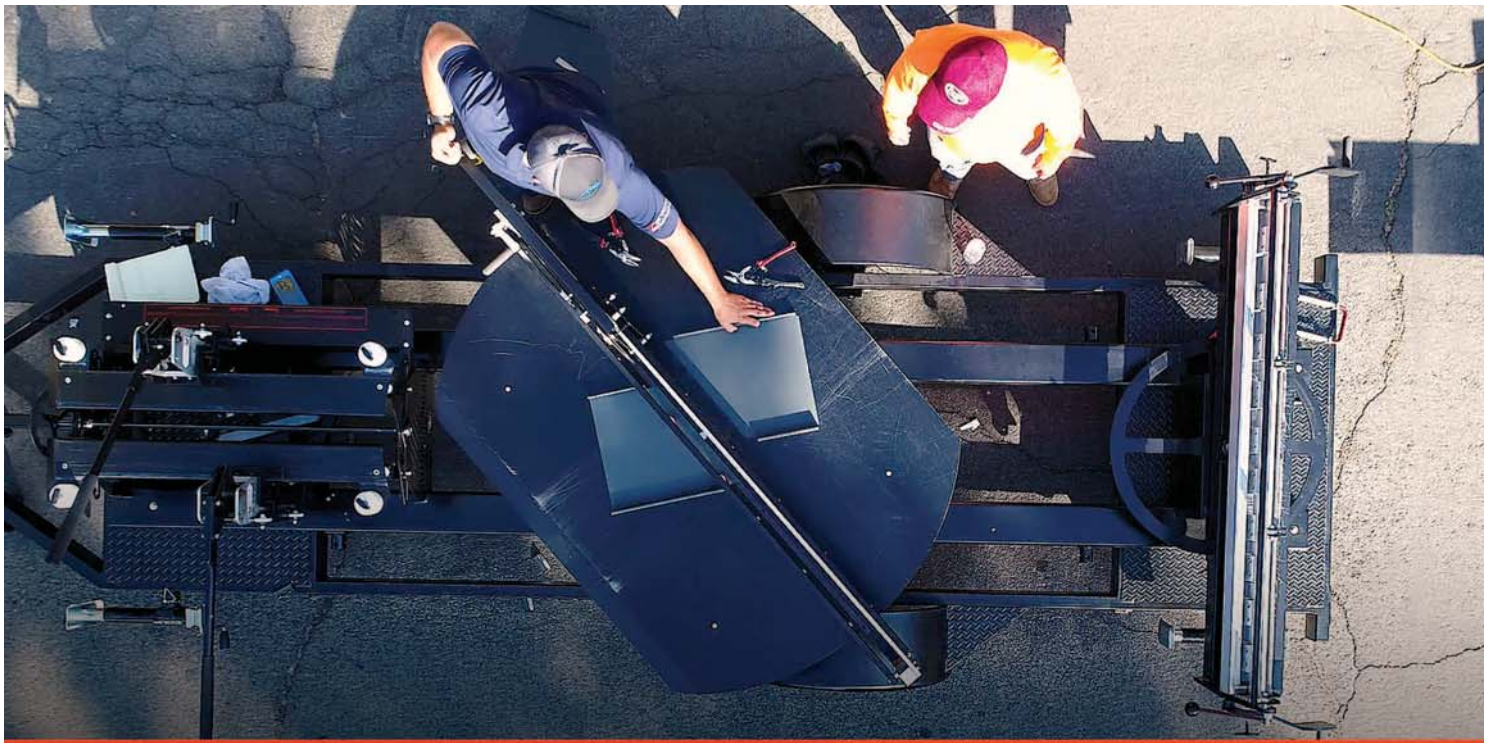
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**JAINDL FARMS** is a multigenerational family business that encompasses a land development company and a fully integrated turkey farm. Its headquarters sits on 12,000 acres of farmland in Orefield, Pennsylvania, where the company grows the crops to make the feed for its turkeys. When the owners contacted MKSD Architects in Allentown, Pennsylvania, about adding space to their offices, the goals were to provide room to expand and to honor the Jaindl family's history and legacy.

"The owner has a deep appreciation for all things agrarian and for old barns," recalls Todd Chambers, partner, MKSD Architects. "One day we were meeting about the project, and he said, 'What do you think about reusing the timber frame of an old barn?' A light bulb went off."

A large barn in Northampton County was located and dismantled, and the frame was repurposed for the office addition. The new two-story stone structure connects to the existing

one-story office building, which was roofed with natural cedar shakes. A standing seam metal roof was specified for the new structure in keeping with the traditional architecture of the area. "We were concerned about the aesthetics, so standing seam was an obvious choice," Chambers says. "We tried to keep the penetrations to a minimum and keep them out of the view of the main facade."

The roofing contractor on the project was The Gehringer Company,



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The snow guards installed on the project were chosen in part because they reminded the business owners of a turkey's tail feathers.

The roof features dormers to bring in natural light. The dormers are sided with metal panels to minimize roof maintenance.



headquartered in Whitehall, Pennsylvania. The company was called in to handle the project by the general contractor, Allentown-based Bracy Contracting Inc. The Gehringer Company's president, Tom Gehringer, recommended a Dutch Seam roof system manufactured by ATAS International because it had the

durability and aesthetics the project required, but was also easy to install. "It's less labor-intensive than other systems because it doesn't require a mechanical seamer," he notes.

#### A TURKEY SHOOT

The roofing installation went very smoothly, according to Gehringer and

Chambers. The Gehringer Company crews installed 6,400 square feet of ATAS MRD-110 Dutch Seam panels on the roof. They also installed approximately 500 square feet of metal panels as siding on the dormers. "It's a 12-inch-wide piece with a raised section at the lock," notes Gehringer. "When it's installed looks like board and batten siding."

Installation began in January 2017, so the weather posed the biggest challenge. "We did it when the temperatures were pretty low. The highs were in the 20s," Gehringer recalls. "The nice thing is you can install the system in almost any temperature."

After ATA-Shield high temperature synthetic underlayment was applied to the entire surface of the plywood deck, the roof panels were installed. "We worked from our aerial lifts," Gehringer explains. "We purchased two aerial lifts several years ago and now use them for almost all of our steep roofing installations."

Details included SL-2 Snow Meister snow guards from Berger Brothers. "In this climate, one of the tricky pieces with standing seam is sliding snow, so we specified snow guards that clamp

PHOTOS: THE GEHRINGER CORPORATION



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to the standing seams," Chambers says. "The ones we used emulate the turkey tail feathers."

Roofing crews also tied in a small section of new cedar shakes to extend the hallway of the existing structure and connect it to the new addition. "We installed the original cedar shakes on the adjacent section for Bracy

Contracting almost 20 years ago," notes Gehringer.

The project went off without a hitch. Gehringer credits his company's experienced crews and field supervisors for its excellent track record. "I believe we're one of the larger architectural metal roofing installers in our area and have virtually no callbacks

on roofs we install," he says. "What it boils down to is having people that know how to do it right – and having people that are committed to doing it right. And with architectural metal work, you have to take your time and do it right. This metal roof is going to look exactly like it looks now for at least 30 years."

Looking back, what strikes Chambers is how different this project was from his typical assignments. "We're commercial architects. We do a lot of health care work," he says. "The ability to design something that's not done every day, and is different than your typical approach, is refreshing and fun." **R**



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## **JAINDL FARMS OFFICE**

## **OREFIELD, PENNSYLVANIA**

### **TEAM**

**ARCHITECT:** MKSD Architects, Allentown, Pennsylvania, [www.MKSDarchitects.com](http://www.MKSDarchitects.com)

**GENERAL CONTRACTOR:** Bracy Construction Inc. Allentown, Pennsylvania [www.BracyConstruction.com](http://www.BracyConstruction.com)

**ROOFING CONTRACTOR:** The Gehringer Corporation, Whitehall, Pennsylvania [www.GehringerRoofing.com](http://www.GehringerRoofing.com)

### **MATERIALS**

**METAL ROOF PANELS:** ATAS Dutch Seam MRD110, .032 aluminum, Medium Bronze, ATAS International Inc. [www.ATAS.com](http://www.ATAS.com)

**METAL SIDING PANELS:** ATAS Multi-Purpose Panels MPW120, .032 aluminum, Sierra Tan, ATAS International Inc.

**SYNTHETIC UNDERLAYMENT:** ATA-Shield, ATAS International Inc.

**SNOW GUARDS:** SL-2 Snow Meister Snow Guards, Berger Building Products [www.bergerbp.com](http://www.bergerbp.com)



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# Expanding Chicago Premium Outlets





Roofing work on the 250,000-square-foot expansion of Chicago Premium Outlets was completed in five months under challenging weather conditions.

**THE CHICAGO** Premium Outlets 250,000-square-foot expansion includes 30 new or expanded stores, two new restaurants, 2,200 additional parking spaces, public art, outdoor fireplaces and a large pond. According to Mike Reynolds, senior project manager for Olsson Roofing Company Inc., headquartered in Aurora, Illinois, "Chicago Premium Outlets is more of a pedestrian mall since the expansion."

Located approximately 40 minutes

from downtown Chicago, the complex now features more than 170 stores including Adidas, Coach, Nike, Tommy Hilfiger, Vera Bradley, and Restoration Hardware. The reflecting pond is an inviting rest stop for shoppers, and it includes a pier-like pavilion with tables, chairs and umbrellas. To support the expansion, Olsson Roofing Company, the roofing contractor on the project, selected a TPO roofing system manufactured by Johns Manville.

PHOTOS: JOHNS MANVILLE



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## A CHALLENGING INSTALLATION

The project team faced two pressing challenges: weather and an aggressive timeline. The roofing-installation time frame fell between January and May, so the majority of the work needed to be completed during the coldest time of year. "We had our work cut out for us," Reynolds says.

The second challenge was the schedule. "The Olsson Roofing team worked several Saturdays and overtime to get the project finished as quickly as possible," notes Reynolds. "We even heated the inside of the buildings to melt the snow on the roof and shoveled areas to make room for the product on the roof."

Olsson Roofing chose to install the roof system using the RhinoBond induction welding attachment system from OMG Roofing Products.



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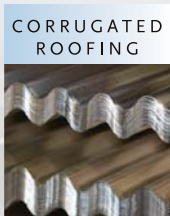
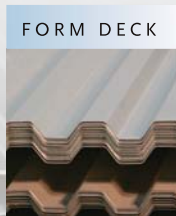
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"We knew that RhinoBond would contribute to a successful installation of the TPO since we were dealing with below-freezing temperatures for most of the first 90 days," Reynolds says.

The 60-mil TPO was installed over two layers of ENRGY 3 roof insulation (one layer was 2 inches thick and the 2.5 inches). The majority of the roof surface features white TPO, but some EPDM was also used. "Olsson Roofing also used JM EPDM for the parapet walls since rubber is more flexible and quicker to install in cold weather and on vertical surfaces. They appreciated the ability to mix the systems and keep the project moving forward during cold-weather installation," says JM sales representative Jason Conley. "With such a tight deadline, it was great to have the versatility of two excellent products – the durable 60-mil JM TPO and the flexibility of the JM EPDM, which provided just the right solution for our customer." **R**

## CHICAGO PREMIUM OUTLETS AURORA, ILLINOIS

### TEAM

**ARCHITECT/SPECIFIER:** FRCH Design Worldwide, Cincinnati, Ohio, [www.frch.com](http://www.frch.com)

**GENERAL CONTRACTOR:** Graycor Inc., Oakbrook Terrace, Illinois, [www.graycor.com](http://www.graycor.com)

**ROOFING CONTRACTOR:** Olsson Roofing Company Inc., Aurora, Illinois, [www.olssonroofing.com](http://www.olssonroofing.com)

### MATERIALS

**INSULATION:** ENRGY 3, Johns Manville, [www.JM.com](http://www.JM.com)

**MEMBRANE:** 60-mil TPO in White, Tan and Light Grey, Johns Manville

**ATTACHMENT SYSTEM:** RhinoBond, OMG Roofing Products, [www.OMGroofing.com](http://www.OMGroofing.com)



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## RESIDENTIAL

WRITTEN BY CHRIS KING



# Doing it All

Multifaceted Residential Project  
Puts Contractor to the Test



Craig Ranch is a multi-phase residential community in McKinney, Texas. Condominiums and town homes feature shingles and standing seam metal roofs. The metal wall panels are a distinctive focus of the design.



**D**iversification has always been a key component of Paul Graham's business philosophy. Graham is the president of StazOn Roofing Inc., headquartered in Dallas, Texas. The company has been in business 38 years, handling all types of roofing, custom sheet metal fabrication and specialty wall panel systems.

Graham designed his company to be able to tackle multiple scopes of work on complicated projects. "Through time and through practice on all of these jobs, we've just been able to step up to the plate and maintain a multi-level task force to handle different types of work on the job," he says.

The company's diverse portfolio has been on display at Craig Ranch, a multi-phase residential development in McKinney, Texas. "It's a high-end multi-family project," Graham notes. "The most recent phase of the project involved a few five-story and predominately four-story buildings, all wood-framed. There are pools and courtyards with amenity areas for the residents."

The buildings featured a blend of different roof systems. Crews from

StazOn installed 60,000 square feet of shingles on roofs with a 4:12 pitch, 52,000 square feet of TPO on low-slope areas, and 8,500 square feet of standing seam metal roofing on roofs with an 8:12 pitch. They installed 22,000 square feet of standing seam wall panel cladding. The metal roof and wall panels were custom fabricated by StazOn with PAC-CLAD metal from Petersen in two colors, Zinc and Weathered Steel.

The company also fabricated and installed trim, flashing, gutters, collector boxes and rectangular downspouts. "We have our own sheet metal shop, so we can manufacture any type of architectural sheet metal product for our own jobs," Graham says. "We also provided the builder with a proprietary door pocket at each of the door locations."

PHOTOS: PETERSEN



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The metal roof and wall panels were custom fabricated with 24-gauge aluminum supplied by Petersen.



## UP ON THE ROOF

The roofing work came first. On the large multi-family buildings, GAF EverGuard 60-mil white TPO was applied on the low-slope sections, which house the mechanical units and serve as a design feature on the project. "These were on the perimeter of the buildings, primarily," Graham explains. "The architect likes to showcase the walls, so to create that effect, they design a flat roof adjoining the pitched roof sections."

GAF Timberline Dimensional Shingles in Weathered Wood were installed on the steeper sections of the large multi-family buildings. "These roofs had long, big runs," Graham notes. "It was kind of like a roofer's dream if you will, to shingle up there with nothing in the way. It was pretty wide open."

Metal roofs were installed on a section of town homes. Where the intersecting roof sections formed valleys, crickets were installed to provide adequate drainage. These cricket sections were covered with TPO, and the details where the TPO roof and metal roof came together were crucial. "We terminated the TPO at the sloped roof with a receiver flashing that we heat welded to the TPO," says Graham. "We take it one step further with that application, so we have a complete watertight transition from the TPO to the bottom of where the metal panel starts."

The crickets divert water to the exterior, where it drains through the custom-made collector boxes. "The downspouts in those locations are oversized four-by-six downspouts fabricated at our shop from the Petersen material," Graham notes. "Along with the other sheet metal items, we did the coping, the pre-flashing and flashing, the edge trim, and miscellaneous other vertical and horizontal expansion details."

## ON THE WALLS

After waterproofing inspection of the exterior facade was completed, crews first applied a peel-and-stick building

wrap from Grace, Vycor enV-S. "We took field measurements and we custom made all of the trim out of the four-by-eight sheets that Petersen supplied for the job," Graham explains. "We make all of the trim to fit the windows, doors, penetrations, the steel support beams, which all get pre-flashed and clad."

The 16-inch-wide wall panels were fabricated on the site. "We keep the panels protected until the guys are ready to install them," Graham says. "We have everything we need right there on hand so we can keep up with the needs of the job as it is evolving."



Panels are installed using a man lift. "From a safety standpoint and a production standpoint, it made sense to use the man lifts," says Graham. "It's the most maneuverable way to do the installation. We work in synchronization, moving three or four lifts at a time along the side of these walls as we work our way around the project."

One unexpected challenge was a section of the leasing office that did not line up perfectly. "The builder came to us and asked if we could build the wall out and make sure all of the wall panels on the facade would be flush once the building was completed," notes Graham. "We made some custom 16-gauge steel hat channels and Z-members and installed them as



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structural members to the wall. Then we installed the panels over the steel framing, so that we would have that same elevation and same build-out across the front of the building.”

### COORDINATED ATTACK

Phase III of the project was just completed, and Phase IV is now underway.

Graham points to a few keys to navigating complicated projects like these. “It usually is a tight schedule, so coordinating with the builder to keep everything on schedule is the key,” says Graham. “You have to fabricate the necessary components and deliver them to the job in a timely fashion to keep the crews on target.”

Maintaining the consistency and quality of the details is also important, and experience helps. “We know what works best for the long haul,” he says. “At the end of the day, you want those details to line up with what the architect had as his vision, but we will make recommendations if we think there is a better way to construct a detail for specific conditions.”

The wall panels on this project were a top priority. “The specialty wall panel systems are so architecturally significant,” he says. “We kind of live and breathe them. We understand them. We’ve come across many, many challenges along the way on other jobs, so when we run into a new challenge, we just roll up our sleeves, get it figured out, design it with all of the people involved, and get going with it.”

Graham credits the Dallas-based builder and the Dallas-based architecture firm, JHP, for spearheading the successful project. “It’s nice when you have a team you’ve worked with and everyone understands what needs to be done to satisfy the client’s desires,” he says. **R**

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### **CRAIG RANCH MCKINNEY, TEXAS**

#### **TEAM**

**ARCHITECT:** JHP, Dallas, Texas,  
[www.jhparch.com](http://www.jhparch.com)

**ROOFING CONTRACTOR:** Stazon  
Roofing Inc., Dallas, Texas,  
[www.stazonroof.com](http://www.stazonroof.com)

#### **MATERIALS**

**TPO:** EverGuard 60-mil white TPO,  
GAF, [www.GAF.com](http://www.GAF.com)

**ASPHALT LAMINATE SHINGLES:**  
Timberline Dimensional Shingle in  
Weathered Wood, GAF

**METAL ROOF AND WALL PANELS:** PAC-  
CLAD 24-gauge aluminum in Zinc  
and Weathered Steel, Petersen,  
[www.Pac-Clad.com](http://www.Pac-Clad.com)

**BUILDING WRAP:** Vycor enV-S, Grace,  
[www.gcpat.com](http://www.gcpat.com)



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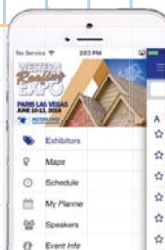
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RESIDENTIAL

WRITTEN BY CHRIS KING


# A Local Gem

Green and Sustainable Roof  
Systems Highlight Durham  
Custom Home



The custom home in Durham, North Carolina features a standing seam metal roof, a balcony and a large roof deck. A 950-square-foot garden roof covers one wing of the house, while the carport roof is made from solar panels.





**W**hen Alison Trott purchased a vacant corner lot in the historic Cleveland-Holloway neighborhood in Durham, North Carolina, she wanted to use the space to construct her dream home. She wasn't sure exactly what she wanted, but she had several priorities in mind. "When I built the house, I wanted to try and focus on sustainability as much as possible," says Trott. "I wanted to try to focus on green building, and I wanted to try to utilize local resources as much as possible – local materials, local builders, local companies, and local craftsmen."

She worked with a talented team of design and construction professionals to bring her vision to life, and the sustainable roof systems on the home became a crowning focus of the project.

At some point in the design process, the architect mentioned the possibility of incorporating a garden roof, and Trott jumped at the idea. "I said, 'I want that!'" Trott recalls. "I was very excited about the idea, but I'd only seen green roofs on large commercial projects."

#### THE LEAD ARCHITECT

Tina Govan, now principal of Somos Design, located in Raleigh, North Carolina, hit it off with Alison Trott right away. The two worked together on the design for several years, inviting CUBE design + research, an architecture firm in nearby Chapel Hill, to collaborate on the project.

The goals included constructing a modern home that would blend in with the historic neighborhood. The house was also designed to be part of the natural landscape. A key priority was saving two large oak trees on the property. "We wrapped the house around the trees," notes Govan. "That way the house bends to nature."

The key themes of the overall design are exemplified by the roof systems. The house features a metal

gable roof with a balcony at one end, echoing historic homes in the area. The 950-square-foot garden roof was installed over the master wing of the house, and the roof of the carport was constructed from solar panels.

"It's a very green house," Govan notes. "Solar panels over the carport take care of most of the energy needs of the home. The green roof replaces what was disturbed – the ground below – and brings it up. The green roof blends well with the landscape, and with it the house doesn't seem as big."

The green roof is visible from many parts of the house, including the roof deck, which is separated from it by a glass railing. "I love green roofs," says Govan. "They replace habitat and make building softer. It's alive. It's so much more dynamic and rich than any other type of hardscape."

#### THE BUILDER

Bob Wuopio is the owner of Form Design/Build LLC, headquartered in Raleigh, North Carolina. The company specializes in one-of-a-kind, complex projects, so this custom house was right up its alley. "We love unique projects," Wuopio says. "Our preference is to make everything – the doorknobs, the pulls, the lights, the cabinets. We try to fabricate everything. That's our niche."





Numerous custom details throughout the house put the company to the test. For its relatively small footprint – 3,400 square feet – the house has its fair share of different roofing systems. “We have almost every type of roof system on that project,” says Wuopio. “We have a standing seam metal roof on the high gable. We have standing seam metal roof that becomes a metal wall. We have a built-up roof with a floating deck and a glass railing system. There is a green roof over a whole wing of the house.”

Getting the deck and green roof areas sloped perfectly was essential, and that begins with the substructure. “Getting a roof with a slope of 1/8 inch per foot right requires a pretty good framer,” Wuopio notes.

Form Design/Build served as the general contractor on the project, and Wuopio was responsible for scheduling multiple trades at the site. One key concern was making sure that the

low-slope roof system wouldn’t be damaged after it was installed. “You don’t want anyone poking holes in it,” says Wuopio. “We spray foamed underneath the deck, so if you did have a small leak, you might not notice it for years, potentially.”

Wuopio knew the roof under the garden roof assembly was crucial. “I knew we needed a bulletproof roof, so I called Jim Pickard. He knew exactly what we needed.”

#### THE ROOFING CONTRACTOR

James Pickard III is the owner and president of Pickard Roofing Company Inc. in Durham, North Carolina. He represents the third generation of his family to run the business, which is more than 90 years old.

Pickard Roofing handles all types of commercial and residential projects, including historical restoration work. Most of the company’s projects are within 25 miles of the office, including

this one, which was just two miles down the road.

Crews at the company don’t do as much hot-mop BUR work as they used to, but they still have that club in their bag for below-grade waterproofing projects and garden roof assemblies. For this green roof project, Pickard recommended a coal tar pitch roof system. “We use hot-mopped coal tar pitch in situations where the material is in constant contact with water because the pitch doesn’t degrade,” Pickard notes. “You don’t want to have to take the dirt off of a garden roof and start looking for leaks. You have to do everything you can to make sure nothing can cause problems.”

That includes making sure the deck is secured with screws and not nails, which can back out and damage the roof assembly. Gravel stops should either be copper or stainless steel so they won’t corrode. “The whole idea is permanence,” Pickard says.

The hot-mopped system manufactured by Durapax consists of four plies of tar-coated fiberglass felt, which were set in four layers of coal tar pitch. A fifth layer of pitch was added as a top coat.

Pickard Roofing also installed the metal roof system. Snap Lock panels were custom fabricated in the company’s metal shop from 24-gauge Kynar-coated steel from Firestone Building Products in a wine-red color chosen by the homeowner. A synthetic underlayment, Titanium PSU 30 from InterWrap, was applied to the wooden deck before the panels were secured in place.

“The great thing about the Snap Lock system is there is virtually no fastening through the face of the metal,” Pickard says. “The panels are secured with cleats and clips in the seams.”

Snow guards from Berger Brothers were attached to the seams using non-penetrating screws. Half-round gutters were fabricated from the same metal as the roof and complemented with “rain chains” that serve as downspouts.

Many of the copper details and flashings were custom fabricated on site. “One of our strengths is in our



flashing design,” notes Pickard. “The company has a lot of soldering irons. We still use a lot of the old techniques.”

The roofing installations went smoothly. As Pickard Roofing completed the roofs on the home, crews from Southern Energy Management, headquartered in Morrisville, North Carolina, constructed the carport roof from partially transparent solar panels.

“Everyone’s priority was on doing the job right,” Pickard says. “In this case, the emphasis was on the quality, not just the cost. The cost is important, don’t get me wrong, but in this case the budget was increased if there was a product that could do the job better. Ultimately, you have to put the quality where it counts, and that’s why this project worked out so well.”

### THE GREEN ROOF INSTALLERS

Landscape architect Kathryn Blatt Ancaya co-founded Living Roofs Inc. in Asheville, North Carolina, along with her husband, Emilio Ancaya. The company handles all aspects of green roof and living wall projects, including design, installation and long-term maintenance. “Our work ranges from small residential projects to large complex commercial and institutional projects – and of course, everything in between,” she says.

Living Roofs is a certified installer with garden roof system manufacturer Xero Flor America LLC, which is headquartered in Durham. Clayton Rugh, the director of Xero Flor, contacted the Ancayas after Trott and Govan toured the company’s own garden roof. They asked for help designing a version of the company’s lightweight extensive roof system for the project. As Rugh notes, “One of the benefits of the Xero Flor green roof system is its adaptability to nearly any roof situation – load limits down to 10 pounds per square foot, dynamic slope changes between zero and 45 degrees, and compatibility with most commercial waterproofing, including TPO, PVC, modified bitumen and asphaltic BUR assemblies.”

“We collaborated with the architect, Tina Govan, and Xero Flor to design an extensive pre-vegetated green roof

with areas of deeper soil to support native grasses and perennials,” Ancaya explains.

The Living Roofs crew installed the Xero Flor XF300 green roof system with growing media depths ranging from 2.5 to 5 inches. After the root barrier was installed over the coal tar pitch roof, it was covered with a drain mat and filter fleece. The growing medium was then lifted into place using a telehandler.

Most of the garden roof area was overlaid with pre-vegetated Xero Flor sedum mats. Plugs of herbaceous plants were inserted in the deeper areas. “The grasses we used were grown by Hoffman Nursery, a local grower, and we used perennials by North Creek Nursery,” Ancaya notes.

The sedum mats are an attractive option because they are fully covered when they are installed, notes Ancaya. “Incorporating the areas of deeper soil also allowed us to create a more dramatic visual effect by contrasting the low-growing Xero Flor mats with taller and more textured plants,” she says.

The green roof installation took less than eight hours over the course of two days. “Kate is the design arm of Living Roofs, and Emilio is the installation arm, and the two of them teamed up on this project to knock it out of the park,” Rugh says.

### A HAPPY HOME

Trott enjoyed watching the building process. “I learned a ton,” she says. “I just love watching craftsmen who are passionate about what they do. I had fun out there!”

The home was completed in the spring of 2017, and Trott is thrilled with the result. “It’s better than I even imagined it would be,” she says. “I love it, and my cats love it. In fact, I think they are pretty sure that I did all of this just to entertain them.”

The growth and changing color palette of the rooftop garden has been interesting to watch. “The green roof has been amazing,” she says. “It’s just been one year, but the green roof keeps getting lusher and lusher. Every feature is my favorite feature in the house, but the green roof – I love it. I really do.”

In fact, Trott has become something of a residential green roof ambassador. “I’ve been spreading the word,” she says. **R**

## TEAM

**ARCHITECTS:** Tina Govan, Architect, Raleigh, North Carolina, [www.somosdesign.us](http://www.somosdesign.us), in collaboration with CUBE design + research, Chapel Hill, North Carolina, [www.cubedesignresearch.com](http://www.cubedesignresearch.com)

**GENERAL CONTRACTOR:** Form Design/Build LLC, Raleigh, North Carolina, [www.formdesignbuild.org](http://www.formdesignbuild.org)

**ROOFING CONTRACTOR:** Pickard Roofing Company Inc., Durham, North Carolina, [www.PickardRoofing.com](http://www.PickardRoofing.com)

**GREEN ROOF INSTALLER:** Living Roofs Inc., Asheville, North Carolina, [www.livingroofsinc.com](http://www.livingroofsinc.com)

**SOLAR INSTALLER:** Southern Energy Management, Morrisville, North Carolina, [www.southern-energy.com](http://www.southern-energy.com)

## MATERIALS

### LOW-SLOPE SYSTEM

**COAL TAR PITCH:** Coal Tar Roofing and Waterproofing Pitch, Durapax, [www.Durapax.com](http://www.Durapax.com)

**FIBERGLASS FELT:** Tar Coated Fiber Felt, Durapax

### STEEP-SLOPE SYSTEM

**SYNTHETIC UNDERLAYMENT:** Titanium PSU 30, InterWrap, [www.InterWrap.com](http://www.InterWrap.com)

**METAL PANELS:** 24-gauge Kynar-coated steel, Firestone Building Products, [www.FirestoneBPCO.com](http://www.FirestoneBPCO.com)

### GREEN ROOF SYSTEM

#### EXTENSIVE AND SEMI-INTENSIVE

**GARDEN ROOF:** Xero Flor XF300, Xero Flor America LLC, Durham, North Carolina, [www.xeroflornorthamerica.com](http://www.xeroflornorthamerica.com)

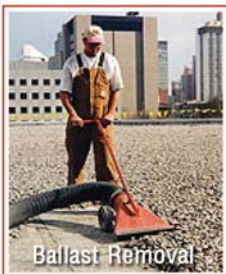
COMPANY	PHONE NUMBER	WEB ADDRESS	PAGE	CIRCLE NO.
A.C.T. Metal Deck Supply	(800) 894-7741	www.MetalDeckSupply.com	70	59
All Weather Insulated Panels	(707) 685-5774	www.AWIPanels.com	41	38
American Hydrotech	(312) 337-4998	www.HydrotechUSA.com	71,73,75	61,62,63
ATAS	(610) 395-8445	www.ATAS.com	31	33
Aztec Washer	(858) 513-4350	www.AztecWasher.com	48	41
Building Products Development	(866) 766-3254	www.BPDusa.com	59	51
Carlisle SynTec Systems	(800) 479-6832	www.CarlisleSyntec.com	4,65	3,55
Chem Link	(800) 826-1681	www.Chemlink.com	19	13
Design Components	(800) 868-9910	www.DesignComponents.com	45	39
Dryer Jack	(561) 743-8696	www.DryerJack.com	76	64
Dynamic Fastener	(800) 821-5448	www.DynamicFastener.com	15	10
EagleView	(585) 444-2576	www.Eagleview.com	49	43
EPDM Coatings	(610) 289-1949	www.EPDMCoatings.com	58	49
E-Z Gutter	(800) 748-7736	www.E-Zgutter.com	60	52
Flex Roofing Systems	(800) 969-0108	www.FlexRoofingSystems.com	47	40
GAF	(973) 628-3000	www.GAF.com	84	67
Garland	(800) 321-9336	www.GarlandInd.com	48	42
Georgia-Pacific	(800) 225-6119	www.BuildGP.com	5	4
Green Link Engineering	(888) 672-9897	www.Greenlinkengineering.com	27	30
GSSI	(800) 288-9489	www.GSSISealants.com	11	7
IB Roof	(800) 426-1626	www.IBRoof.com	3	2
Lakeside Construction Fasteners	(740) 244-5911	www.Lakeside-Fasteners.com	33	34
Lifetime Tool	(877) 904-1002	www.LifetimeTool.com	29	32
LM Curbs	(800) 284-1412	www.LMCurbs.com	59	50
Marathon Drains	(800) 824-8424	www.MarathonDrains.com	18	12
Metal Plus LLC	(860) 379-1327	www.MetalPlusLLC.com	57	48
MFM Building Products	(740) 622-2645	www.MFMBP.com	35	35
Mule-Hide Products Co. Inc.	(800) 786-1492	www.MuleHide.com	66	56
NB Handy	(434) 847-2498	www.NBHandy.com	63	54
OMG Roofing Products	(800) 633-3800	www.OMGRoofing.com	2	1
Peak Metal Products	(919) 256-2270	www.PeakMetal.com	53	45
Petersen	(888) 942-2636	www.PAC-CLAD.com	17	11
Polyglass	(954) 233-1239	www.Polyglass.us	21	15
Progressive Materials	(812) 944-7803	www.PMSilicone.com	23	20
RK Hydrovac	(800) 762-8361	www.RKHydrovac.com	83	66
Roof Hugger	(800) 771-1711	www.RoofHugger.com	53	44
Royal Adhesives	(517) 841-7108	www.RoyalAdhesives.com	37	37
Safety Hoist	(877) 99-HOIST	www.SafetyHoistCompany.com	20	14
Sharkskin	(877) 742-7507	www.Sharkskin.us	67	57
Snojax	(717) 458-7880	www.Snoblox.com	12	8
SofSurfaces	(800) 263-2363	www.SofSurfaces.com	25	25
Soprema	(330) 331-3062	www.Soprema.us	9	6
Standing Seam Roof Anchor	(863) 703-4522	www.FailPD.com	54	46
Steinel	(800) 852-4343	www.Steinel.net	70	60
Swenson Shear	(877) 588-8748	www.SwensonShear.com	61	53
System Components	(425) 392-5150	www.SystemComponents.net	6	5
Triad Corrugated Metal	(866) 625-9727	www.TriadMetalRoof.com	69	58
Trufast	(800) 443-9602	www.Trufast.com	36	36
Versico	(800) 992-7663	www.Versico.com	55	47
WSRCA	(800) 725-0333	www.WSRCA.com	77	65
Zimmerman Metals	(303) 294-0180	www.ZimmermanMetals.com	13	9



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