

JULY / AUGUST 2021
RoofingMagazine.com

Roofing

THE INDUSTRY'S VOICE

ROOFING AND SOLAR

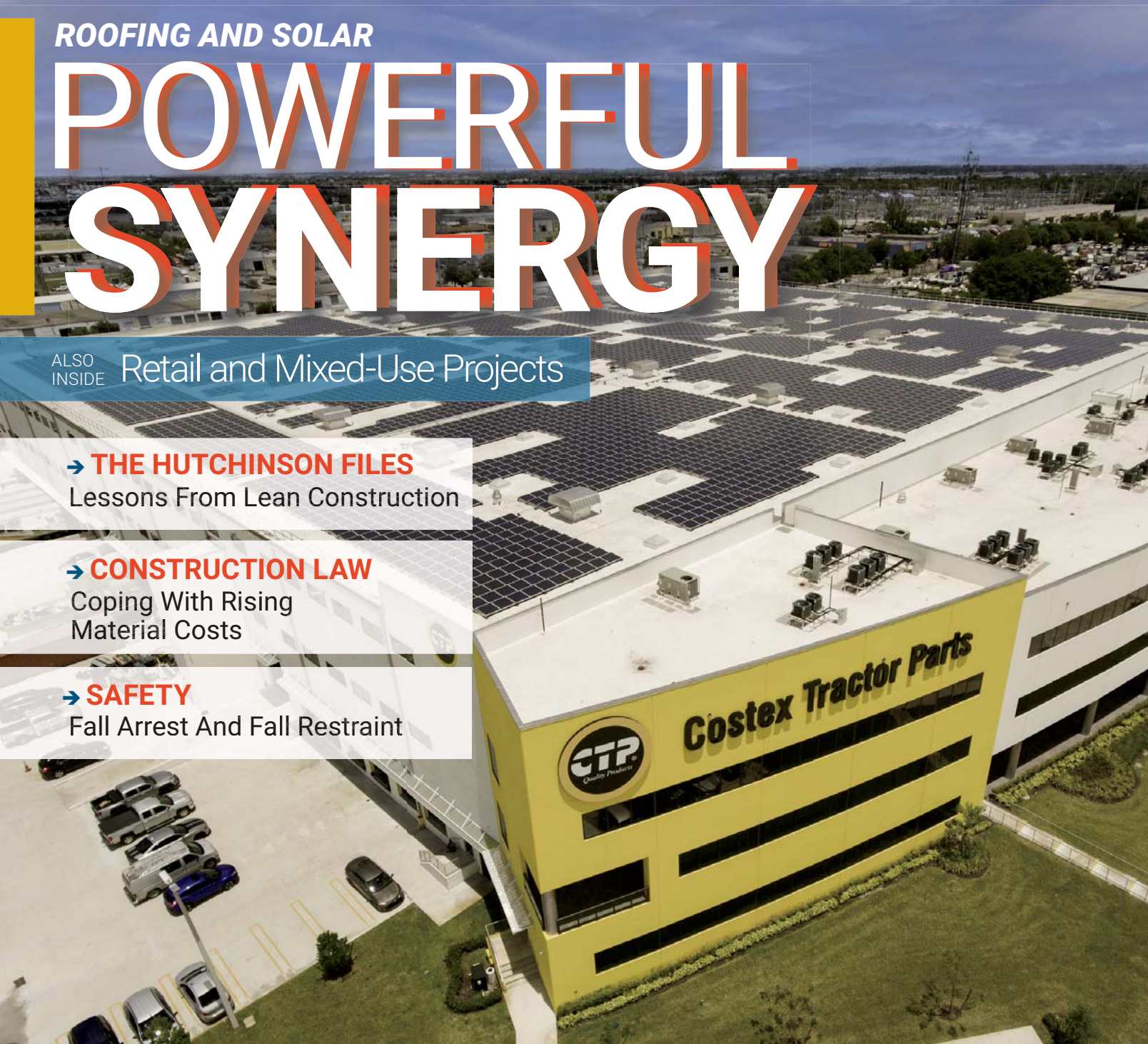
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CONTENTS

JULY / AUGUST 2021

FEATURES

THE HUTCHINSON FILES

58 Lean Roofing

Project management is more important than ever.

RETAIL AND MIXED-USE PROJECTS

66 Eye-Catching Detail

Aesthetic touches add flair to new retail complex

68 Best of Both Worlds

New roof system delivers short- and long-term returns.

72 Supporting Rooftop Solar

Shopping mall re-roof incorporates PV system.

76 Texas-Sized Roof

Synthetic slate roof tops sporting goods store.

78 Championship Caliber

PVC roof protects the Boston Celtics at the Auerbach Center.

80 Roof Maintenance Pays Off

Contractor helps non-profit with insurance claim.

82 Historic Retrofit

Roof coating is key to adaptive re-use project.

86 All-Inclusive

Mixed-use facility protected by TPO system.

88 Get on Deck

High-performing fill material supports rooftop swimming pool.



ROOFTOP SOLAR

90 Powerful Synergy

Roofing and solar work hand in hand at the CTP headquarters.

94 Horse Sense

Equestrian multi-purpose barn designed with PV in mind.

96 Beauty, Braun & Energy Savings

Colorado net-zero home is ready to weather the elements.

98 Sunny Future

Residential solar offers lower energy bills and great aesthetics.

COMMERCIAL

100 The Big One

Restoration project helps resort reopen after a storm.

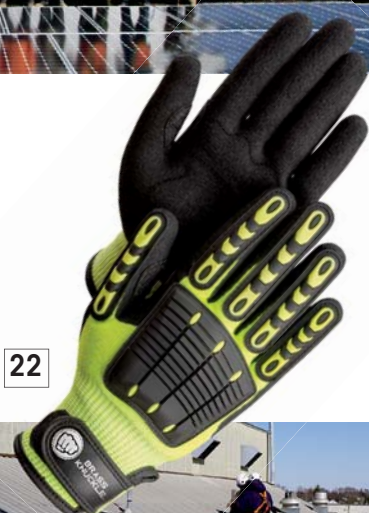
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CONTENTS

JULY / AUGUST 2021



ON THE COVER

Costex Tractor Parts (CTP) built its new headquarters in Doral, Florida, complete with a 1.6-megawatt solar array that provides 90 to 100 percent of the energy needed for the entire building.

PHOTO: ADVANCED GREEN TECHNOLOGIES



COLUMNS

10 Raise the Roof

Roofing and solar need to work hand in hand.

30 Business Sense

Roof preparedness and hurricane season.

34 Construction Law

Coping with rising material costs.

42 Construction Law

Key considerations when bidding on government projects.

48 Tech Point

Mountaintop installation provides lessons in rooftop solar.

54 Safety

Fall arrest and fall restraint for residential vs. commercial roofing.

DEPARTMENTS

12 Contributors

14 New & Notable

18 News from the NRCA

20 Tech Tools

22 Materials & Gadgets

28 Roofers' Choice

106 Ad Directory



Check out Episode 2 of "Roofing: The Industry's Voice" podcast and hear Anna Anderson, CEO of Art Unlimited, and Sue Burkett, marketing manager at Owens Corning, share their insights about how contractors can more effectively market to women.

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

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

Under the Sun

There has always been a debate about the merits of solar power. If you're of a certain age, you might remember President Jimmy Carter installing solar panels on the roof of the White House. If so, you probably also remember President Ronald Reagan later pulling them down. A less well known fact is that President George W. Bush installed a rooftop electric solar system during his administration. The saying goes that there's nothing new under the sun, but innovations in solar power continue to advance the hopes of a greener energy future.

Reasonable people can debate the benefits, efficiencies, and optimal design and installation methods for solar panels, but there's one area where all roofing professionals are probably in agreement: if solar panels are on the roof, they are in the roofing contractor's domain.

The contractors I spoke with for this issue emphasized the importance of making sure the roof system and solar system are compatible. They explained that the solar array needs to be designed and installed with the roof system in mind, and the roof system has to be designed to be integrated with the solar array – and withstand the ongoing maintenance required.

This issue spotlights solar installation on a variety of roofs, including a retrofit application on a mall built in the 1970s in Maine; a state-of-the-art office, warehouse and manufacturing facility in Florida; an equestrian horse barn in British Columbia; an observatory atop Hawaii's tallest mountain, Mauna Kea; as well as residential homes in Pennsylvania and Colorado.

"We truly believe the roofer is the most well-equipped to handle rooftop solar," said Clint Sockman, executive vice president of Advanced Roofing and Advanced Greet Technologies, sister companies that installed the roof and solar array on the new Costex Tractor Parts headquarters in Doral, Florida. The goal of the companies in the Advanced Group is to handle everything on the rooftop.

That is the same business model driving Bachman's Roofing, Building & Remodeling, Inc. The company is making great inroads in residential solar in Pennsylvania by emphasizing the savings on utility bills and great aesthetics roof-integrated residential solar can provide.

Sockman sums it up this way: "Roofing and solar need to go hand in hand. There are a lot of synergies there, but there can also be a lot of trouble if you don't make them come together. There is a lot of benefit to the customer to having one project team coordinating everything." **R**

— CHRIS KING





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Dave Feitl is vice president of Global Roofing and Western USA SPF Sales with Huntsman Building Solutions. In "Business Sense," page 30, he examines the importance of preparing roofs to perform in the face of intensifying storms.



Keith A. Boyette is an attorney with Anderson Jones, PLLC in Raleigh, North Carolina. In "Construction Law," page 34, he explores how a price escalation clause can protect contractors from the effects of material price increases.



Roscoe Green is a Partner at Cotney Attorneys & Consultants who focuses his practice on construction law. In "Construction Law," page 42, he details key considerations for contractors bidding on government projects and other publicly funded work.



Louisa Hart is the director of communications for the Washington-based EPDM Roofing Association (ERA). In "Tech Point," page 48, she details a photovoltaic installation on an observatory on Hawaii's tallest mountain.



David Ivey oversees the product development of fall protection and safety equipment at Malta Dynamics and sits on the ANSI Z359 board. In "Safety," page 54, he explores fall arrest and fall restraint systems typically used on residential and commercial roofing projects.



Thomas W. Hutchinson, AIA, CSI, Fellow-IIBEC, RRC, is a principal of Hutchinson Design Group Ltd. in Barrington, Illinois. In "The Hutchinson Files," page 58, he examines the benefits of Lean Construction and its implications for project management.

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ABC Supply Co. Inc. and GAF Team Up to Offer QuickMeasure Reports on MyABCsupply App

ABC SUPPLY CO. INC. and GAF are joining forces to give contractors convenient access to aerial roof measurements through their myABCsupply account. ABC Supply customers are now able to order a GAF QuickMeasure report, retrieve reports, and place their materials order with ABC Supply without leaving the myABCsupply app, giving contractors back a little more time in their day.

"We're excited to partner with GAF to give our customers an option to access GAF QuickMeasure reports through their myABCsupply accounts," said Mike Jost, chief operating officer at ABC Supply. "We're constantly looking for ways to make our customers' lives a little easier, and giving them easy access to these reports helps us toward this goal."

ABC Supply launched myABCsupply in 2019 to give its customers 24/7 access

to place orders online, view order details, track deliveries, retrieve delivery photos and manage their billing.

"Contractors are looking for tools that help streamline processes and gather accurate information quickly and easily to meet customer needs," said Vishal Laddha, director, marketing – partner programs at GAF. "We're thrilled to partner with ABC Supply to provide an integrated solution where contractors can access everything they need for a roofing job at their fingertips, including a QuickMeasure roof report."

GAF QuickMeasure is a complete aerial roofing measurement tool based on third-party proprietary software that delivers accurate, automated roof measurements in less than one hour for



single-family homes and less than 24 hours for multifamily and commercial properties. GAF QuickMeasure also provides an interactive roof report which includes a design view featuring GAF products customized to the project. All reports include a recommended materials list based on the measurements, which can be ordered directly through the myABCsupply app.

For more information, visit abcsupply.com and www.gaf.com.



S-5! Holds Groundbreaking Ceremony for New Office Campus

SHAWN HADDOCK, Rob Haddock and Dustin Haddock break ground on S-5!'s new office campus in Colorado Springs, Colorado, designed to provide sufficient space for staff and to better serve its customers. The two-story building will sport metal finishes, a solar roof and comfortable but provocative space for its thought-leaders to collaborate. A support building will house S-5!'s video training center, prototype shop and test facilities. S-5!'s new corporate headquarters will be located in Black Forest where S-5! clamp-to-seam technology was birthed 30 years ago. For more information, visit s-5.com.

Keven Yarbrough Joins Cotney's Team as Safety Consultant

COTNEY ATTORNEYS & Consultants announced that Keven Yarbrough has joined Cotney's team as a Safety Consultant, where he will help clients with safety training and OSHA defense. Keven spent 23 years with OSHA and has been recognized for his work through three Secretary of Labor Exceptional Achievement Awards. He is registered with the OSHA Training Institute and Education Center in Wesley Chapel, Florida.

"Keven will be a great asset to our company by providing our clients and attorneys with valuable insight from his 20-plus years of experience working for OSHA," stated Trent Cotney, CEO of Cotney Attorneys & Consultants. For more information, visit cotneycl.com.

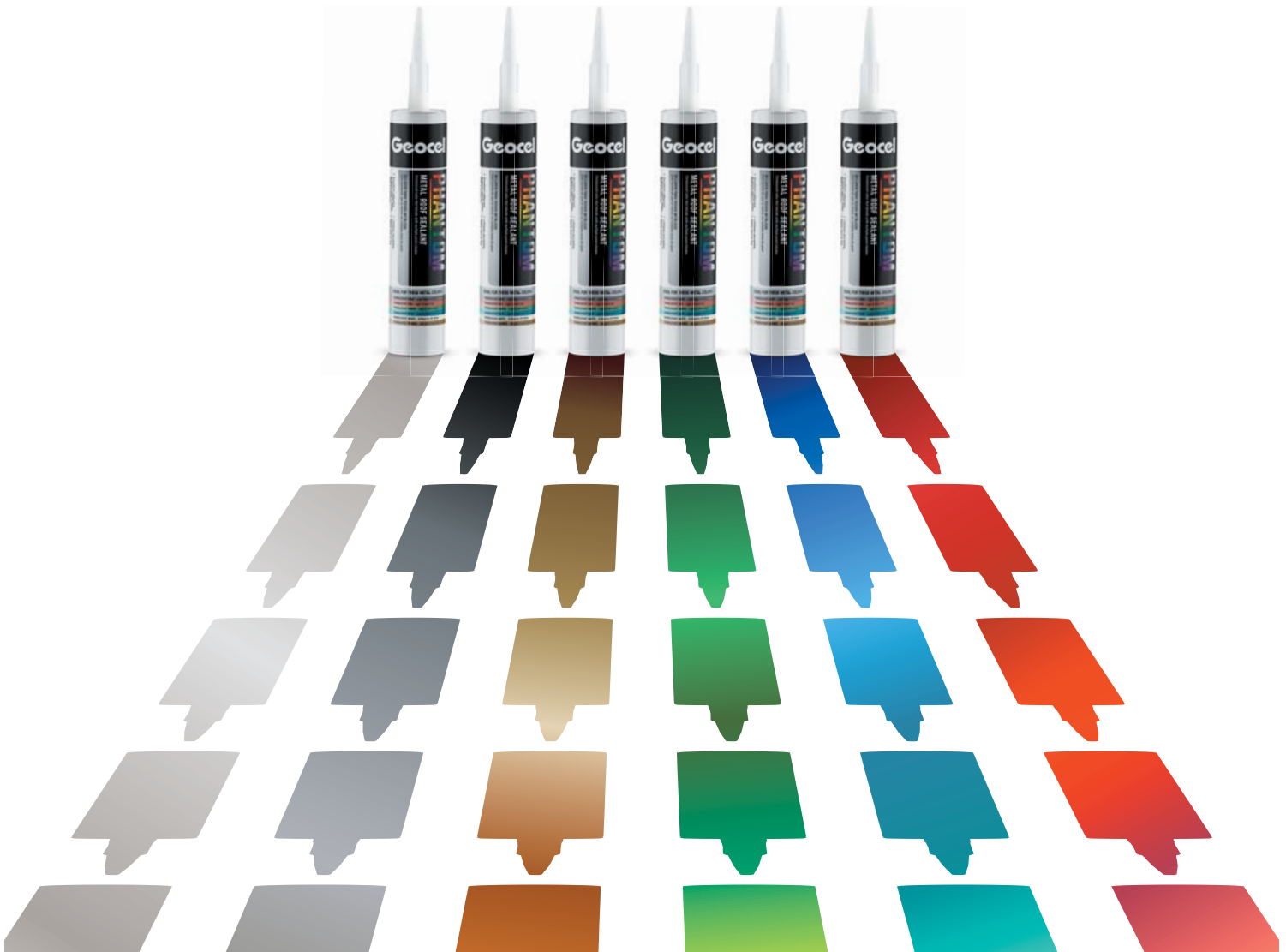
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GAF Energy Builds Out U.S. Solar R&D and Manufacturing Facility

GAF ENERGY has leased and begun critical improvements on a 112,000-square-foot facility in San Jose, California. The new facility will serve as the company's center for research and development and manufacturing, bringing traditionally off-shored solar manufacturing to the United States. The buildout of the property and its ongoing operations will result in hundreds of U.S.-based, clean energy manufacturing jobs and a solar roof product that is made in America. As part of Standard Industries and a sister company to GAF, GAF Energy brings extensive roofing manufacturing and R&D expertise to the solar industry.

"Solar roofing is the future of the industry; the research, innovation, and manufacturing for that future will start at this facility," said Martin DeBono, president of GAF Energy. "The co-location of R&D and manufacturing is a huge benefit for the scientists pushing the envelope on what's possible for the product, and the engineers responsible for rolling it off the line."

GAF Energy empowers roofing contractors across the country with a comprehensive and economical approach to solar installations. The GAF Energy solar system in-market today is integrated into the roofing system, ensuring that the primary function of the roof – to protect the home from the elements – remains intact. For more information, visit gaf.energy.

Boral Agrees to Sell Its North American Building Products Business

BORAL LIMITED announced that it has entered into an agreement with a subsidiary of Westlake Chemical Corporation to sell its North American Building Products business for \$2.15 billion.

Boral's CEO & Managing Director, Zlatko Todorovski, said, "Boral has owned and operated building products businesses in the USA for more than 40 years, and we recognize and value the contribution that our North American building products' employees and customers have made to the Boral Group over that time. The level of market interest and the acquisition price reflects the fact that Boral's Building Products is a portfolio of great businesses with quality products, strong brands and good positions in many geographies. We are confident that this change of ownership to Westlake, with its strong history and focus on innovative exterior building products, will support the prospects for our North American Building Products business, which includes Roofing, Stone, Light Building Products and Windows businesses."

The transaction is expected to be completed in the first half of fiscal year 2022. For more information, visit westlake.com.



David Sokol (left) Tommy Barch, Wally Barch.

The Garland Company Awards Scholarship

THE GARLAND COMPANY, INC. awarded a \$12,600 scholarship to Tommy Barch, son of Garland's Director of Recruiting and Training Wally Barch. The scholarship program was inaugurated in 2020 for the company's 125th anniversary. Tommy Barch, a 2020 graduate of Highland High School in Medina, Ohio, will be a sophomore at Bowling Green State University in the fall and is majoring in finance.

"This scholarship has been a wonderful opportunity to see the bright minds nurtured by our employees and Tommy is a stellar example of that," said President David Sokol. For more information, visit garlandco.com.

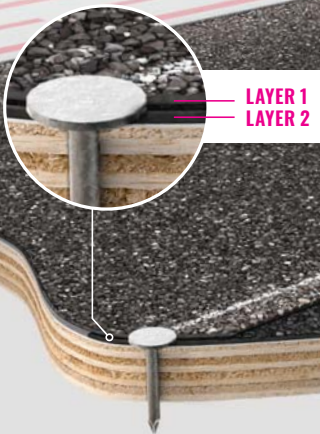


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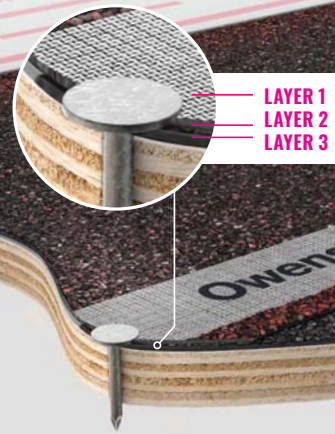
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* Owens Corning testing against competing products with wide, single-layer nailing zones when following manufacturers' installation instructions and nailing in the middle of the allowable nailing zone.

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The Roofing Alliance Announces 2021-2022 Leadership, Adds Scholarships

THE ROOFING ALLIANCE, celebrating 25 years as the foundation of the NRCA, announced the Board of Trustees for 2021-2022. Dave Lawlor of ROCKWOOL North America will serve as the new president and Kelly Van Winkle of King of Texas Roofing Company LP will serve as the first female vice president.

Additional announcements at the Roofing Alliance virtual spring meeting included an increase to 13 scholarships for the number of awarded Melvin Kruger Endowed Scholarships for the Accredited Post-Secondary Institution Scholarship Category. Changes were approved to the scholarship program criteria for both the Accredited Post-Secondary Institution Category and the Accredited Career Technical Education Scholarship Category. Eligibility to apply for scholarships was expanded beyond Roofing Alliance and NRCA members to include the larger roofing industry in general. Scholarship applications will also be offered to construction management schools, vocational and technical trade schools associated with SkillsUSA.

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

NRCA ProCertification for Clay and Concrete Tile Systems Installers Has Launched

Experienced installers who demonstrate substantial skills and knowledge of clay and concrete tile roof systems can apply to become NRCA ProCertified Clay and Concrete Tile Systems Installers. The certification was developed with support from the Tile Roofing Industry Alliance. For more information, visit nrca.net/procertification.

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



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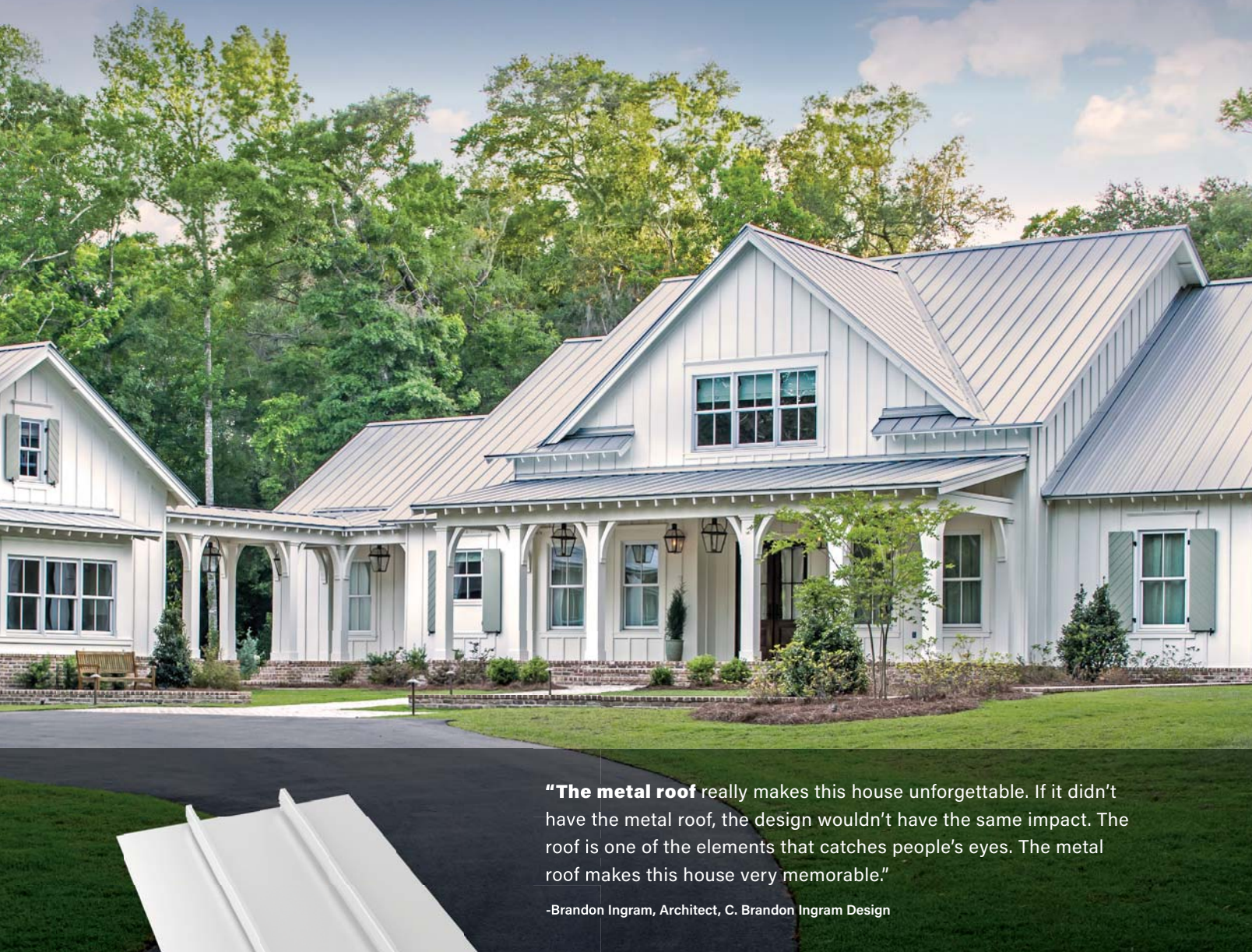
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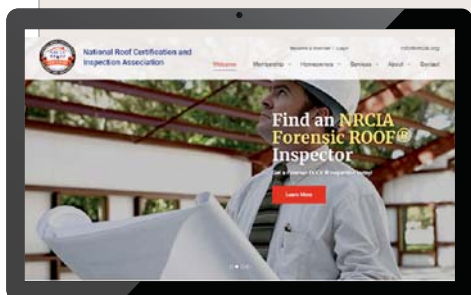
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Professional Roof Certifications for the Home Inspection Industry

The National Roof Certification and Inspection Association (NRCIA) developed inspection reporting software that set the standard for roof inspections in the home inspection industry. NRCIA certified roof inspectors perform in-depth roof inspections and provide thoroughly written inspection reports. NRCIA-certified members are able to use web-based inspection reporting software from their desktop PCs or mobile devices and issue LeakFREE certifications as part of the proprietary system provided under NRCIA membership. LeakFREE is a registered trademark of NRCIA. For more information on becoming an NRCIA Certified roof inspector, visit [NRCIA.org](https://nrcia.org).

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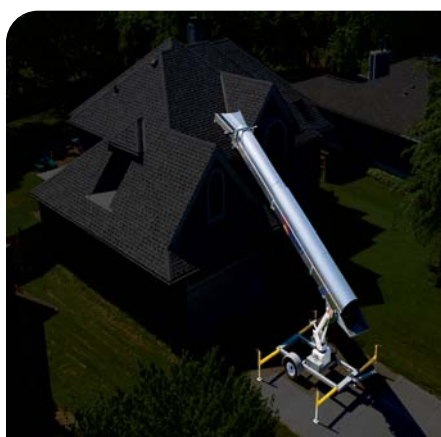
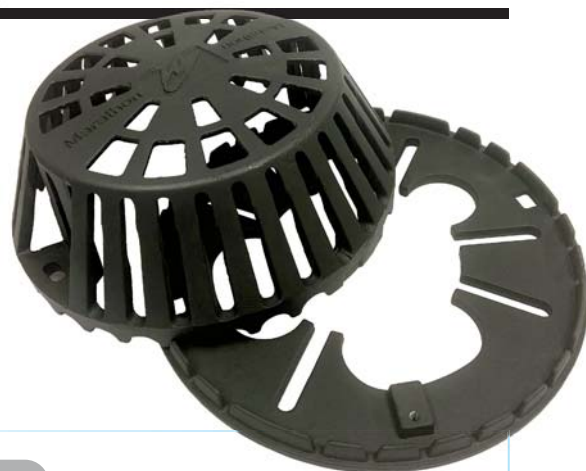
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Cast Iron Retrofit Roof Drain Ring and Dome

Marathon Roofing introduces a new Cast Iron Retrofit Ring and Dome designed to easily replace broken or missing parts on existing roof drains. They are designed for re-roofing applications when a clamping ring is important to secure single-ply and two-ply membranes in waterproof roof systems. The ring features a strong cast iron design with three pairs of bolt-down tines to align with most old drain bolt patterns. The low-profile cast-iron dome is 12 inches in diameter and 5 inches in height. Ring and dome assembly weighs 21 pounds. The ring and dome may be purchased separately or in combination. Also available in aluminum.

MarathonDrains.com



Compact, Telescoping Roof-to-Dumpster Disposal System

Rocket Equipment launches the Trash Rocket 3000, a self-supported telescoping debris disposal system designed for residential roofing companies. The Trash Rocket 3000 is a smaller version of Rocket Equipment's commercial grade Trash Rocket 3900. Trash Rocket 3000 is a compact unit for easy transport and setup in most residential driveways. It is trailer mounted for easy towing and setup with a standard size truck. It has adjustable outriggers to provide leveling on uneven terrain and features a totally enclosed chute, which prevents roofing debris from missing the dumpster or damaging the homeowner's property.

RocketEquipment.com



Two-Piece Clamps for Standing Seam Metal Roofs

Dynamic Fastener offers new two-piece clamps for standing seam metal roofs, the DC-TS2 and DC-ZR2. Mini versions of these two clamps are also in stock for same-day shipping. The clamps are designed so that the insert can be removed prior to installation, allowing the clamp to be fitted at virtually any location on the roof panel seam. That feature eliminates the need for the installer to slide the clamp up the seam from the eave to the required clamp location. These clamps are designed to be used on panels such as Centria SRS3 (DC-TS2) and Merchant & Evans Zip Rib (DC-ZR2).

DynamicFastener.com



All-in-One Modular Pre-Vegetated System

SOPREMA releases the SOPRANATURE Tundra Box, an all-in-one, modular pre-vegetated system that is customizable for water retention based on plant selection and cultivated tundra plants, which is a mix of sedum species or a mix of different drought-resistant perennials. The mix of vegetation can be adapted according to the hardiness zone and climatic conditions. Factory-made from 100 percent recycled polypropylene, the modules are light, hold a large water volume, and offer excellent wind uplift resistance properties.

Soprema.us

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Acrylic Elastomeric Roof Coating

Firestone Building Products launches GacoFlex A47, an acrylic elastomeric roof coating with all the qualities you want when renewing a weathered commercial roof: longer roof life, visual appeal, strong adhesion, high tensile strength, and great reflectivity. It can be applied over many existing systems, including weathered single-ply, metal, sprayed-in-place polyurethane foam, and asphalt membranes. The product exceeds ASTM D6083 requirements, among other code approvals, and offers strong anti-microbial properties to prevent unsightly biological growth. For a total roof replacement solution, GacoFlex 47 and GacoRoofFoam can be used together. Available in 55-gallon drum and 5-gallon buckets.

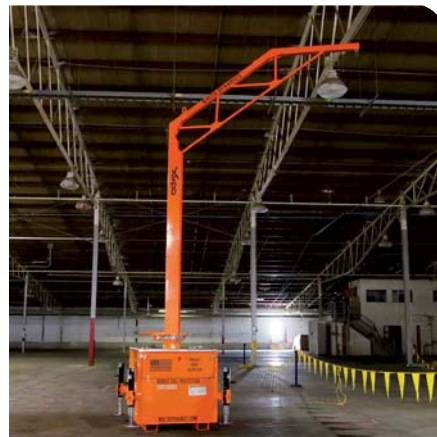
Gaco.com



Flexible Solar Panel for Standing Seam Metal Roofs

Sunflare offers PowerFit 20, a solar panel that is designed to be practically invisible on standing seam metal roofs. It is a light, thin, flexible solar panel that is custom fit to sit between the seams of the roof. Each PowerFit panel is 60 watts and can be seamlessly connected to cover whatever length the roof demands. Sunflare solar modules have a butyl-based adhesive on the back, so installation is fast, easy and low-cost. With PowerFit 20 there are no roof penetrations needed.

SunflareSolar.com



Mobile 360-Degree Rotating Overhead Fall Protection Anchor

Malta Dynamics offers its new X500 Free-Standing Anchor mobile fall protection unit that offers a 360-degree rotatable arm with an overhead anchor point. Perfect for loading and unloading applications, the free-standing unit provides a mobile 20-foot-high overhead anchor point, providing tie-off for fall protection while minimizing swing fall hazards. The X500 fall protection system offers quick, simple field assembly with bolt-together components and is rated for user assembly with minimal equipment required. The unit features built-in leveling jacks, forklift pockets for easy mobility, and a multi-position boom lock to provide a fixed-position arm when needed.

MaltaDynamics.com

Temporary Shrink-Wrapped Roofing System Lasts One Year

Mule-Hide Products Co. introduces Shur-Gard Roof Wrap, a temporary roof that can protect the roofing structure and the building's interior for a full year. The 12-mil-thick polyethylene film is heated to shrink to the roof, securely wrapping it to create a fully-functioning, leak-free roof that can stay in place for up to 12 months, resisting water and wind and preventing further damage. Designed for use on steep-slope roofing systems, it can be used to cover an entire roof or to protect only damaged areas, such as around turbine roof vents, over a few broken tiles, or over a broken skylight. One roll of Shur-Gard Roof Wrap covers 2,880 square feet.

MuleHide.com



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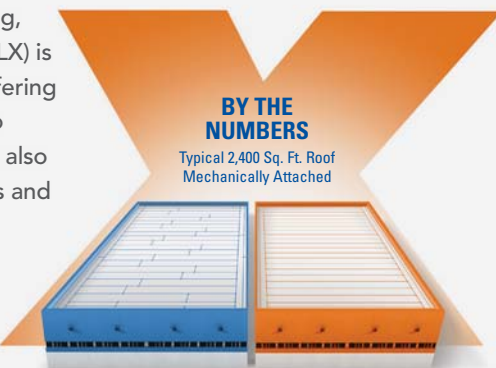
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Roof Hatches Approved for Hurricane and Wind Resistance

The BILCO Company announces additional standard-sized roof hatches that are approved for hurricane and wind resistance by the Miami-Dade County Building Code Compliance Office and Florida Building Commission. BILCO has added the 36" x 36" (Type E), 48" x 48" (Type F), and 30" x 96" (Type L) standard size-size roof hatches to its line of specialty access products approved to withstand severe weather conditions, joining the company's S and NB sizes, which were previously offered. The hatches are specifically designed and tested to withstand hurricanes and severe weather systems and the new sizes offer more options for architects who are specifying roof hatches for projects located in hurricane zones.

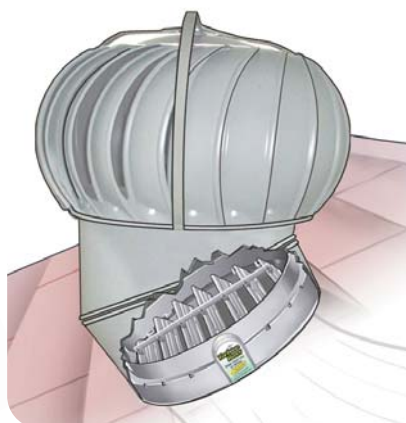
Bilco.com



Safety Gloves Designed for Impact Resistance

Brass Knuckle SmartShell is the next-generation, cross-functional glove that is loaded with features that are engineered to provide protection on multiple fronts. Ergonomic design features excellent flexibility. Thermoplastic rubber padding is sonically welded to the back of the glove for protection from contusions, smash injuries, object strikes, pinch-point injuries to the tips of each finger, and other impact hazards. The gritty black nitrile palm coating offers excellent wet grip and the bright lime green shell color meets the requirements of ANSI/ISEA 107-2010 for high-visibility safety apparel.

BrassKnuckleProtection.com



Automatic Damper for Roof Turbines

Lancer United Inc. introduces Turbine Boss, the original automatic damper system for roof turbines that cuts home heating costs in winter. The damper louvers are automatic. The louvers are designed to open in summer the summer at 70 degrees and close in winter at 40 degrees. The Turbine Boss needs no batteries or electrical hookup; it's controlled by the temperature. Molded of durable, high-impact polystyrene and measuring 12 inches by 2 inches, it easily fits inside roof turbine vents with diameters of 12 inches and 14 inches. The product holds a U.S. Patent and is made in USA.

TurbineBoss.com



Cable Suspension Roof Scaffolding System

The SteepSeat from **Kain Built** is the world's first cable suspension walk board system for roofing. No nails or fasteners are needed; the system sets up in minutes and walk boards can be repositioned in seconds. The steep seat is ideal for metal, slate or tile work. The rubber-mounted brackets won't scratch metal panels. The complete set includes two ridge hooks; two 25-foot steel cables, and two rubber-mounted roof brackets.

KainBuilt.com

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Roof Vent For Clothes Dryer Exhaust Provides Protection From the Elements

InOvate introduces DryerJack Model 477, a roof vent for clothes dryers designed to maximize dryer exhaust system efficiency and safety. Model 477 is deep-draw manufactured of Galvalume steel for durability and is available in four powder-coated colors. The deep-draw process delivers a seamless hood providing extra

protection against the elements, as well as a sleek look for improving home aesthetics.

"As with all InOvate product development, the team started by listening to customers and working to engineer advanced solutions to best meet their needs, delivering superior quality and performance," said Cliff Budnick, InOvate's President. "Lab and field

testing have proven the 477 to be perfect for properly venting clothes dryers through the roof."

International building code forbids the use of screens, requires a damper and a venting passageway larger than 12.5 inches for dryer exhaust systems. The DryerJack exceeds all manufacturer and building code requirements without any modifications. It is ready to go right out of the box.

Superior airflow efficiency is achieved with a large clean opening and lighter Galvalume curved damper. This, combined with rear placement of the vent passageway that increases in size, allows the dryer to operate at peak performance, maximizing airflow efficiency and helping reduce the chance of dangerous dryer fires. The larger opening also provides easy cleaning and maintenance access while blowing lint straight out, not down. **R**



The "Roofers' Choice" selection 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 March/April 2021 issue.

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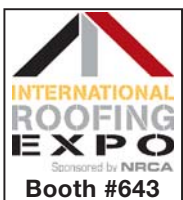
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SPRAY FOAM ROOFING

Spray polyurethane foam (SPF) roofing is ideal for a wide range of commercial, agricultural, industrial and residential applications over most new and retrofit roofing substrates. The rigid material is a high density, closed-cell spray foam variety at around 2.8 pounds per cubic foot. As roofing, spray foam provides a protective layer and uniquely acts as a thermal insulator, air barrier, vapor retarder and a waterproofing solution.

The roofing system locks every portion of the roof into place and eliminates the need for mechanical fasteners. The material may be utilized when the roof deck is of an unusual configuration or shape or when a sloped application is required to provide controlled drainage (in addition to being ideal for flat roofs of regular shapes).

The material's adhesion qualities make it particularly ideal in hurricane prone regions including the Southeast, Gulf Coast and Puerto Rico, as well as in locations where severe weather cycling, storms, wind, hail and other conditions frequently arise. The durable, monolithic membrane that spray foam creates over the roof offers a compressive strength of approximately 40 to 55 pounds per square inch. It changes little with time and, when properly maintained, lasts 30 years or more.

Spray foam roofing increases wind uplift resistance when installed to the roof substrate and, when applied to concrete, wind uplift protection is even stronger. Some high-performance spray foams also demonstrate wind uplift resistance by meeting the High Velocity Hurricane Zone (HVHZ) criteria of the Florida Building Code.

As a roofing solution, spray foam also resists peeling failure, which is a result of wind pulling flashings and copings away from a roof's edges, which can ultimately lead to devastating damage to the structure. Additionally, the material's ability to withstand leaks due to hail is also unsurpassed.

In a notable review of the material's real-life performance, the National Institute of Standards and Technology (NIST) reviewed roof damage following

Roof Preparedness in the Face of 2021 Atlantic Hurricane Season

WRITTEN BY | **DAVID FEITL**

WE HAVE NOW officially entered the 2021 Atlantic Hurricane Season, which will run through November and is likely to wreak serious havoc. Scientists and researchers from Colorado State University (CSU), Tropical Storm Risk (TSR), North Carolina State University (NCSU), and AccuWeather expect above normal activity, projecting 12 to 15 tropical storm events, according to Allianz Global Corporate & Specialty's (AGCS) Atlantic Hurricane Season Outlook 2021. The report notes that an above average season is typically characterized by seven to nine storms reaching hurricane strength and two to four becoming major hurricanes.

For commercial building owners and operators, storms and hurricanes remain a big concern. The damage incurred by the not-so-distant Hurricane Laura, and others, in 2020 is still

top-of-mind. Undoubtedly, storms and hurricanes have been steadily growing in both intensity and frequency over the past several years and the physical and financial damage they bring can be catastrophic. As a result, many commercial facility owners are increasingly reexamining their roofing to ensure their structures are protected from possible damage. This represents an important opportunity for contractors to step up and provide weather-resistant solutions to their commercial customers.

One cost-effective roofing option resilient to wind, water and inclement weather is spray foam roofing. Not only is the material proven in the face of serious storm events, but it is also an optimal re-roof solution that may be applied directly overtop an existing roof, saving facility owners both time and money.



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*The Proof is
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Hurricane Katrina and discovered that buildings roofed with spray foam performed well without blow-off of the SPF or damage to flashings. NIST's 2006 report (*Performance of Physical Structures in Hurricane Katrina and Hurricane Rita: A Reconnaissance Report*) found only one of the examined SPF roofs had incurred notable damage and concluded that spray foam kept the roofs intact, prevented moisture from entering the buildings, and protected the structures from hail and debris.

USE AS TEMPORARY POST-STORM SOLUTION

If a storm has passed through a region and affected commercial facility roofs, damaging them, spray foam roofing may also be utilized as a temporary solution. For example, contractors addressing roofs where portions of shingles or metal deck have blown off during a hurricane or severe weather event often apply spray foam roofing over the damaged area to keep the roof intact, and to lessen water damage and

protect the structure's interiors and property in the interim until the full roof can be replaced.

ENERGY EFFICIENCY

In addition to the physical and financial impacts of Earth's intensifying weather on commercial facilities, it also dramatically influences their energy consumption and cost. Whether extreme heat or extreme cold, rising energy bills are impacting the bottom line of many owners.

Equally important to its weather resistance capabilities, spray foam also prevents heat transfer through the roof deck, minimizes the escape of conditioned air and, in turn, dramatically reduces energy bills for the life of the roof. In fact, spray foam roofing's seamless insulating and sealing capabilities can help reduce a building's energy consumption up to 40 percent. It is precisely this energy performance that has led to spray foam roofing, as well as its sister solution, spray foam insulation (which is a FEMA class 5 material

when applied in walls, ceilings and floors), increasingly being selected for use in commercial structures designed to achieve net zero energy.

EDUCATING AND PREPARING COMMERCIAL CUSTOMERS

Roofing contractors are encouraged to take the growing number of storms seriously. The continued progression toward increasingly serious weather events has not let up in quite some time. The need for commercial property owners to prepare their properties as best they can for storms is greater than ever and they are relying on the industry's experts to help them navigate their roofing options. **R**

ABOUT THE AUTHOR: Dave Feitl is VP Global Roofing and Western USA SPF Sales with Huntsman Building Solutions. For more information, visit huntsmanbuildingsolutions.com or email dfeitl@huntsmanbuilds.com.



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Coping With Rising Material Costs

A Price Escalation
Clause Can Protect
Contractors From
Price Increases

WRITTEN BY | **KEITH A. BOYETTE**

ONE OF THE MAJOR headlines in the construction industry during 2020 was the dramatic increase of lumber prices and costs of other raw construction materials across the country. Anyone monitoring construction industry trends knows that those prices continue to increase with no indication of decreasing anytime soon. Earlier this year, Associated Builders and Contractors reported that iron and steel prices were up 15.6 percent from January 2020 to January 2021, and that lumber prices had increased by nearly 73 percent in that same timeframe.

There are several explanations for these price increases, including supply chain and shipping disruptions, increased demand for new home construction, and other global economic factors related to the coronavirus pandemic. Nevertheless, the reality is

that the increase in costs of materials can lead to project budgets being shattered, and owners and contractors disputing which party is responsible for absorbing the increased costs. As is often the case, the answer as to which party will bear the expense is usually found in the provisions of the construction contract itself.

The cost of materials under a contract can be determined in many ways. For projects constructed on a cost-plus or time and material basis, the contract will likely identify the owner as the party responsible for price increases. Due to the open-ended structure of these types of contracts, owners typically face uncertainty with regard to fluctuating material costs while contractors are given more flexibility and protection.

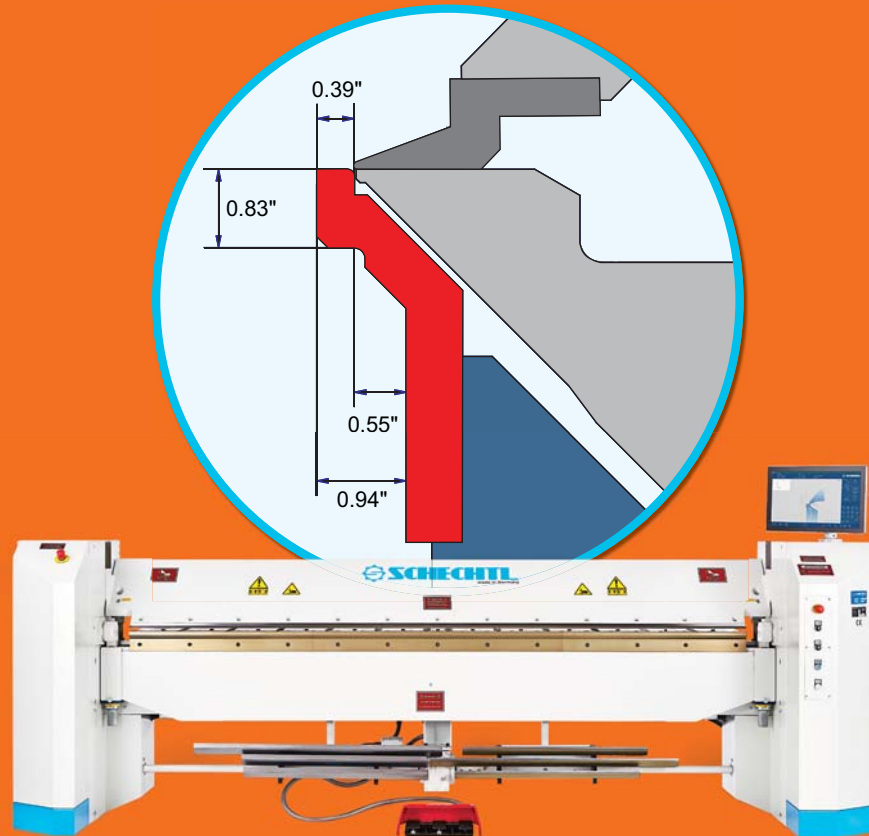
For projects constructed on a lump sum or fixed-price basis, a contractor's

price is generally locked in at the outset under the defined scope of work. Under these types of contracts, the owner is generally protected from the rising costs of materials and the contractor will likely be the one to bear the increase in costs of materials not yet purchased for the project.

Owners are also generally protected from material price increases under "not to exceed" or "guaranteed maximum price" contracts. Under these types of contracts, there is a cap on total construction costs and contractors will oftentimes include allowances or contingencies in the pricing structures to protect against things such as unexpected material cost escalations.

Since most construction projects can take months or years to complete from start to finish – a period during which changes in materials costs are expected – contractors and subcontractors

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need a mechanism to provide for compensation related to cost increases. With the right contract provisions, contractors can seek to protect against and address price increases between the time of bidding, proposing, and contracting, and the actual time of purchasing the materials.

Specifically, contractors can protect

themselves against price increases with the inclusion of a price escalation clause. A price escalation clause is a provision that can be inserted into any contract to provide a way for contractors and subcontractors to recover some or all of the cost increases that occur over the course of a project under certain, specific circumstances.

While the specific language of a price escalation clause varies, there are two main types: (1) event or delay price escalation clauses; and (2) percent-change price escalation clauses. Contractors who regularly use Owner/Contractor agreements from the American Institute of Architects (AIA) should be aware that price es-

With the right contract provisions, contractors can seek to protect against and address price increases between the time of bidding, proposing, and contracting, and the actual time of purchasing the materials.



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calation clauses are not contained in those agreements, but could be added through contract negotiations.

Over the course of a project covering several months or even years, the event triggering the price escalation clause could be the passage of a particular milestone, a change of the calendar year, a supplier issuing a price increase, a default by another party, or a change of a specific contractor or supplier. The occurrence of any of these events triggers the price escalation clause and allows the affected party to seek reimbursement for the increased costs. As such, where

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any of these events could impact the cost of construction, the affected party should consider the addition of a provision that shares the risk of the increased cost.

More frequently, contractors will include a price escalation clause that is triggered by certain delays that are not caused by the party attempting to enforce the provision. The delays triggering the clause include natural disasters, acts or omissions caused by other contractors or the property owner, or, as realized over the past year, pandemics. Depending on the way the clause is written, the delay could be required to last for a certain period of time or the provision could permit a party to recover for increases no matter how long the delay lasts so long as the party can prove that the delay caused the increase.

Percent-change price escalation clauses allow a party to recover costs once their budgeted costs have increased by a certain percentage. In other words, the prices must increase beyond an agreed-upon threshold (e.g., 5 percent) to justify any increase or otherwise trigger this type of price escalation clause. While these types of price-escalation clauses are rare, they can be very useful where the parties are attempting to equitably distribute the risk of cost increases. This type of price escalation clause is particularly favorable to contractors, as it can help protect the contractor in the event of a substantial increase in the cost of materials. Specifically, if a spike in the cost of materials occurs, but the spike is not the result of a delay or does not occur during a delay, the event or delay price escalation clause likely would not be triggered, but the percent-change price escalation clause would provide the contractor with protection.

Despite the benefits of a price escalation clause, if not carefully drafted, they could carry unintended consequences. Some, if not most, provisions limit the amount of the increase to the difference between the budgeted cost and the actual cost. Such a limitation requires a contractor to be particularly



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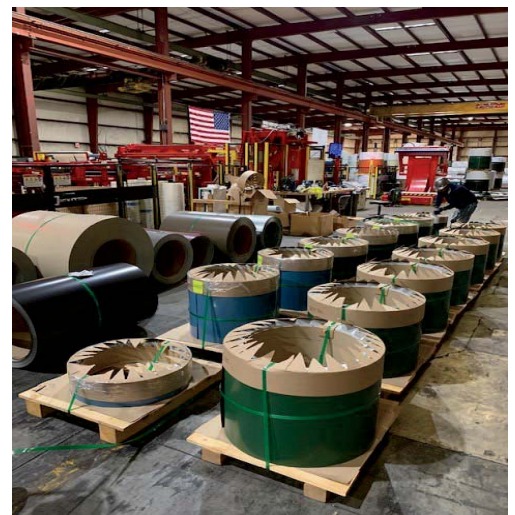
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Like any contract provision, price escalation clauses can be nuanced and should be implemented with caution.

diligent in their estimation of construction costs to protect against possible losses or financial exposure.

At the time of proposal and contract negotiations, contractors should

identify materials with price volatility concerns, consider the timing of procurement, and account for those concerns in their contracts with the owner, subcontractors, and suppliers. Where possible, all parties should agree upon the circumstances in which the right to a price adjustment will exist.

It is no secret that the costs of construction materials are ever-changing and prone to instability. Many factors which impact the cost of construction under a contract, such as the economic impact of a global pandemic, are out of the contractor's control. While the contractor may not be able to control the events that take place, the contractor can control the impact the events or delay may cause to its bottom line. With a carefully drafted price escalation clause, a contractor can reduce its financial exposure in the event of an unexpected and drastic increase in the cost of materials. Like any contract provision, price escalation

clauses can be nuanced and should be implemented with caution. Contractors seeking to include price escalation clauses are encouraged to consult with an experienced construction attorney for drafting and negotiating them into their contracts. **R**

Author's note: This article is intended only for informational purposes and should not be construed as legal advice.

ABOUT THE AUTHOR: Keith A. Boyette is an attorney with Anderson Jones, PLLC, a construction law firm located in Raleigh, North Carolina, with attorneys licensed in North Carolina, South Carolina, and Georgia. He assists clients throughout the litigation process, from pre-filing advice to mediation, settlement negotiations and trial. For more information or questions about this article, please email Keith at kboyette@andersonandjones.com.

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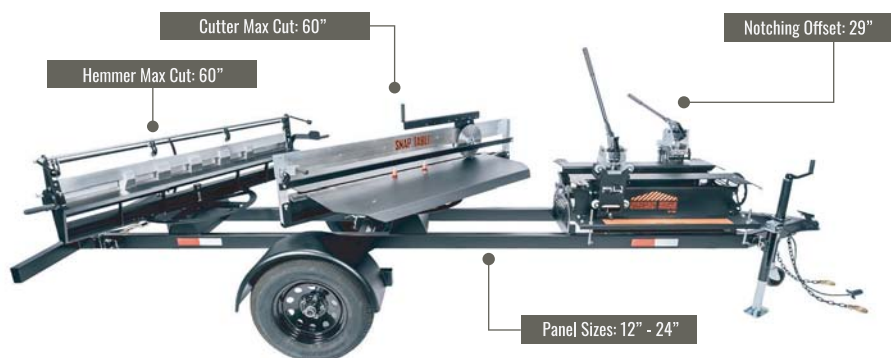
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Negotiating Publicly Funded Work



Considerations Before You Bid or Submit a Proposal for a Government Project

WRITTEN BY | **ROSCOE GREEN**

AS U.S. LAWMAKERS debate the nation's proposed \$2.3 trillion infrastructure bill, many contractors are eagerly waiting to see what funds will be allotted for transportation and building projects. As private projects begin to slow in some regions, the possibility of working on public projects is intriguing for many contractors.

However, for contractors who have never contracted with a public agency, there are a few things you may want to consider.

APPLICATIONS AND PREQUALIFICATION

Even before you submit a bid or proposal, understand that many government projects have extensive applications and prequalification requirements. These requirements will

vary by agency, but you can usually find the project requirements in the solicitation documents issued by the procuring agency; typically, the Invitation to Bid or Request for Proposal, depending on the selected procurement method. Be sure to thoroughly review the solicitation documents well in advance to give yourself enough time to meet the requirements and to provide all information requested by the agency in a timely fashion. This process can be time-consuming, and you can expect to encounter some hiccups along the way.

DISCLOSURE OF RECORDS

On private projects, the information provided by your competitors to the owner during the procurement process may not ever be disclosed to you. But

with public projects, the information you provide to the public agency during the procurement process — even your pricing details — could be disclosed by the agency to the public (including your competitors) if an exception does not apply. Many public agencies are subject to strict laws concerning the public's access to information received by the agency during the procurement process.

While these laws are designed to promote transparency and fairness in the procurement process, you should keep in mind that the information you provide to the agency could wind up in the hands of your competitor. Therefore, there should be some level of thought and tactfulness in the manner in which you express or provide information to the agency, as it could go a long way in helping you to maintain your competitiveness or helping you to avoid a protest over a contract awarded to you down the road.

CONTRACT DETAILS

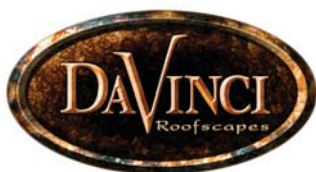
It should come as no surprise that public contracts are often voluminous, covering every aspect of the project in great detail, and frequently include numerous procedures and provisions that are specific to the contracting agency. It is common to find extensive provisions pertaining to project participation and reporting requirements, insurance, indemnity and bonding requirements, and a host of other requirements. If that is not enough, public contracts often incorporate various statutes and regulations into the contract by reference. While a copy of the contract is typically provided by the contracting agency in the solicitation documents, in practice we find that many contractors surprisingly submit their bid or proposal to the agency without ever reviewing the contract. Do not let this be you.

Put the time and effort on the front end to review the contract with an attorney experienced in construction law. While the agency may have little leeway to negotiate the terms of the contract, a thorough review and understanding of the contract will help

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CONSTRUCTION LAW

you to make an informed decision as to whether to take on the project. It will help you to assess your exposure and account for it in your pricing, and will help you to strategically raise questions concerning uncertainties in the contract that could affect your pricing. This could also put the issue on your competitors' radar and force them to account it in their pricing, ultimately leveling the playing field.

BONDING REQUIREMENTS

On most public projects, you will be required to obtain a few types of construction-related bonds – one of those being a bid bond. A bid bond is a guarantee to the agency that the agency will be compensated if you are awarded the project and backout or fail to honor the terms of the bid. The other commonly required construction bonds are called performance and payment bonds, both of which are types of surety bonds. A performance bond provides

Be sure to thoroughly review the solicitation documents well in advance to give yourself enough time to meet the requirements and to provide all information requested by the agency in a timely fashion.

a guarantee to the agency that the project will be satisfactorily completed, while the payment bond guarantees that those performing work on the project on your behalf will be paid for their work.

While these surety bonds may seem a lot like insurance, they are vastly different. Under a surety contract, if you fail to meet your contractual performance obligations or pay your bills,

the surety assumes your obligations under the contract with the agency. However, the surety will have the right to recover any losses incurred in fulfilling your obligations from you as the principal on the bond. Conversely, under a standard commercial general liability policy, the carrier generally has no duty by way of its insured's contract with the agency to assume the contractual performance obligations

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of its insured. Additionally, a standard general liability policy does not typically provide the carrier with a basis to recover from its insured any losses resulting from a claim made against the policy.

Given the surety's potential exposure, sureties tend to be very selective as to who they will issue a bond and the principal is typically required

to go through a stringent process beforehand. As part of this process, an exhaustive assessment of personal and company financials, assets, and past performance on similar projects by the surety should be expected. You can also expect to be required to execute a general indemnity agreement, both personally and on behalf of the company, that will require you to

indemnify, defend and hold the surety harmless from any claims made or losses incurred by the surety related to the bond.

Considering the foregoing, it would be smart to establish a relationship with a qualified bonding agent once you decide to pursue public projects. You should also have a good understanding of construction bonds and have a written commitment from the surety that it will issue the required bonds to you before you spend unnecessary time and resources pursuing the project.

LOOKING AHEAD

With rising material and labor costs affecting the residential sector, and funding for public projects appearing on the horizon, we will likely see a rise in the number of solicitations for public construction projects and a rise in the number of contractors looking to transition to public work.

While public construction projects can be great opportunities, your success on these projects will hinge, in large part, on your understanding of the agency's procedures and the contractual requirements for each project. If you would like to pursue public projects, we recommend that you consult with an experienced construction lawyer. A little time spent on the front end could help you to avoid a disaster down the road. **R**

Author's note: The information contained in this article is for general educational information only. This information does not constitute legal advice, is not intended to constitute legal advice, nor should it be relied upon as legal advice for your specific factual pattern or situation.

ABOUT THE AUTHOR: Roscoe Green is a Partner at Cotney Attorneys & Consultants who focuses his practice on construction law. Cotney is an advocate for the construction industry and represents industry professionals in all facets of construction law. For more information, contact the author at (866) 303-5865 or visit cotneycl.com.

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PV INSTALLATION ON HAWAII'S TALLEST MOUNTAIN PROVIDES LESSONS IN ROOFTOP SOLAR

WRITTEN BY | LOUISA HART

CHANCES ARE, you will never have to install a solar voltaic system on the slope of a dormant volcano, at an altitude of almost 14,000 feet, taking care to place the system's panels on an

existing ballasted roof, avoiding snow and ice that can fall from the domes protecting the nearby 300 pound astronomical telescopes.

That was the challenge that faced

Mark Devenot, infrastructure specialist at the W.M. Keck Observatory, atop Hawaii's tallest mountain, Mauna Kea. The observatory is the home of two telescopes that attract astronomers from around the world "to observe the universe with unprecedented power and precision." The location of Mauna Kea in the middle of the Pacific Ocean, with no nearby mountain ranges and few city lights polluting the night sky, makes it ideal to visually explore the far reaches of space.

Those conditions also make it an ideal location for a solar installation. Four years ago, a solar array was installed at Keck's headquarters, two hours down the mountain at the base of Mauna Kea. Inspired by the success of the installation at headquarters, Devenot began to ponder the feasibility of installing a solar system at the summit of Mauna Kea. Overcoming a wide array of challenges, both natural and man-made, Devenot and his staff completed the installation of a 137 kilowatt solar system at Mauna Kea in December of 2020.

While it is an understatement to say the challenges faced by Devenot were unique, his experience with solar power holds some lessons for anyone contemplating putting solar power on a new or existing roof.

THE EXISTING ROOF

Installed more than 30 years ago, the existing EPDM roof on the building that supports the Keck I and Keck II telescopes was held in place by cinder ejected thousands of years ago from the dormant volcano. This ballast was abundant, nearby and, according to Devenot, had other attributes that made it ideal. "The roofing ballast is from onsite graded overburden, which inherently has sufficient density to stay in place with expected wind loads of the mountain conditions. It also perfectly matches the site's surroundings in thermal color, making it ideal for telescope optical performance."

In order to design a foundation for the solar panels, some of the ballast needed to be removed, first very methodically by hand and then using a mini excavator to clear the sections

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A 137 kilowatt solar system was installed on the existing roof at Keck Observatory, which is located atop Hawaii's tallest mountain, Mauna Kea.



The existing EPDM roof system is inspected prior to the PV installation. The inspection and non-destructive testing confirmed the more than thirty-year-old membrane was in excellent condition.

of the roof that would support the PV system.

After careful inspection of the EPDM membrane, inspectors said it “appeared brand new” and they left the existing membrane in place. Then 332 solar panels were strategically placed on the 20,940-square-foot roof, carefully positioned to avoid snow and ice fall from the domes. The ballast was replaced after the solar system was installed.

“One of the biggest challenges was attaching the PV array to this type of roof, which has no structural

framework to anchor the system,” notes Devenot. This meant designing a one-of-a-kind solution to create a customized PV roof racking system. “The racking system is made up of hundreds of large, heavy 1/2-inch steel plates interconnected to a framework of strut materials which the PV modules are clamped to.”

Today, the system is producing approximately 10–15 percent of the observatory’s electrical power, helping to carry out its commitment to reduce the organization’s carbon footprint and lower the cost of energy.

OUTLOOK FOR SOLAR

So, what does a successful installation of a PV array on a mountaintop in Hawaii have to do with down-to-earth considerations of generating and using solar power? For the roofing industry, how will it prepare to meet the needs of increasing number of customers who want to mount solar equipment on the roofs they produce?

Rooftop solar power has been in use since the 1970s. Now various forces are finally converging during the 2020s to make it an attractive choice, both environmentally and financially. While interest in solar took what one observer has called a “time out” during the Trump administration, the Biden administration is reversing course and proposing significant economic support for companies that choose to incorporate solar into their building plans.

While the administration’s legislative agenda with its centerpiece “clean energy standard” is still being shaped by various forces on Capitol Hill, the White House is carrying out its support for solar through other federal channels. The Department of Energy has announced a goal to cut the cost of solar power by 60 percent within the next ten years and plan to spend nearly \$128 million to lower costs, improve performance, and speed the deployment of solar energy technologies. The Department estimates that by 2035, solar PV could represent between 30 and 50 percent of electricity supply.

Much of the current action around solar is driven by the Solar Investment Tax Credit, which defrays 26 percent of solar-related expenses for all residential and commercial customers. However, after 2023 the tax credit will be lowered to 10 percent for commercial installers. Given this incentive to act relatively quickly, according to the Harvard Business Review, commercial sales of solar “will probably burn even hotter in the coming months, as buyers race to cash in while they still can.”

Other forces are converging to bring the use of solar power to the forefront, and to make it a feasible choice to generate power in a broad range of



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climates. For instance, while storage of power generated by solar panels was an issue for years, negatively impacting the use of solar power, the storage problem has been solved, and will most likely be further improved to meet market demand. The companies that make electric cars – primarily Tesla and Mercedes Benz – are leading the way on this effort. Batteries are available

that will store power from your solar array, ready to be used during times of peak demand (and expense) and able to store power purchased from the grid during slack times.

For roofers, this renewed interest in solar – and financial support for it – means being able to offer roofing systems that can support a solar array, and provide a setting where solar

panels can be maintained in top condition. In general, any roof that is supporting overburden, whether it is vegetation or solar panels, should clearly be thick and durable. Solar panels will need maintenance and repair, and their placement on a roof must allow for access in case of fire. Roofing-related code provisions increasingly acknowledge this need and require that sufficient space be left between groups of panels to allow for emergency access for people and equipment. Any roofing membrane installed under a solar system needs to be durable enough to withstand this traffic, as well as scheduled maintenance.

Much has been written during the last decade in the “black vs. white” roof color debate. With much of a roof covered, the color of the membrane and any potential benefit from reflectivity can be negated. In fact, energy conservation codes in Zones 1 through 3 generally exempt roofers from meeting the requirement for reflective roofing, in what is described as “overburden” exemptions. Under model codes, relief from the requirement for the entire roof can be met by covering up to 75 percent of the roof with PV, vegetative systems, walkways or any combination of these elements. In essence, the code is already acknowledging the fact that in these instances, color doesn’t matter. Jason Wilen, Senior Associate II at Klein & Hoffman, says, at that point, “Pick the membrane that makes the most sense and don’t worry about what color it is.” Given this leeway provided by energy conservation codes, the durability and longevity of black EPDM argues strongly for its use.

As for that EPDM membrane helping to support a PV system high on a mountain above Hawaii, it is going into its fourth decade of service, contributing to a lower electricity bill for unmatched world class research into our galaxy and beyond. **R**

ABOUT THE AUTHOR: Louisa Hart is the director of communications for the Washington-based EPDM Roofing Association (ERA). For more information, visit www.epdmroofs.org.

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Fall Arrest and Fall Restraint for Residential vs. Commercial Roofing

DETERMINE WHICH TYPE OF SAFETY EQUIPMENT IS BEST SUITED FOR EACH JOBSITE

WRITTEN BY | **DAVID IVEY**

MUCH HAS BEEN WRITTEN about the importance of fall protection in the roofing industry. According to OSHA, falls from heights remain the single leading cause of injuries and fatalities in the industry and across the board. Employers and builders have heard the message loud and clear and have adopted a number of strategies and systems designed to protect workers from fall hazards.

Of course, the gold standard for personal fall protection equipment is to tie off to an overhead anchorage point, which means having an elevated anchor point to attach to. However, this may not be possible in roofing applications, especially in residential roofing.

Whether you employ measures for

fall restraint (systems designed to prevent workers from being exposed to a fall hazard) or fall arrest (systems designed to arrest an uncontrolled fall) depends on the application and the conditions of your jobsite. Residential and commercial roofing present two distinct challenges as worksites that can expose workers to fall hazards. It is worth exploring how to think about providing fall safety in each application and what type of equipment is best suited for each.

RESIDENTIAL ROOFING

On residential roofing projects, you're more likely to want to work in fall restraint rather than a fall arrest system. The main reason is because the fall clearance distances tend to be smaller

in residential settings. OSHA requires the free fall distance — the distance from the start of a fall to when the fall arrest system engages — to be no greater than 6 feet. Typically, overhead tie-off is not available in residential roofing applications and the fall clearance distance at most residential roofing jobsites isn't enough to support a foot-level tie-off. Foot-level tie-off often requires a 16-foot to 21-foot fall clearance distance, so workers at sites with less clearance will be required to use fall restraint.

Common anchors for residential roofing applications include a reusable or permanent roof anchor mounted to the truss. If you're working on a finished roof with standing seam roof material, you can use a temporary standing seam roof anchor.

To these anchors you can attach restraints such as:

- A vertical lifeline assembly. Using this system, you should give workers enough slack so that they cannot reach the edge of the roof.
- A 4-foot to 6-foot adjustable non-shock absorbing restraint lanyard.

COMMERCIAL ROOFING

In commercial roofing work, fall clearance is usually not a limiting factor, giving you a great deal more flexibility to use fall arrest systems tied off to appropriate anchor points. A simple 12-inch to 18-inch permanent anchor is one option. For low-slope flat roofs you might also opt for a four-way anchor plate; this is a penetrating anchor that goes into the roof substrate. If you need a temporary solution for parapet walls, you can use parapet anchors.

Newer builds are often required to install fall protection anchors, so many will have anchor points to tie off to already in place. For older buildings without these permanent built-in anchor points, consider using temporary anchorage to avoid damaging the substrate and having to reroof.

With suitable anchors in place at the commercial roofing jobsite, you can use any of the following:

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- A vertical lifeline assembly to work in fall restraint.
- Other options are available based on your application. For example, a four-person temporary horizontal lifeline kit can be used that spans between two anchor points.

On low-slope roofs you can also use fall restraint with a guardrail system. A guardrail system means your workers are not required to wear fall protection as long as they remain inside the guardrails.

On some new construction projects, the owners choose to install a

permanent fall arrest system consisting of anchor points connected to a cable horizontal lifeline system permanently installed on the roof. This allows workers to remain connected to one system the whole time – a nice solution for newer commercial buildings.

FALL RESTRAINT OR FALL ARREST – WHICH SHOULD YOU CHOOSE?

Ultimately, whether you opt for fall restraint measures or fall arrest systems depends on a few key factors:


FREE FALL DISTANCE. OSHA standards

require a 6-foot free fall distance for fall protection systems. If your jobsite doesn't afford a 6-foot fall before a fall arrest system can engage, you should opt for fall restraint.

OVERHEAD ANCHOR POINTS. If no overhead anchor points are available, fall restraint may be your best choice. You may, however, opt for a portable overhead anchor solution that allows you to position temporary overhead anchor points courtesy of a road-towable mobile unit with an extended arm designed for fall arrest.

PERMANENT FALL ARREST SYSTEMS. If the jobsite includes permanent fall arrest systems such as built-in anchor points or a cable horizontal lifeline system, many workers prefer these solutions. They are often built into new construction but may be absent from older jobsites.

Most commonly, residential roofing tends to require fall restraint whereas commercial roofing is usually more accommodating to fall arrest systems. Newer builds – especially commercial buildings – may offer workers more choices for built-in fall protection systems, which are a great option if they're available.

Clearly you have many choices when it comes to working in fall restraint or with fall arrest systems. Knowing in advance the type of jobsite you have and the condition of the roof, including any built-in fall protection systems, will help you arrive prepared. A little planning and the proper equipment are key to maintaining safe working conditions and making sure every worker comes home safely at the end of the day. 

ABOUT THE AUTHOR: David Ivey oversees the product development of fall protection and safety equipment at Malta Dynamics. He also sits on the ANSI Z359 board and participates in many subcommittee meetings for safety products. For more information or with questions about ladder safety, contact divey@maltdynamics.com.

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LEAN ROOFING

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MAKE PROJECT
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MORE
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THAN EVER

THE EFFECTIVENESS of the labor hour has not improved in the last 50 years, according to the Lean Construction Institute. I can attest to this, as the process of replacing roofs has changed little in the 35 years I have been observing them being installed. The method seems to be to just throw crews at the project and hope the bottom line works out. While we have new materials, larger projects and unique ways to reroof, it appears the solution is always the same: Throw

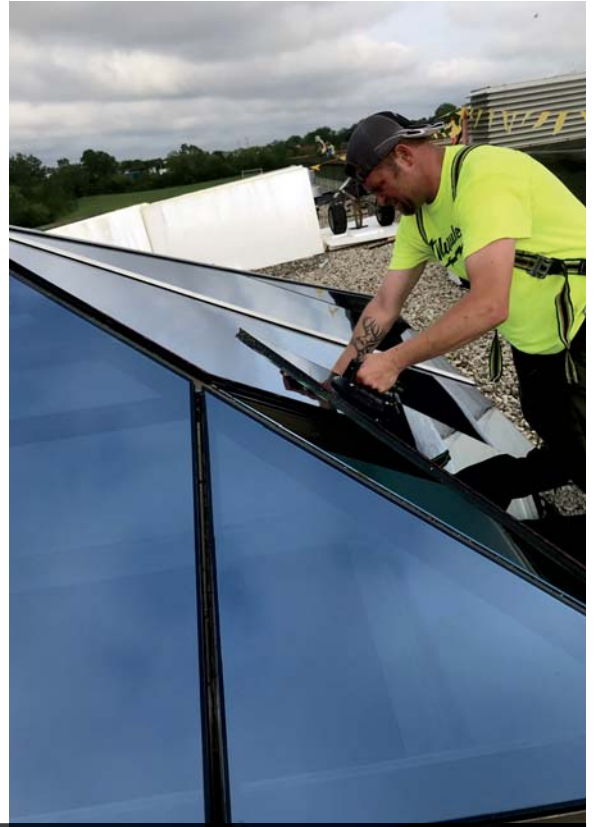
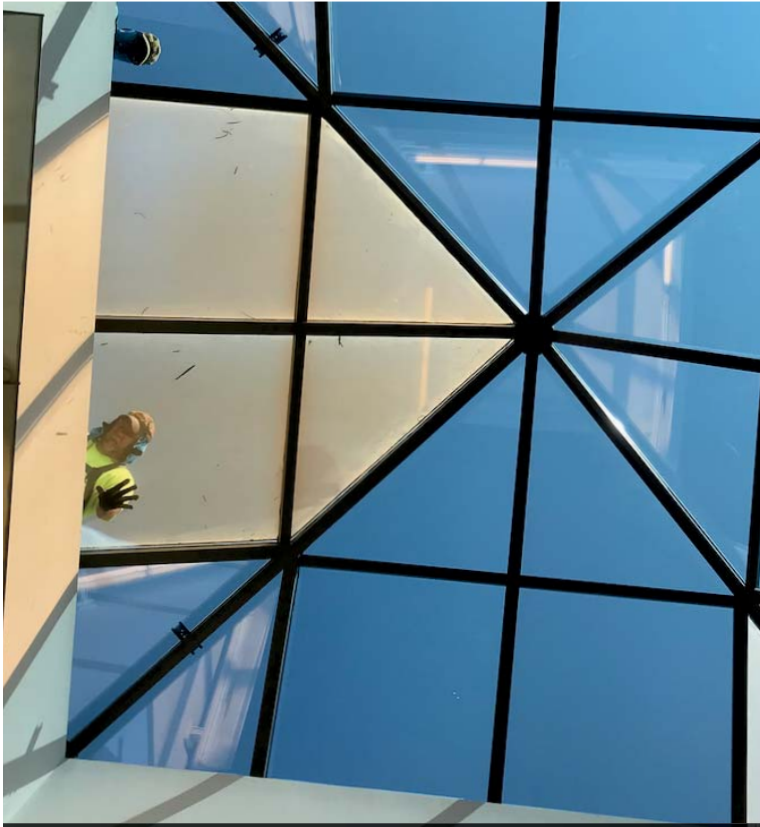
crews at it and hope the bottom line works out.

I have long wondered why the work wasn't planned better. I know management. "Mgmt" is a four-letter word. Why not raise the roof edge prior to removing the old roof (when feasible)? Why not remove the abandoned roof curbs and "deck it in" or raise the roof curbs, add pipe curbs, install new or replacement roof drains all before removing the roof?

I hear it again and again: "We'll do

WRITTEN BY

THOMAS W. HUTCHINSON,
AIA, CSI, FELLOW-IIBEC,
RRC



Prior to the removal of the existing roofing, the glazing contractor removed and replaced the skylight glass. This eliminated pipe scaffolding, material storage, debris and foot traffic on the new roof.

it when we get there.” So, I often find myself watching as a few crews try to raise the roof edge and get it completed prior to the new roof installation. This is especially challenging at corner conditions when there is considerable roof edge. What often happens is that the roofing catches up to the wood blocking, and time is wasted waiting for the wood blocking to be completed. As an observer and one always trying to slim down the process, I’ve often thought that a well-managed project would render enormous benefit. Isn’t effective, efficient project management even more important today, as labor shortages have significantly reduced available labor?

OPPORTUNITY TO CHANGE

Timing is often a catalyst for change. With the recent material shortages, now might be the time to review how projects are completed. (Don’t get me started on my views about material

shortages. Manufacturers didn’t plan for an inevitable event, don’t plan as needed for the summer season, and still make insulation of every conceivable thickness. How about getting rid of most of those thicknesses and go with only half-inch increments? Now there is a novel thought: Simplify. Now, I know if you’re a supplier you are thinking I need the 1.1 inch so the contractor can meet a code required R-Value. Well, let’s start with acknowledging that delivered to the site, insulation boards’ thickness does not match that which was specified [allowable by the ASTM Standard] and that code is the minimum; you can go thicker. “Oh, but the other suppliers will get the job if I don’t have that thickness.” Perhaps so, but I think if you can get the material out quicker and have it when needed, things will change. I digress, but at least I got that off my chest.)

I have several projects that are large or complex or both – projects that

require a great deal of man-hours. Insulation is weeks, if not months, away, and roofing contractors are fearful that they will not have enough work to keep their crews busy. And then what happens when the dam breaks and materials flow – will enough workers be available to complete the projects?

How can contractors attain a win – win? I believe the answer lies in Lean Thinking: shortening and managing the process.

HOW TO SHRINK THE PROCESS

Let’s review one of my projects currently underway and being managed by Jason Tenpas, Senior Project Manager for All American Exterior Solutions: Replacing an aged, ballasted EPDM roof on a school building. Roofing materials are scheduled to arrive in late July, with a substantial completion date of August 15, 2021,



Having masonry work completed prior to the new roofing installation prevents potential damage to the new roof.



The contractor removed the roof edge coping, raised the roof edge and then installed the new base flashing that will be integrated into the new roof cover.



The roof edge coping is completely flashed and measured for the new sheet metal fabrication. The base flashing is left loose on the interior side and will be integrated into the new roof cover.

and liquidated damages of \$3,500. First, let's review the plans and details to understand all the work that is required and see what if any of that work could be completed before the insulation and membrane arrives.

This review revealed the following potential items for early installation:

1. Raising of the roof edge.
2. Raising of roof curbs.
3. Installation of new pipe curbs.
4. Insulating a roof side mansard installed to cover structural bracing.
5. Masonry restoration of split face concrete block.
6. Removal of a gas pipe.
7. Installation of new pipe curbs.
8. Removal of an air-handling unit and installation of a curb extension.
9. Roof drain renovation.
10. Raising of plumbing vents.

Of these, the contractor determined that items 1-8 were feasible. Items 9 and 10 could not be completed before the roof system installation begins, as the roof drain renovation will involve re-leading the joints after the ballast is removed and raising of the plumbing vents would inhibit the installation of the new 90-mil EPDM.

The goal is to have the first eight items above completed so that when material arrives, re-roofing can move forward at rapid pace.

IMPLEMENTING THE LEAN

The project manager from the contractor is excellent and thought this through.

The skylight glass replacement, in which the replacement glass was ordered within days of project award, was ready for delivery the first week after the school year ended. As the skylight glass work, masonry restoration and mansard insulation are stand-alone work, they were scheduled to start the first week after school is out. This allows those contractors, pipe scaffolding, and roof protection to be off the roof and out of the way when the roofing work begins.

At the roof edge, the sheet metal was removed, the existing EPDM that was brought up and over the parapet

was allowed to remain, and new wood was installed. This change is reflected in Figure 1. Now, here is the big lead item: The wood blocking was immediately covered with 60-mil EPDM flashing, which is the finished flashing to which the new roofing will be integrated. With the roof edge complete, sheet metal can now also be

fabricated and installed prior to the arrival of the insulation. How about that – the sheet metal can be installed before the roofing!

The gas pipe was disconnected and moved.

Plans called for the roof curbs to be raised, so the mechanical unit was removed, the curb raised, and the EPDM

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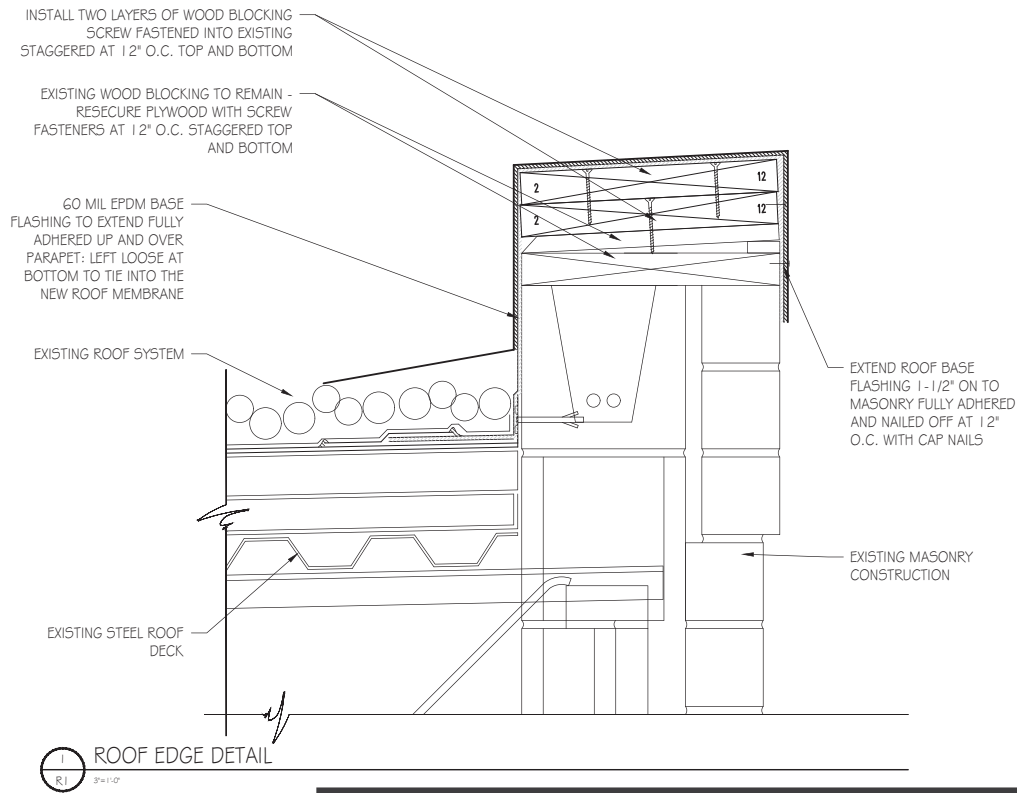


Figure 1. This detail reflects the phased approach of installing all the wood blocking prior to the installation of the new roof system.

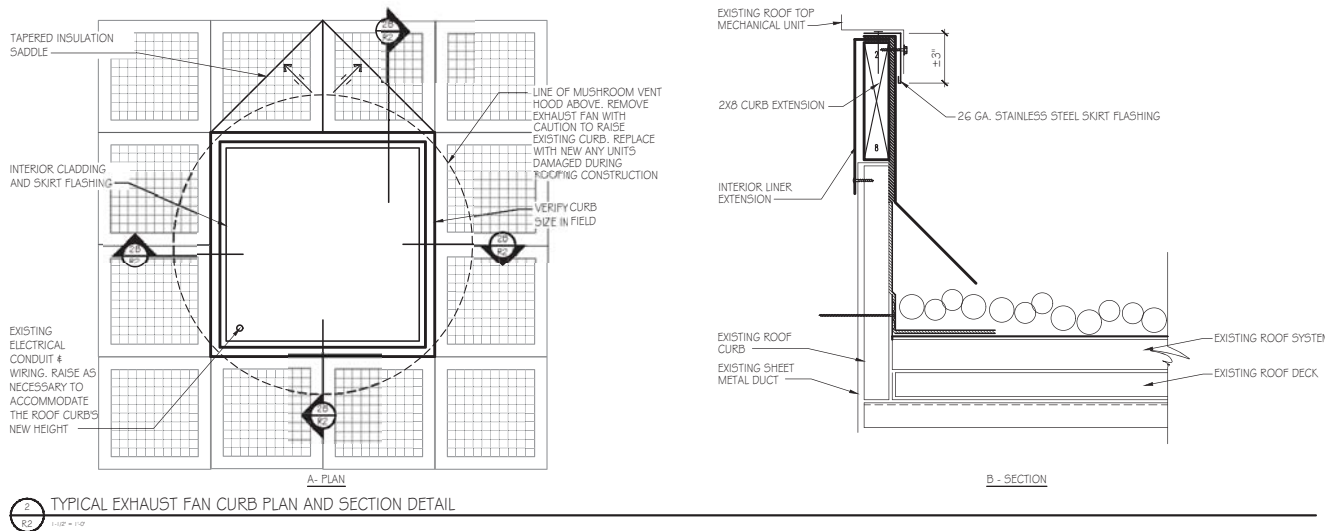


Figure 2. The existing roof curbs were raised to accommodate the new insulation height and pre-flashed. A skirt flashing was installed over the top prior to the installation of the new roof system.

base flashing installed on the new blocking with a portion loose over the existing base flashing to be integrated later with the main roof membrane. The protective stainless steel skirt flashing was installed and the mechanical unit was re-set.

The roof insulation is slated to arrive at the end of July. The project was managed so that even with an extremely late delivery of materials, the project will be completed before the substantial completion date and associated liquidated damages.



New curbs are being installed prior to the arrival of the new insulation and membrane. The curb will have the base flashing installed and the interior sealed and waterproofed prior to membrane installation.


ALWAYS IMPROVING

Our office motto is Kaizen – “continuous improvement” – in all aspects.


I challenge both designer and contractor to determine what can be changed to save time and increase productivity.

Einstein said doing the same thing over and over again and expecting a different result was the definition of insanity. Thirty-five years of the same thing has to qualify.


And Bernard Shaw wrote: “The reasonable man adapts himself to the world: the unreasonable one persists in trying to adapt the world to himself. Therefore, all progress depends on the unreasonable man.”

Those who adapt to the new normal and become “the unreasonable man” will survive and prosper. Will that be you? 


ABOUT THE AUTHOR: *Thomas W. Hutchinson, AIA, CSI, Fellow-IIBEC, RRC, is a principal of Hutchinson Design Group Ltd. in Barrington, Illinois.*



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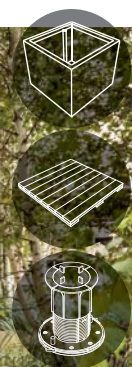
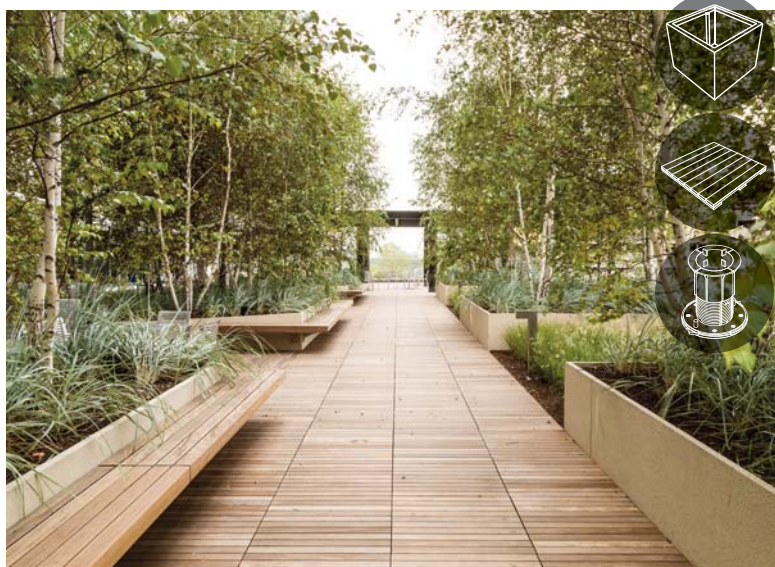
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Eye-Catching Detail

Aesthetic Touches Add Flair to New Shopping Complex

When he was designing the Shops at Terravella in Queen Creek, Arizona, Robert Hansen had some overarching goals in mind. Hansen, Lead Architect at SEG Architecture in Scottsdale, Arizona, wanted to design a retail center that was functional and interesting to look at, as well as a complex that embraced the character of the surrounding area. The building envelope would be the key to executing his vision.

“We are flexible and design with context and client in mind,” Hansen

says. “The town and community of Queen Creek is fast-growing but determined to reflect through architecture their roots of farming and agrarian history. With this underlying direction, we chose simple, durable, functional materials: concrete, steel, brick/block, and wood.”

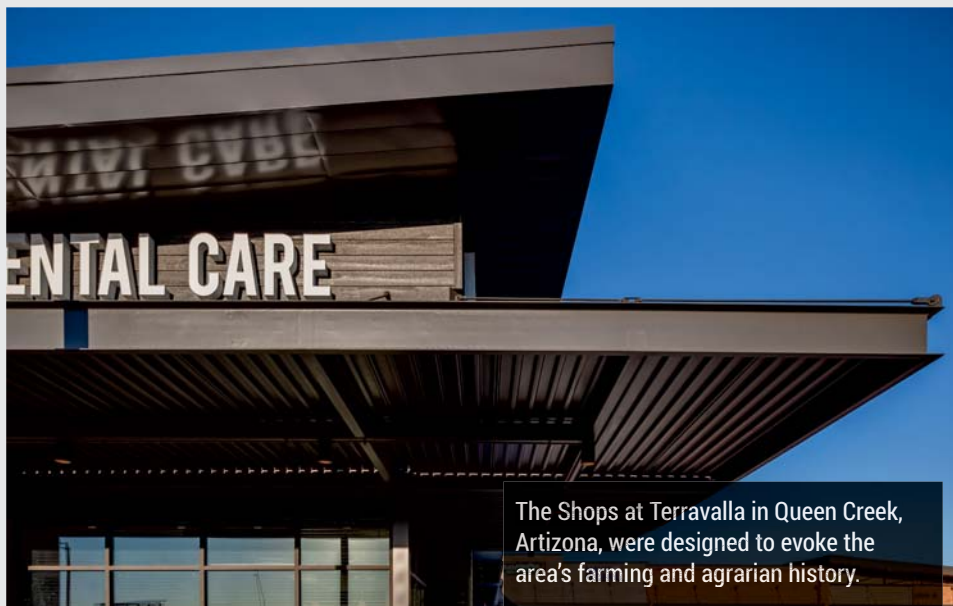
The durable materials were also designed to last. “The solid base of concrete/block systems allowed for long roof spans to make the uses efficient,” Hansen says.

The main roof system specified incorporates a PVC single-ply membrane manufactured by Carlisle SynTec. The walls were constructed of a variety

of materials including Echelon block and complemented by Petersen’s PAC-CLAD Flush metal panels. The crowning aesthetic touch – a water-tower feature at one corner of the complex – was clad in PAC-CLAD Corrugated panels.

THE INSTALLATION

Installing the roof system, metal wall panels and soffits would be the province of Starkweather Roofing, a full-service commercial roofing contractor tapped for the project by Campbell Development, the general contractor. “We do quite a bit of work with them,” notes Starkweather



The Shops at Terravalla in Queen Creek, Arizona, were designed to evoke the area's farming and agrarian history.



estimator Dave McCarty.

The low-slope roof was installed first. The Carlisle 60-mil PVC was mechanically attached over two layers of 2.2 inch insulation and custom-fashioned tapered crickets. Edge details included 2-foot base flashings and the coping cap, which was installed over Carlisle's 300 HT high-temperature underlayment. "We fabricated the coping in-house and put that up," McCarty notes.

"Safety is the first priority of Starkweather Roofing," McCarty says. "It's safety, quality, production. It's

been that day since Day 1. We have a full-time safety officer that's employed by Starkweather Roofing and we also have a company under contract that does spot checks for us. We have every piece of safety equipment that you can imagine, and if something new comes on the market that helps our guys work more safely and efficiently, our owners, Jeff and Diane Starkweather, are all for it. We are 100 percent tie-off. We don't use safety monitors; it's not an option. Our guys go home every day."

The scope of work for the wall panels included approximately 2,900 square feet of 24-gauge PAC-CLAD Flush panels in Graphite and 1,300 square feet of Petersen PAC-CLAD Corrugated panels, also in Graphite.

Starkweather often roll-forms panels at the site, but not in this case. "We typically just buy coil, but for this project we ordered the panels from PAC-CLAD," McCarty recalls. "If they are longer panels, we will form them on site."

The 12-inch-wide Flush panels were used for both soffit and walls. The Corrugated panels were installed on the art installation designed to resemble a water tower. "That's a popular feature here in Arizona," says McCarty. "It's absolutely hollow on the inside. We did a tapered batten seam

panel on the top of it."

Details included tying in the water tower to other wall elements. "Most of it was pretty straightforward," McCarty recalls. "We fabricate all of our own trim. We have an automated brake and shear, so even if we buy panels from PAC-CLAD, we still make all of our own trim. Having that capability of being to make pretty much whatever we need to eliminates a lot of challenges for us."

McCarty credits his company's experienced crews for the smooth installation, despite the many challenging details. "We have the best guys in the valley," he says. "They just adapt and overcome."

Coordinating the installation of the wall panels with other masonry work was crucial. "That's always a challenge for our guys, but we're lucky. We do a lot of work for the same general contractors, over and over again, and they use the same trades, over and over again," notes McCarty. "We have really good relationships with the masons. We bend up a lot of their metal for them, so we make sure it gets put in the right place. It's just a partnership. We pride ourselves on having great partnerships with our general contractors as well. We always want to be the ones coming up with the solution." **R**

SHOPS AT TERRAVALLA QUEEN CREEK, ARIZONA

TEAM

ARCHITECT: SEG Architecture, Scottsdale, Arizona, azseg.com

GENERAL CONTRACTOR: Campbell Development, Phoenix, Arizona, campbell-development.com

ROOFING CONTRACTOR: Starkweather Roofing, Phoenix, Arizona, starkweatherroof.com

MATERIALS

ROOF MEMBRANE: 60-mil PVC, Carlisle SynTec, carlisesyntec.com

WALL PANELS: 24-gauge PAC-CLAD Flush and Corrugated panels in Graphite, Petersen, pac-clad.com

The Best of Both Worlds

New TPO System
Delivers Short- and
Long-Term Returns

Save now or save later? When planning a roofing project, is it best to focus on minimizing up-front costs, or to look at the long-term, big-picture impact of the roofing system on the business? When re-roofing its facility in Peoria, Arizona, State Trailer RV & Outdoor Supply, working with Phoenix-based contractor Multi-Pro Roof Solutions, did both.

Recovering the existing built-up roofing (BUR) system with a new TPO system saved the cost and hassle of a full tear-off. Ongoing maintenance of the new roof will be minimal. And it has already proven its ability to dramatically reduce air-conditioning costs.

CAREFUL PLANNING

State Trailer, a service center and parts and accessories superstore for recreational vehicles, trailers and boats, purchased the 112,000-square-foot former Walmart in 2014 to open its fourth location. Its leaders knew that a new roof was in the foreseeable future, but other priorities needed to be addressed first. Initial challenges included completing a two-year, \$5 million renovation of the 22-acre property, which also includes a former Albertsons grocery store, and finding a tenant to share the Walmart building with State Trailer.

Once those boxes had been checked, the State Trailer team began budgeting to replace the 1,200-square roof

— a granulated BUR system with a plywood roof deck and batt insulation installed underneath the deck. Daniel Bobbitt, owner of Multi-Pro Roof Solutions, worked with them for 18 months to plan the project.

“The roof wasn’t in poor, poor condition,” Bobbitt says. “They had kept it going with maintenance and repairs until they could re-roof.”

But it was now nearly 30 years old and leaked periodically in a variety of places. Continuing to invest in it no longer made financial sense.

Bobbitt recommended a TPO system from Mule-Hide Products Co. The 60-mil white TPO membrane and one 2-inch layer of Mule-Hide Poly-ISO Flat insulation were mechanically



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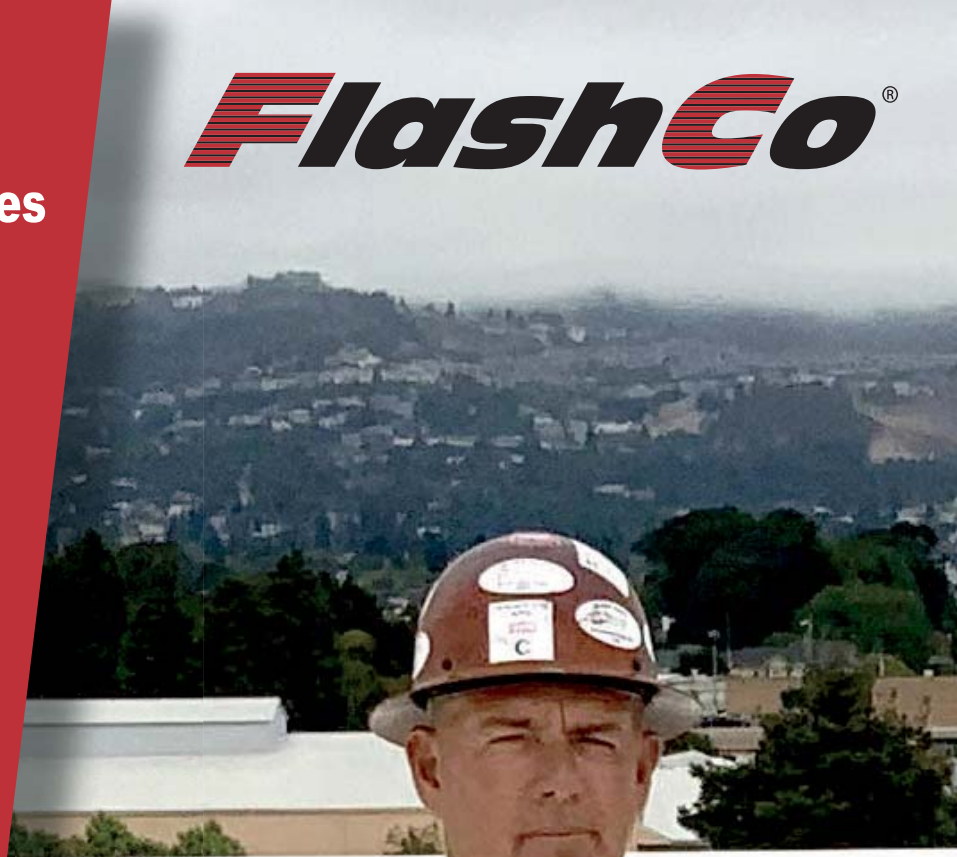


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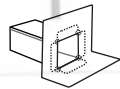
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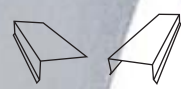
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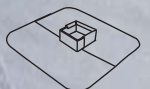
VENTS



EDGE METAL



ACCESSORIES



attached over the existing BUR system.

"We've installed TPO systems on some of our other buildings, so we were comfortable with it and were familiar with its performance," says Eric Hult, manager of State Trailer. "It also made sense for this project."

MINIMIZING INSTALLATION COSTS

Recovering the existing BUR system was key to minimizing project costs, and a primary reason for choosing TPO. A full tear-off would have cost approximately \$78,000, Bobbitt estimates, and would have been far more disruptive to the building's occupants.

Mechanical attachment of the insulation and membrane also was a time- and cost-saver. Materials and labor costs were reduced by 30 percent to 35 percent compared to a fully adhered system, according to Bobbitt.

The installation process went smoothly. Mother Nature provided the only speed bump, as an unusually wet fall and early winter kept the six-man crew off the roof for a total of nearly three weeks.

EASY MAINTENANCE, ENERGY SAVINGS

Hult knew from experience with the company's other buildings that caring for the new roof would be hassle-free and help keep the lifetime costs of the roof low.

"Maintenance is a big plus with TPO," he says. "If the roof does leak, it's usually because someone was up there and stepped on a screw or something. Other than that, it's low-maintenance."

Given the Phoenix area's sweltering summers, with average daily high temperatures peaking at 106 degrees Fahrenheit, Bobbitt and Hult knew that upgrading to a more energy efficient roofing system would be a wise investment. They have been astounded by how big the return has been.

Over the roof's first 12 months of service, the company's electricity costs decreased by nearly \$22,000 – a full



Crews from Multi-Pro Roof Solutions re-covered the existing built-up roof system with the new TPO system.



17.4 percent – compared to the previous 12 months.

The owners and managers of the retailer that shares the building with State Trailer also have remarked that it has been easier to keep their space cool, Hult says.

"I can only attribute the lower energy bills and greater comfort to the new TPO roof and the additional insulation doing a better job of keeping the cool air in the building, which keeps our HVAC units operating at a minimum," he says.

The reflectivity and emissivity of the ENERGY STAR-qualified TPO membrane are far superior to that of the original BUR system, Bobbitt notes, keeping rooftop temperatures lower and expelling much of the heat that does enter the building through the roof.

Adequate insulation is an even bigger contributor to the energy savings. After nearly 30 years, the original batt insulation installed underneath the roof deck "had turned to dust," Bobbitt says, leaving the system, for all practical purposes, uninsulated. The new 2-inch layer of poly-ISO insulation, with its R-Value of 11.53, will keep the hot air outside and the air-conditioned air inside.

Savings in future years will likely not be quite as dramatic as those seen initially, Bobbitt says. Energy bills could be impacted by fluctuations in weather, increases in electricity rates,

and any changes in how the building is used. And without regular cleaning, the reflectivity of the TPO membrane will decrease slightly over time. Even taking these factors into account, however, the new roofing system will be money in the bank for State Trailer.

"It's a no-brainer," Bobbitt says.

Multi-Pro Roof Solutions and State Trailer are now hoping for similar results as they plan their next project – a TPO roofing system for a new 28,000-square-foot State Trailer facility in Mesa, Arizona. **R**

STATE TRAILER RV & OUTDOOR SUPPLY PEORIA, ARIZONA

TEAM

ROOFING CONTRACTOR: Multi-Pro Roof Solutions, Phoenix, Arizona, multipreroof.com

ROOFING MATERIALS DISTRIBUTOR: ABC Supply Co. Inc., Branch #025, Phoenix, Arizona, abcsupply.com

MATERIALS

MEMBRANE: 60-mil Standard TPO in White, Mule-Hide Products Co., mulehide.com

ROOF INSULATION: Mule-Hide Poly-ISO Flat insulation, Mule-Hide Products Co.

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Supporting Rooftop Solar



Shining a Light on Maine Mall's Modern Photovoltaic Roof System

The Maine Mall in South Portland, Maine, is the largest enclosed shopping mall in Northern New England. Constructed in 1971, the mall sprawls over a million square feet of retail space with 118 stores.

When owner Brookfield Properties Retail Group decided to upgrade the mall's aging roof, they opted for a modern photovoltaic roof that would provide renewable solar power. Solar roofing systems have steadily gained traction since Congress approved the Energy Improvement and Extension Act of 2008. The law allows building owners who install solar energy systems to deduct a portion of the cost directly from federal taxes. The law was set to expire at the end of 2016, but was renewed in late 2015, assuring that solar roofing systems will become even more common.

CHALLENGES TO THE ROOF ASSEMBLY

While solar roofing systems offer

decreased utility bills to building owners, they put a significant strain on roof assemblies, primarily from additional foot traffic. Frequent inspections and maintenance of solar equipment increase the potential for wear and tear from greater foot traffic or damage from a worker dropping a sharp tool that could puncture the roof. Roofing consultants rank punctures as having the most negative impact on the lifespan of a roofing assembly.

Consequently, most contractors recommend — or even require — the use of a high-performance rigid cover board when installing a photovoltaic (PV) system in order to protect the roof membrane and insulation underneath. With most PV products designed for a service life of 25-30 years, the supporting roof system needs to last at least as long as the solar array itself.

"Solar roofs cost more than traditional single-ply roofs," says Michael Gumm, applications technologist and business development manager for solar panel manufacturer MiaSolé

and principal of Corporate Roof Consultants. "The additional cost of including a cover board in the project becomes almost inconsequential when designers figure in the life cycle cost benefits of extending the life of the solar roof system."

With all of this in mind, Brookfield selected RRK Associated, Ltd., of Gurnee, Illinois, to engineer a Sika Sarnafil 60 mil PVC RhinoBond induction welded roofing system designed to house a ballasted solar array system covering most of the 167,000 square feet of roof area being replaced. This would provide the owner with a Sika Sarnafil 20-Year NDL Warranty.

According to Guy Snowden, Jr., principal of RRK Associates, given the scope of the project, the firm knew that a high-performance rigid cover board would be required to support the equipment and withstand foot traffic from routine inspection and maintenance.

"Once it was discovered that a solar array system was planned for this location, the use of a rigid and durable cover board was never a second thought," Snowden explained. "And since this was a re-cover application and the client had an FM review project scope, an approved cover board was required."

HIGH-PERFORMANCE COVER BOARD

Snowden has worked with a variety of roof boards over the years, but when it came to specifying a product for Maine Mall's new roof, he felt the choice was simple.

"The heavy foot traffic the roof had already experienced combined with the installation of a solar array made DensDeck Prime Roof Board the best choice for long-term performance and durability," Snowden says. "Other cover boards would break down or be crushed over a short period of time with the foot and equipment traffic."

According to Snowden, DensDeck Prime Roof Board with EONIC Technology offers significant advantages over other

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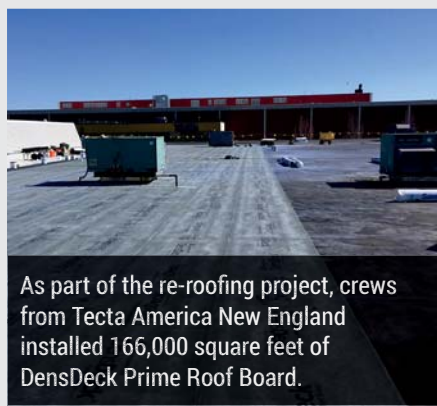
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products. “I’ve been in the roof consulting field specifying systems across the nation since 1990, and I feel DensDeck Prime Roof Board provides significant long-term performance, durability, and cost savings. Its high compressive strength is extremely beneficial, especially in applications where heavy foot traffic and equipment traffic is expected, as well as roofs in hail zones.”

Additionally, EONIC Technology has doubled DensDeck Prime Roof Board’s resistance to moisture, allowing it to meet the industry’s tough new Three-Part Specification for moisture resistance. This includes 5 percent total water absorption resistance by weight and 1-gram surface water absorption on both sides of the board.

Sarnafil Manufacturer’s Representative Ned Keating, owner of New England-based Barrier Architectural Reps, helped to choose the materials and assisted on job walks both before and during the project. “We were going over an existing roof that could have had moisture in it,” says

Keating. “And since the new roof is a RhinoBond system, moisture could condense under the membrane, sometimes more so than when it’s adhered. This made DensDeck Prime Roof Board’s surface and total water absorption performance extremely valuable.”

RRK Associates hired Tecta America New England to install the roofing system, and 166,000 square feet of half-inch DensDeck was mechanically attached over the existing EPDM roofing system. The white 60-mil Sarnafil PVC roof system was then installed over the top.

“The existing roof had 3 to 4 inches of polyiso insulation on the deck and EPDM membrane on top of it,” explains Mark Drummond, project manager for Tecta America. “The scope of the project required us to slice the existing membrane into 10-foot-by-10-foot squares and then install the DensDeck Prime Roof Board over it.”

According to Drummond, DensDeck Prime Roof Board created an excellent substrate to add protection for the

membrane and support solar panels.

“The product worked really great,” Drummond says. “Once it was installed, we were left with a nice, firm surface for the roof. Its high compressive strength and moisture resistance made it ideal for this project, especially since it was a re-cover. Most roof boards out there are rated around 100 psi, so 900 psi is really impressive. And once the winter snowstorms hit and snow gets locked in around the shaded sides of the photovoltaic panels, that moisture resistance will really count.”

Brookfield Properties Retail Group is counting on the solar panels to provide many years of reliable, renewable electricity. Thanks to DensDeck Prime Roof Board, they can also count on the roofing assembly to support the equipment, handle the foot traffic, and protect the building and its occupants for years to come. **R**

MAINE MALL SOUTH PORTLAND, MAINE

TEAM

ROOF CONSULTANT: RRK Associates, Ltd., Gurnee, Illinois, rkassociates.net

**ROOF CONSULTANT/
MANUFACTURERS REP:** Barrier Architectural Reps, barrierarchitecturalreps.com

ROOFING CONTRACTOR: Tecta America New England, Portland, Maine, tectaamerica.com

MATERIALS

COVER BOARD: 1/2-inch DensDeck Prime Roof Board with EONIC Technology, Georgia-Pacific, buildgpc.com

MEMBRANE: White 60 mil Sika Sarnafil PVC, Sika Sarnafil, usa.sika.com/sarnafil

SOLAR PANELS: MiaSolé, miasole.com

IRE COMMUNITY SERVICE DAY PROJECT

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The biggest SCHEELS sporting goods store in the nation is now open in Texas. Just like the Lone Star state itself, the store is BIG. The size of 6 football fields, this world's largest sports store needs a hard-working, low-maintenance roof to cover its 331,000 square feet. That's why Bellaforté Slate synthetic roofing from DaVinci Roofscapes was chosen for the project.

Amidst the COVID-19 outbreak, SCHEELS had its grand opening at Grandscape in The Colony, Texas, in May of 2020.

The impressive store has more than 85 specialty shops inside. You'll find top-name sporting goods, clothing, shoes, and much more. Inside The Colony SCHEELS, you can ride the 65-foot Ferris wheel, spend time playing arcade games, grab lunch at Ginna's Café or visit the Dallas Cowboys Fan Shop.

"Historically, concrete roof tiles had been used on other projects," says Tiffaney Triepke, AIA with R.L. Engebretson. "However, we examined the benefits of synthetic roof tiles and were pleased. Their lightweight nature, quicker installation and lower maintenance are very impressive."

R.L. Engebretson has been involved in the design of several SCHEELS stores over the years. "We saw a cost benefit to using the Bellaforté Slate product," says Triepke. "Once we decided to use this synthetic slate tile, we requested a special color blend for The Colony SCHEELS store. We were able to combine 70 percent of the Castle Gray color with 30 percent of the Smokey Gray color. That gave us the exact blend we wanted for the roof. Now that we've found this winning color combination and Bellaforté Slate product, it will become a roofing standard for



all SCHEELS stores moving forward."

Fire- and impact-resistant, Bellaforté Slates are the perfect addition to SCHEELS stores. Each tile is constructed of a composite material made of virgin resins, UV and thermal stabilizers. In addition, the tiles are made with a specialized fire retardant. The result is a state-of-the-art synthetic slate tile.

With the Bellaforté Slate tiles, SCHEELS stores will always have a perfect roof overhead. The composite roofing resists severe weather and fading. It also resists rotting, cracking and pests. Each tile is modeled after natural slate pieces. Bellaforté synthetic roofing is Class A fire rated and Class 4 impact rated, and the product is also certified by the Texas Department of Insurance. **R**

SCHEELS THE COLONY, TEXAS

TEAM

ARCHITECT: R.L. Engebretson, West Fargo, North Dakota,
rleco.com

MATERIALS

SYNTHETIC SLATE: Bellaforté Slate, DaVinci Roofscapes,
davinciroofscapes.com



The Auerbach Center houses practice arenas for the Boston Celtics and Boston Bruins, as well as the global headquarters for New Balance Athletics.

Championship Caliber

PVC Roof Protects the Boston Celtics at the Auerbach Center

Directly off the Massachusetts Turnpike and with easy access to the commuter rail, the newly developed Boston Landing community will be one of the most progressive and convenient living communities in the city of Boston. This community boasts numerous brand-name shops, restaurants, bars, residential facilities,

and thousands of square feet of office space. While the community is designed to provide convenient shopping, eating, and socializing for its residents, perhaps the most unique, sought-after aspect of Boston Landing is its support of local sports teams. The community houses the Auerbach Center – the Boston Celtics' new, 70,000-square-foot practice arena – as well as a practice arena for the Boston Bruins

and the global headquarters for New Balance Athletics.

Construction on the Auerbach Center began in December 2017 and was completed in June of the following year. One of the primary aspects of this new construction project was the installation of the roofing system, which was managed by Peabody, Massachusetts-based contractor Marshall Roofing and Sheet Metal Co., Inc.

The team at Marshall Roofing and Sheet Metal chose to use a PVC roofing assembly manufactured by Carlisle SynTec Systems. Marshall Roofing has been installing Carlisle roofing membranes since 1989 and the team knew that the Sure-Flex PVC membrane would be ideal for this application due to its long-term durability, resistance to harsh weather conditions, and flexibility of installation. The team chose to use a combination of white and gray PVC membranes to complete this rooftop with a unique aesthetic appeal.

TOPPING THE PRACTICE FACILITY

The 58,000-square-foot rooftop of the practice facility presented a challenge that required four separate roofing system designs to cover multiple roof levels, all of which contained extensive HVAC equipment, dunnage posts, and screen wall assemblies. Carlisle's 60-mil-thick Sure-Flex PVC membrane provided the flexibility needed for this type of rooftop challenge. The company's PVC membranes incorporate a strong polyester reinforcement that enhances their durability — a durability that would be essential for the extreme temperatures and precipitation Boston often experiences during the winter months.

The installation of this complex rooftop system began with the rooftop decks. Of the four levels, two levels utilized a concrete deck and two utilized a steel deck. For the steel deck roofing assemblies, the crew from Marshall Roofing installed a 5/8-inch cover board, followed by the application of Carlisle's VapAir Seal 725TR Temporary Roof and Air/Vapor Barrier membrane, which consists of 35 mils of self-adhering rubberized asphalt laminated to a 5-mil woven polypropylene film. The application of 725TR ensures that the roofing system maintains consistent air and vapor barrier priorities while also increasing its strength. Once the 725TR was applied, the crew installed 6 inches of Carlisle's InsulBase polyiso insulation to increase the



The rooftop of the practice facility was comprised of multiple roof levels with extensive HVAC equipment.

thermal efficiency and R-value of the roofing system.

After the insulation was in place, Carlisle's half-inch SecurShield HD cover board was installed, fastened to the InsulBase insulation with HP fasteners. The final step was to roll out the Sure-Flex PVC membrane, adhering it with Carlisle's Low-VOC Bonding Adhesive for optimal adhesion and superior wind-uplift performance, another characteristic that was essential for a rooftop that would endure Boston's severe winter weather.

The installation of the two remaining rooftop levels with concrete decks included the same steps, with the exception of the insulation and membrane application. For the concrete deck assemblies, the installation crew chose to use Carlisle's 8-inch SecurShield polyiso insulation, which features unique fire resistant and moisture-resistant properties while also enhancing the thermal efficiency of the building. Once these assemblies were ready for the PVC membrane, the installed it using Carlisle's RhinoBond fastening system. The RhinoBond fastening system significantly minimized the labor and installation cost by reducing the number of fasteners needed on the rooftop by up to 50 percent. In addition, the use of this fastening system also enabled the crew to space the fasteners evenly across the rooftop,

eliminating rooftop flutter and the potential for membrane blow-off.

With the PVC roofing systems in place, the Boston Celtics will be able to practice during any season, in any weather, for decades to come. The combination of PVC's long-term durability and the detailed craftsmanship of the crew from Marshall Roofing and Sheet Metal will ensure this facility remains safe and dry through the harshest Boston winters. **R**

AUERBACH CENTER BOSTON, MASSACHUSETTS

TEAM

ROOFING CONTRACTOR: Marshall Roofing and Sheet Metal Co., Inc., marshallroof.com

MATERIALS

MEMBRANE: 60-mil Sure-Flex PVC, Carlisle SynTec Systems, carlisesyntec.com

AIR/VAPOR BARRIER: VapAir Seal 725TR, Carlisle SynTec Systems
Insulation: InsulBase Polyiso, Carlisle SynTec Systems

COVER BOARD: SecurShield HD Cover Board, Carlisle SynTec Systems



Roof Maintenance Pays Off

Contractor Helps Non-Profit With Insurance Claim, Roof Replacement

When hail severely damaged the roof over classrooms and the gym at Urban Ventures, the team at Central Roofing stepped in to help. They successfully negotiated with the Minneapolis-based non-profit's insurance company for a settlement. As a result, Urban Ventures received a new roof system that would normally cost more than \$679,000 for just the cost of their insurance deductible – \$1,500.

“Central Roofing worked directly with our insurance carrier to ensure we got everything required to receive full financial compensation for the new roof system,” says Matthew von Ende,

general manager of Urban Ventures Leadership Foundation, based in Minneapolis, Minnesota. “They did an excellent job walking both us and the insurance adjuster through the hail damage to our roof. Trent Cook and his team were able to identify damages that we had not noticed. It’s clear that the Central Roofing team has the right level of expertise to support our organization.”

SEEKING INSURANCE COMPENSATION

Back in 2007 when the sprawling Urban Ventures facility was constructed, Central Roofing installed donated roofing products atop the 61,795 square feet

of the structures that house classrooms, offices, a gym and other activity areas. The building, named the Colin Powell Center, contains both Cristo Rey Jesuit High School and Urban Ventures.

Starting in 2013, Central Roofing was hired by Urban Ventures to begin yearly service on the roofs. Five years later, their investment in preventative maintenance had some surprising results.

“In 2017 I noticed unusual cracking/splitting in the membrane on the original roof,” says Trent Cook, project manager/service sales representative with Central Roofing Company. “Working with the product manufacturer, it was determined that hail severely damaged the entire roof system.”

After recommending that Urban



“For our big re-roof project, Trent was on site constantly,” says von Ende. “He made sure materials were delivered and stored in an efficient manner, that our project adhered to the schedule, and that I was informed every step of the way. This allowed me to keep our building occupants up-to-date with the timeline and to manage expectations efficiently.”

As the job concluded in late 2019, scaffolding and cranes were removed from the site. The result was a new, dependable roof with a 20-year warranty.

“Central Roofing did a very solid job from beginning to end of this project,” says von Ende. “It makes sense to us to commit the budgetary resources for the ongoing preventative maintenance program. The expertise Central Roofing brings to our facility has helped protect our structures and save us money.” **R**

Ventures get their insurance company involved, Cook began working to get them compensation. Eight months later it paid off. Cook had convinced the insurance company to provide a new, mechanically-fastened Firestone 75-mil reinforced EPDM roof system for the facility with HailGard composite board.

“We believe this is a higher-performing roof system that will serve the organization well for the next 20 years,” says Cook. “All Urban Ventures had to do was pay their small deductible and they received a brand new roof.”

REDUCING ENERGY BILLS

With the insurance settlement approved, the Central Roofing team got to work. In 2019 they removed the previously damaged roof. Before adding the new roof, the commercial roofing crew installed a significant amount of new insulation.

By adding a layer of 2.5-inch

polyisocyanurate insulation, plus a layer of 1/2-inch high-density polyisocyanurate cover board to the existing cover board and insulation, Central Roofing was able to bring the combined R-value up to 31.28 for the facility. The upgraded insulation costs were covered as part of the insurance claim.

“We believe the added insulation will help cut down the heating and cooling costs of the building dramatically,” says Cook. “As a bonus, the high-density cover board allows for future solar panel installations without voiding the warranty.”

INSTALLING A BETTER ROOFING SYSTEM

With the insulation in place, the Central Roofing team moved forward with installation of a mechanically-fastened Firestone EPDM 75-mil reinforced membrane. They also fabricated and installed new sheet metal flashings and new scuppers.

URBAN VENTURES MINNEAPOLIS, MINNESOTA

TEAM

ROOFING CONTRACTOR: Central Roofing Company, Minneapolis, Minnesota, centralroofing.com

MATERIALS

MEMBRANE: 75-mil reinforced EPDM, Firestone Building Products, firestonebpc.com
COMPOSITE BOARD: HailGard, Firestone Building Products



Historic Retrofit

Roof Coating System
Is Key to Adaptive
Re-Use Project

WRITTEN BY | CHRIS KING

When Ian Wilson was asked to check out the roof on a historic structure in Houston that was being redeveloped, he knew it would be an interesting project. Originally built in approximately 1930 as the headquarters of the Star

Engraving Company, the building later served as a cultural center and a theater for the Stages performing arts organization. The site was renovated by developer Radom Capital and transformed into a retail, office and mixed-use facility in 2020.

Wilson is president of Market Makers Inc., a Houston-based manufacturers

rep firm servicing the commercial and residential roofing markets. He's often contacted by building owners and roofing contractors to provide advice and write specifications. "I got involved and wrote specifications for the owner," Wilson says. "We started talking about their budgetary concerns and what they were trying to accomplish,

and we looked at the whole project.”

As he walked the roof, Wilson saw historic clay coping caps and a section of metal roofing that had been installed over the theater stage. The existing modified system over the main roof was still in good condition, and Wilson realized it would be a great candidate for a high-solids silicone coating. He specified Karnak 670 for the vast majority of the project. “The modified was nearing the end of its useful life, but it was still performing,” he says. “The roofs all had relatively good slope. The idea was, do we get another two or three years out of this modified, or do we coat it, and have a reflective roof system that’s going to be energy efficient and cool off the building. The coating is going to extend the life of this roof for another 20 years. That was the logic.”

Eliminating the tear off would also minimize waste – and allow work to begin on the inside of the building right away. “It sped up their process pretty dramatically,” says Wilson. “It was an excellent choice from a sustainability issue and an energy-efficiency issue.”

In an area that was to be covered with plaza pavers for outdoor dining and entertaining, Wilson recommended installing a Fleeceback TPO system from Versico. “The plaza pavers would be on pedestals, and we wanted to make sure the system could cope well with high pressure points,” he says. “So, I said, ‘Let’s put TPO over the existing modified in that area, and then you are good to go there.’ The rest of the roof was coated with silicone. We coated all of the walls and all of the



field, except for the area we installed a full TPO system. I wrote a spec that encompassed all of the low-slope areas of the roof.”

THE INSTALLATION

Three contractors were invited to bid on the project, and Strategic Roofing Solutions, LLC, got the nod. The company is a commercial roofing, sheet metal and waterproofing contractor based in Houston. “We hang off high rises and do full exterior waterproofing and renovations, as well as roofing replacement, roofing renovation, new construction roofing, and sheet metal,” says owner and president Mike Martin. “We do it all.”

Work began on the area where the pavers would be installed. “We

mechanically attached a cover board – half-inch DensDeck Prime – and then mechanically attached 60 mil Versiweild TPO on that section of roof,” Martin notes. “We stripped it all in with the flashings per the manufacturer’s system requirements.”

Work on the main roof continued as other trades installed pavers from Bison Innovative Products, skylights and new HVAC equipment. “We cleaned and prepared the surface and installed the Karnak silicone coating system,” Martin says. “They went with that particular coating because it is a high-solids formulation. The modified roof was a really good substrate for the job. In this case, it was probably their best bang for the buck with a long-term system warranty.”

The first step was cleaning and prepping the substrate. “We used 3,000 psi pressure washers,” Martin notes. “Karnak has a solution called Spray & Wash that you spray down first and let it sit on the roof. When you power wash the roof, it helps eliminate any residue on the substrate.”

Any damaged areas of the existing roof were then repaired or replaced. “Any sections of the modified that were lifted or blistered, we cut out those areas and repaired them prior to applying the coating system,” Martin says. “Then we went in and detailed all the laps, seams, flashings and penetrations with Karnak’s detail materials. It’s a three-course method embedded

The most challenging part of this project was ensuring the roof was protected from other trades.”

—Mike Martin, Strategic Roofing Solutions

MIXED-USE

in fabric for all of those conditions.”

The coating, which can be applied with sprayers or rollers, was installed in two coats. “We actually rolled that whole thing out,” Martin says. “It was a little more time-consuming, but it allowed us to really confirm our coverage ratios. We mark out our areas so we know how much material should cover each area. We also use squeegees that have notches in them so we can provide the mils we are looking for, so it gets us really close as we spread the material out for the guys to back-roll.”

The coating system was also applied to the R-panel metal roof over the old theater stage.

SUCCESSFUL OUTCOME

The roofing portion of the project was completed in September of 2020, and despite the coronavirus pandemic and the rainy Houston weather, the installation went smoothly. “The most

3201 ALLEN PARKWAY HOUSTON, TEXAS

TEAM

ARCHITECT: Perkins + Will, Houston, Texas, perkinswill.com

GENERAL CONTRACTOR: Pruitt Structures, Houston, Texas, pruittstructures.com

MANUFACTURERS REPRESENTATIVE: Market Makers Inc., Houston, Texas, marketmakersinc.com

ROOFING CONTRACTOR: Strategic Roofing Solutions, LLC, Houston, Texas, strategicroofing.com

MATERIALS

ROOF COATING SYSTEM: Karnak 670 high-solids silicone, Karnak, karnakcorp.com

MEMBRANE: 60 mil Versiweild TPO, Versico, versico.com

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

PAVERS: Bison Innovative Products, bisonip.com



challenging part of this project was ensuring the roof was protected from other trades,” Martin says. “We had to go back and repair the roof after it was done because other trades weren’t being cautious.”

The project was completed on time and without any accidents or incidents. Safety is the top priority for Strategic Roofing Solutions, which has a full-time safety director. “We had a weekly safety meeting on site and also a weekly safety inspection to ensure OSHA requirements were met and the guys were keeping safety on their minds,” says Martin. “We have incentive programs for our employees regarding safety. One of the things I like to brag about is that since incorporating my business since 2016, we have not had an injury or an incident.”

Martin is proud of his company’s

work on the project. “We project managed it very well,” he says. “We had good communication with the general contractor and the owner. We were very fortunate because the manufacturer was very supportive with us on anything we needed. It was a really smooth job and we enjoyed doing it. That area is kind of hoppin’ and poppin’ right now, so it was a unique experience to be a part of it.”

For Wilson, success this complicated project began with specifying the right system. “For us, this really defines who we are,” Wilson says. “We call ourselves ‘your roofing solutions resource.’ That’s our mantra. We don’t sell products; we bring people together. We create solutions by writing good specifications – by creating the right system for the right project.” **R**

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All-Inclusive

Trace on The Parkway Provides Easy Access to a Variety of Experiences

Located across the Mississippi River from the city of St. Louis, Edwardsville, Illinois, is a lively and growing community. Home to about 25,000 residents, Edwardsville features a quaint downtown, beautiful neighborhoods, and a wide variety of stores and restaurants.

In 2019, construction began on Trace on The Parkway, a new, mixed-use development in the heart of Edwardsville. The idea behind the development was to offer an all-inclusive living experience with on-site shopping, dining, recreation, working, and social spaces. Trace on the Parkway is close to downtown and provides tenants easy access to everything in the city. Additionally, the residential complex is one of the first in the area to be powered primarily by solar energy.

Trace on The Parkway was designed and built by locally owned Plocher Construction, whose work includes

many schools, offices, banks, and restaurants in the area. Joiner Sheet Metal and Roofing, based in Highland, Illinois, was selected to install the roof thanks to their history of top-quality workmanship in the region. Since 2005, Joiner has preferred Versico for their high-quality, innovative materials, and responsive, helpful local representatives.

Joiner Sheet Metal and Roofing suggested using a Versico TPO system with CAV-GRIP 3V Adhesive for most of the Trace on The Parkway complex. VersiWeld TPO roofing systems are cost-effective, easy to install, and offer outstanding durability and resistance to damage and extreme temperatures. Underneath the TPO would be two layers of mechanically attached 2.6-inch-thick VersiCore Polyiso insulation, which offers outstanding installed cost advantages and has exceptional fire resistance (FM 4450 and UL 1256 approvals).

THE ROOF INSTALLATION

The Joiner Roofing crew began by mechanically attaching two layers of 2.6-inch-thick VersiCore Polyiso insulation using ASAP (Assembled Screw and Plate) Insultite Fasteners. The pre-assembled fasteners and plates are designed to help save time and labor. Next, the crew rolled out the VersiWeld TPO membrane and sprayed CAV-GRIP 3V on the top of the insulation and the back of the TPO membrane. Versico's spray gun-applied CAV-GRIP 3V Adhesive requires no stirring, is quick to apply, and has a fast flash-off time. As soon as the CAV-GRIP 3V had flashed off, the crew rolled the membrane onto the substrate and immediately broomed it and then rolled it with a weighted roller.

VersiWeld TPO membrane offers outstanding resistance to punctures, hail, chemicals, solar UV, and extreme temperatures. VersiWeld TPO is available in wide sheets and is quick and easy to install and has less seams. These attributes made it a perfect candidate for a solar installation post-inspection.

Once the project was complete, a 20-year, 55-mph wind speed Total System Warranty was issued, ensuring that Trace on the Parkway's development will be protected for years to come. **R**

TRACE ON THE PARKWAY EDWARDSVILLE, ILLINOIS

TEAM

DESIGN-BUILDER: Plocher Construction, Highland, Illinois, plocherco.com

ROOFING CONTRACTOR: Joiner Sheet Metal and Roofing, Highland, Illinois, joinersmr.com

MATERIALS

MEMBRANE: VersiWeld TPO, Versico, versico.com

INSULATION: VersiCore Polyiso insulation, Versico

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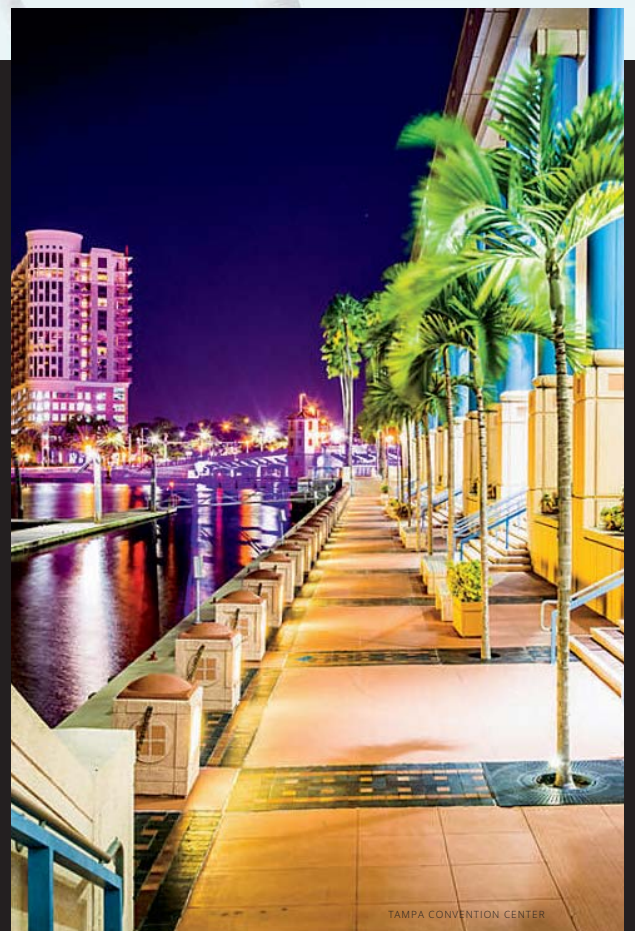
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WRITTEN BY | TOM SAVOY

Get on Deck

risk of the pool floor sagging, cracking or leaking water onto the parking garage underneath. Had the project team utilized traditional fill materials such as concrete or soil, the owners of the Midtown 360 may have risked premature building system failure.

LIGHTWEIGHT COMPOSITION AND STRENGTH TO BOOT

Weighing approximately 0.7 to 2.85 pounds per cubic foot, EPS geofoam's ultra-lightweight composition is one of its defining qualities. Incredibly, the rigid material is approximately 20 to 30 times lighter than concrete, and 100 times lighter than most soil types. This extreme difference in unit weight makes EPS geofoam an attractive solution over traditional fill materials. Because it weighs so little, large earthmoving equipment is not required during installation. Instead, the fill material can be installed easily and efficiently by hand. The custom-cut blocks are designed to lock in place, much like stacking blocks or assembling a puzzle.

Despite its lightweight nature, EPS geofoam is also designed to exhibit exceptional compressive strength and load-bearing capacity. As an engineered product, manufacturers can customize the material to offer values ranging from about 317 to 2,678 pounds per square foot at a 1 percent strain. Assuming combined dead/live loads do not exceed the 1 percent strain designation, the material will not creep or experience plastic yield. And because the material is engineered to disperse loads evenly across the roof deck, it minimizes post-construction settling, which supports a more stable foundation. This is not the case with soil and related fill materials, as their inconsistent compositions can lead to

HIGH-PERFORMING FILL MATERIAL SUPPORTS ROOFTOP SWIMMING POOL

According to data from the U.S. Census Bureau, the Provo-Orem metropolitan area of Utah is the ninth fastest growing metropolitan area in the United States. This statistic isn't surprising, given the significant gains in net migration to the state over the last decade as families flock to suburban communities. That said, with a burgeoning population comes an increased demand for housing.

Predicting the city's need for housing, The Ritchie Group, a second-generation real estate development company, purchased an unfinished mixed-use development in Orem in 2015. Dubbed "Midtown 360," the massive 265,000-square-foot complex was designed to accommodate both residential and commercial real estate needs; retail shopping and dining accompanies 245 contemporary apartment units and abundant underground parking. An added perk for residents of the luxurious complex? An outdoor swimming pool on the rooftop

of a sub-grade parking garage.

To bring the pool from concept to reality, The Ritchie Group enlisted Harris Architecture, an Orem-based firm specializing in residential and commercial design. From the start, sourcing an effective fill material to support the rooftop swimming pool proved difficult, considering the sub-grade garage was not designed to accommodate the high gravity loads imposed by the weight of so much water.

To meet this challenge, Harris specified expanded polystyrene (EPS) geofoam (GF) by Insulfoam. An engineered fill material, EPS geofoam is widely known for its lightweight composition, strength and customization capabilities. The effective fill solution is employed to address a variety of geotechnical challenges, including lightening loads on structures and serving as a structural void fill for concrete or landscaping applications. EPS geofoam was an ideal choice for use over the Midtown 360 parking garage because it offers incredible compressive strength, and yet, it's light enough to sideline the



Constructing an outdoor swimming pool over the parking garage required a fill material that was lightweight yet offered exceptional compressive strength.

non-uniform load transfer and differential settlement. This can cause dangerous, uneven settling and lead to permanent structural damage. By employing the EPS geofoam approach to support the rooftop swimming pool, the project team would proactively avoid these risks and ultimately extend the lifespan of the complete building system.

CUSTOMIZATION CAPABILITIES

Blocks of EPS geofoam, which are typically 40 inches by 48 inches by 96 inches in size, can be employed to fill massive volumes, reducing upfront material and labor costs. For custom projects, like the Midtown 360 rooftop swimming pool, the rigid foam material can be cut on the factory floor to accommodate virtually any shape, curve or slope. This level of customization typically eliminates the need for separate concrete

pours for vertical wall sections and topping slabs. Should the EPS geofoam need to be altered on site, crews can easily trim these oversized puzzle pieces using hot wire cutting tools.

In 2019, the pounding of hammers at the Midtown 360 was replaced with the splashing of water on the garage structure's newly minted rooftop pool. Supported by a high-performance void fill from Insulfoam, the swimming pool and surrounding area quickly became a coveted destination for residents. **R**

ABOUT THE AUTHOR: *Tom Savoy is the technical director for Insulfoam, a division of Carlisle Construction Materials. He has worked in the EPS Industry for 33 years and in construction materials (manufacturing and testing) for 38 years. Tom actively participates in many trade organizations including ASTM, SPRI and EPS IA. He can be reached at tom.savoy@insulfoam.com.*

MIDTOWN 360 SWIMMING POOL OREM, UTAH

TEAM

ARCHITECT: Harris Architecture, Orem, Utah, harris-architecture.com

CONTRACTOR AND PROJECT MANAGER: Cornerstone Concrete, Lehi, Utah, cornerstoneconcrete.us

GENERAL CONTRACTOR: Big-D Construction, Salt Lake City, Utah, big-d.com

MATERIALS

FILL MATERIAL: 13,720 cubic feet of InsulFoam GF EPS19 at 2.25 feet, 3.5 feet, 5 feet, insulfoam.com

ROOFTOP SOLAR

POWERFUL SYNERGY



Roofing and Solar Work Hand in Hand at the New CTP Headquarters



When the management team at Costex Tractor Parts (CTP) was planning its new headquarters in Doral, Florida, the goal was to build a state-of-the-art facility and centralize all operations of the growing business. The company was also interested in tapping into green technology, including solar power.

Now complete, the new CTP office, warehouse and manufacturing center sports 2,974 solar panels on the roof that provide 1.6 megawatts of energy — 90 to 100 percent of the energy needed for the entire building. It took a talented team to design and execute the project, including the general contractor, Link Construction Group, the roofing contractor, Advanced Roofing Inc., and the solar installer, Advanced Green Technologies (AGT).

Advanced Roofing and Advanced Greet Technologies are sister companies, so coordinating the design and installation of the roof and solar system was always top of mind, according to Clint Sockman, executive vice president of Advanced Roofing

and AGT.

CEO Rob Kornahrens started Advanced Roofing in 1983. “The vision has always been to control what happens on rooftops,” notes Sockman. “In 1994, we started Advanced Air Systems, which is our mechanical company for heating, ventilation and air conditioning. In 2007, I started Advanced Green Technologies, which is our solar company.”

All three companies are part of the same corporate structure, known as the Advanced Group, headquartered in Fort Lauderdale, Florida. The company has seven offices throughout Florida.

The owners of Costex Tractor Parts were thinking about solar from the start, but it was not reflected in the preliminary plans, so Link Construction brought in Advanced Roofing and AGT to help with the design process. “We were engaged by the general contractor because we are a leader in solar energy in Florida, and we’ve also done a lot of roofing for them,” Sockman says. “The owner was very heavily engaged with the design-build team. We got engaged early, before designs were complete, and we helped wrap up the whole vision. The roof was meant to be

in conjunction with the solar. We put a 30-year roof system in place. We wrote the specifications on the safety equipment. We designed the solar layout for maintaining and owning it over the course of 30 years.”

The scope of work covered the roof system and the solar system. “Roofing and solar need to go hand in hand,” Sockman asserts. “There are a lot of synergies there, but there can also be a lot of trouble if you don’t make them come together.”

THE ROOF SYSTEM

One key to the roof design was the owner’s goal of long-term ownership of the facility. The Advanced team prioritized a durable, long-lasting roof system that required little maintenance and would work well in conjunction with the solar array.

“We ended up pouring lightweight insulating concrete over the whole deck to create a monolithic insulation structure,” notes Sockman. “Then we came in and put in an 80-mil Carlisle PVC KEE FleeceBack, which an upgraded thermoplastic membrane, which was fully adhered in foam adhesive directly to the lightweight concrete. That

— ROOFTOP SOLAR



Advanced Roofing and Advanced Greet Technologies designed and installed the roof system and solar array.



Powergrip Plus mounts from OMG Roofing Products were used to attach the solar racking system.

gave us a 300 psi substrate to set the solar on, so we didn't have any worries about compression and wear from the solar. It gave the owner a 30-year warranted roof. And we know PVC performs well in the aggressive salt air."

The Advanced team walked some other roofs they had installed with the owner and pointed out the benefits of wrapping parapet walls in membrane and installing stainless steel coping caps. The plans also called for approximately 200 standard skylights, but after seeing the benefits of

prismatic skylights, they were upgraded to Sunoptics daylighting skylights.

THE SOLAR ARRAY

The design process for a solar array typically begins with determining what the power consumption will be. AGT began by looking at data from the company's existing facilities. "We tried to translate the usage of their other facilities into what this might mean per square foot at this facility," Sockman says. "Then we started taking an inventory of all of the conveyors, the

lighting, the office structures, the HVAC equipment — how they are going to be operated and what their efficiencies are. We ultimately landed on an energy model of a projected consumption."

The next steps involved determining the wind speeds and designing the system to withstand them. "We are in Dade County," Sockman says. "We have 175 mph wind speeds to deal with. We started working with our solar racking manufacturers to understand where the highest pressure zones are going to be and looking at wind tunnel

simulations. That helps steer us toward the ultimate, final layout – along with things like fire codes, walkway access, and maintenance, which is always taken into consideration.”

The solar array covers almost the entire warehouse portion of the facility. The front office area, which includes mechanical and HVAC equipment, was not used for the solar array.

The solar modules are manufactured by Canadian Solar, and the continuous rack system used was manufactured by DCE Solar. “It’s a combination of ballasted and mechanically attached racking,” Sockman says. “We run the building through the wind tunnel software that is proprietary to DCE, and we are able to see the pressures on each panel, and we can move our ballast and mechanical attachments around to optimize the design.”

Mechanical attachments used on the project were the Powergrip

Plus, manufactured by OMG Roofing Products. “It has a large structural plate that is anchored down through the lightweight into the structural concrete,” notes Sockman. “It has a PVC skirt on it, and we actually weld the flashing right to the roof, so it is seamlessly integrated into the roof.”


Permanent safety equipment was also installed. The building has parapet walls on two sides, while the other two drain to gutters and were completely open. Because maintenance personnel would be on the roof, Advanced designed and fabricated a custom aluminum safety rail system that was anchored directly to the structural deck before the lightweight concrete was poured.

SINGLE-SOURCE RESPONSIBILITY

The ultimate goal is to make sure the solar system and the roof work well

together, and that’s the key to the business model of Advanced Roofing and AGT.

“Single-source responsibility is our message to the customer,” says Sockman. “You get the advantage of never having to worry about people sitting across the table pointing fingers at each other. We are very much coordinated and obviously work together. The other thing that we do is as long as you are engaged in any of our maintenance programs, we extend our contractor’s warranties on both sides indefinitely.”

Sockman points to the project as proof the importance of determining the customer’s vision and executing it flawlessly. “We truly believe the roofer is the most well-equipped to handle rooftop solar,” he says. “We brand ourselves as vertically integrated. We handle the roofing, we handle the solar, we fabricate the carport steel for our carport division. We are big on collaboration in design. We love to collaborate and talk to our owners. We want to understand what the owner’s goals are and have that deeper relationship.” 



COSTEX TRACTOR PARTS DORAL, FLORIDA

TEAM

GENERAL CONTRACTOR: Link Construction Group, Doral, Florida, linkconstructiongroup.net

ROOFING CONTRACTOR: Advanced Roofing Inc., Fort Lauderdale, Florida, advancedroofing.com

SOLAR CONTRACTOR: Advanced Green Technologies, Fort Lauderdale, Florida, agt.com

MATERIALS

MEMBRANE: 80-mil PVC KEE FleeceBack with 55-mil fleece, Carlisle SynTec, carlisesyntec.com

SOLAR MODULES: Canadian Solar, canadiansolar.com
Solar Racking System: DCE Solar, dcesolar.com

Horse Sense

Canadian Equestrian Multi-Purpose
Barn Designed With PV System in Mind



Bruce Goode, a retired cattle-ranch owner and airline pilot, recently downsized and purchased an 8-acre equestrian estate with spectacular mountain and lake views of the Okanagan Valley area of British Columbia, Canada. The property features a new 3,500-square-foot,

multi-purpose barn with a 24-gauge Cascadia Metals Black SMP standing seam metal roof.

The spacious main floor will be used as a workshop area with a tack room and riders' lounge. The upper floor open loft area will be used as a "hunting lodge/cowboy shack" themed retreat and entertainment area complete with taxidermy mounts, in addition to

a hobby/work area for gunsmithing and another area for exercising.

THE CHALLENGE

The owner's goal was to construct a multi-purpose building that would also serve as a mounting platform for a 28.35 kilowatt PV solar system, which would provide 100 percent of the electricity needs for the entire



equestrian ranch property. He also needed a roof that would meet the expected 25-30-plus year service life of the PV system. Because the barn is located in the northern hemisphere, he needed to orient the roof and the solar panels for maximum solar gain.

Additionally, the property is located within a forest interface area, so a building constructed of fire-resistant materials was preferable. Furthermore, he wanted to reduce the risk of sudden and unexpected release of snow on his new slick metal roof, potentially posing a serious threat to property and visiting guests below.

THE SOLUTION

The owner specified a standing seam metal roof for its sustainability and durability, since it offers a service life that actually exceeds the service life of a solar PV system. This enables him to avoid potential costly disassembly of the PV array, re-roofing and re-assembly further down the road.

The ridge line of the barn roof was oriented exactly due east/west, to afford maximum solar gain for the 90 solar panel system mounted on the south-facing upper roof and lower roof surfaces.

The S-5-PVKIT 2.0 solar solution – in black to match the black anodized PV frames – enabled solar installers to direct-attach PV modules to the standing seams, eliminating the need

for a traditional rail mounting system and provided a simple, secure, economical and penetration-free method for attaching the solar modules.

Additionally, in the event of a nearby wildfire, a metal roof was chosen for its non-flammable, non-combustible properties, since it will not spark and ignite into flames during a wildfire or lightning strike, which also helps the owner save on insurance premiums.

S-5!s X-Gard 2.0 snow retention pipe system was selected for its compatibility with the project's standing seam metal roof, providing a penetration-free snow retention solution.

"Our multi-purpose barn was designed and constructed to withstand time and elements in a challenging western Canadian environment," says Goode. "The barn was built with the exclusive use of durable, weather-proof, fireproof and low-maintenance materials. To maximize the longevity potential of the barn's roof, we chose a standing seam metal roof, which achieved our sustainability goals. The metal roof is performing exceedingly well, easily withstanding the heavy snow loads expected in British Columbia, and it provides an excellent platform for mounting the 90 solar panels, which are directly attached using the S-5-PVKIT 2.0 rail-less, solar attachment solution to the entire south-facing surfaces of the roof. I am confident the barn will provide

trouble-free enjoyment for our family today and for many generations to come."

"In British Columbia, our public utility offers full credit for any excess energy produced through a net-metering program for grid-tied systems," says Stephen Russell, owner of Roost Solar, the solar system installer. "Essentially, this means our customers can 'store' all excess solar energy for use at night or during the winter when solar generation is reduced. This 90-module, high-efficiency array is anticipated to produce more than 30,000 kWh per year and cover 100 percent of the property's annual electricity usage." **R**

EQUESTRIAN MULTI-PURPOSE BARN VERNON, BRITISH COLUMBIA, CANADA

TEAM

ARCHITECT: Timber frame engineering and design by European Timberframe Corporation, Vernon, British Columbia, timberframecorp.com

GENERAL CONTRACTOR: Woodstyle Homes, Vernon, British Columbia, woodstyle.ca

ROOFING CONTRACTOR: Artisan Roofing Ltd., Vernon, British Columbia

SOLAR INSTALLER: Roost Solar, Inc., Vernon, British Columbia, roostsolar.com

MATERIALS

METAL ROOF: 24-gauge Black SMP Standing Seam Metal Roof, Cascadia Metals, cmetals.com

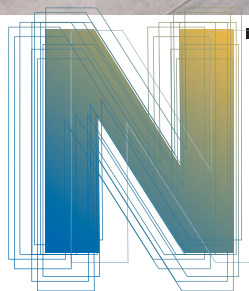
SOLAR MODULES: 315W mono-crystalline modules (CS3K-315MS), Canadian Solar, canadiansolar.com

INVERTERS: HD Wave inverters, SolarEdge, solaredge.com/us

SOLAR ATTACHMENT SYSTEM: S-5-PVKIT 2.0 and the S-5-S clamp, S-5!, s-5.com

SNOW RETENTION SYSTEM: X-Gard 2.0, S-5!

Beauty, Braun Energy Savings



Nestled outside of Boulder, Colorado, the city of Longmont abounds with the beauty of nature delicately balanced with the modern amenities that residents demand. The city enjoys the weather Colorado is known for – beautiful warmer months capped with a snow season that delights skiers from around the world.

Those lucky enough to own a home in Longmont are often protective of the environment in which they live. And perhaps, because of the natural bounty that Colorado boasts, the state is at the forefront of incorporating solar power into residential construction. In fact, in 2004, Colorado passed the first voter-led Renewable Energy Standard (RES) in the nation, requiring electricity providers to obtain a minimum percentage of their power from

renewable energy sources. The state's goal is to utilize 100 percent renewable energy sources by 2040. Stringent energy codes are nothing new to builders like Colorado-based Sopris Homes. The builder has been constructing high-performance luxury homes for more than two decades.

According to Sopris Homes President John Stevens, "As more communities desire and even require solar on new home construction, finding solar



products that are both functional and attractive is a growing challenge for builders. In some areas, we're mandated to use solar. In other areas, it's a choice. Most people don't voluntarily pay for solar on new home construction because, for most, it is not considered an aesthetic improvement."


When Stevens accepted the task of building a 5,510-square-foot, five-bedroom net-zero home in Longmont's Portico Lane subdivision,



he knew solar would be a mandatory part of the project. But for this high-end neighborhood, it was vital that aesthetics were not sacrificed. And, because of Colorado's weather, roofing materials had to be strong enough to endure heavy snow loads along with extreme temperature shifts. Concrete tile was selected for the primary roof covering, as it would easily stand up to nature's elements, but a decision still had to be made on the solar components.

After some research, Sopris Homes selected CertainTeed's Apollo Tile II concrete tile integrated solar roofing system, making it the first project of its kind in the state of Colorado. Unlike traditional rack and panel solar applications, Apollo tiles are flat and designed to seamlessly integrate with concrete or asphalt roofs. The solar tiles create a seamless and inconspicuous appearance that serves as both a roof system and energy generation source. Although they are attractive, Apollo tiles are also strong enough to handle heavy snow loads. Their design allows them to absorb a wide variety of temperature extremes without the risk of contraction or expansion.

The completed roof system incorporated 229 solar tiles, each with a power rating of 68 watts per tile. "I'm not aware of anything like it on the market here," said Stevens, referring to concrete-tile integrated solar systems. "You get the savings of solar energy generation, and you don't have to sacrifice aesthetics."

The result was a twofold success. The project was honored by the Colorado Solar Energy Industries Association (COSEIA) for a residential project sized under 10 kilowatts. And the homeowner received the benefit of a net-zero home without a negative impact to the home's curb appeal. 

LONGMONT RESIDENCE LONGMONT, COLORADO

TEAM

BUILDER: Sopris Homes, Boulder, Colorado, soprishomes.com

MATERIALS

SOLAR TILES: Apollo Tile II, CertainTeed, certainteed.com

Sunny Future

Residential Solar Offers Lower Energy Bills and Great Aesthetics

When thinking of hotbeds of solar power, eastern and central Pennsylvania probably don't jump out as top candidates. But that isn't stopping one roofing contractor from making its mark in residential solar.

Bachman's Roofing, Building & Remodeling, Inc., is fourth-generation family-owned business headquartered in Wernersville, Pennsylvania. The company also has offices in the Lehigh Valley and Philadelphia Metro Area. "We started out as a roofing company in 1972," notes Matthew Harter, marketing manager for Bachman's Roofing. "We are really strong on the roofing side. Of course, solar roofing is now a big part of that. We also do siding, gutters, windows, doors, skylights, and building construction. We are a one-stop shop for all of your home improvement needs."

Bachman's Roofing began installing GAF Energy's roof-integrated

solar system in 2019. "We have a very strong relationship with GAF," Harter says. "We are one of 25 three-star level President's Council roofers in the country, so it was a natural fit for us to partner with GAF Energy and add the roof-integrated solar to our portfolio. It's a great partnership."

Hands-on training began when Bachman's Roofing installed its first system on its own offices. "We started by installing an array right here on our corporate campus," Harter says, "The experts from GAF Energy came out and worked with our team. We worked through the installation process, what was different about it compared to a traditional rack system, and what the special considerations are when installing the integrated solar. They were great to work with."

To date, Bachman's Roofing has installed more GAF Energy solar systems than any roofing contractor in the country. "We are very proud we are the No. 1 installer in the U.S. for them," Harter says.

A SIMPLE MESSAGE

Bachman's Roofing is thriving in the world of residential solar by delivering an important message to homeowners. "It's really simple," Harter says. "We start from Step 1 introducing them to a process that can help their roof pay for itself."

The education process begins with the appointment reminder prospective customers receive, which has a picture of the rep that's coming out to meet with them. "We talk about projects we've done, and there are links in there to our solar page that talks about all of the programs we have," notes Harter. "Every single member of our sales team, from residential all the way to remodeling, introduces folks to solar."

He pointed to one residential roof replacement project involving the DecoTech 2.0 solar system and GAF Timberline HDZ shingles as an example. The roof on a residence in Sinking Springs, Pennsylvania, was nearing the end of its useful life. "A roof replacement is the perfect time to install solar," Harter explains. "The homeowner, Mr. Fischer, is an engineer – very analytical. He really did his homework. He was a very educated consumer, which we appreciate – it helps us."

Mr. Fischer was interested in the energy savings the solar system would provide, as well as the environmental benefits of renewable energy. "The homeowner wanted to 'go green' and have his roof pay for itself," Harter says. "It was a way for him to recoup the money he was going to have to spend on a roof anyway."

ONE-DAY INSTALLATION

The installation at the Fischer residence was fairly straightforward. According to Harter, the process begins like any typical residential re-roof.

"After we tear off the old roof, we inspect the decking. That's important," notes Harter. "Obviously we are not going to install new shingles or new solar on top of poor decking. So, there is a thorough inspection of the roof substructure, including going into the

attic and making sure that everything is adequate in there.”

Roofs incorporating solar panels have some key differences, including finding the optimal placement for the solar array and determining the best place to install conduit for the electrical wiring. The installer needs to know the policies of the local power company, as well as any state and local codes and regulations. Another difference is that a special underlayment goes underneath the solar panels. “When the system is designed, we have to take those things into consideration,” says Harter. “We also have to know exactly where that

roof – if we open you up today, we will close you up today.”

At the Fisher residence, there were two major challenges: the array had to be split into two separate columns, and four vent pipes had to be moved to accommodate the solar panels. “We’ve done that many times, so it’s old hat to us, but it is a challenge.”

It’s a challenge Bachman’s Roofing handles in-house. “That’s one of the advantages for our company,” Harter says. “We have our own electrician, our own plumbers, our own framers. You name it, we can do it. There’s no project we can’t tackle.”



array starts, where it ends, and where everything goes in between.”

Robert Glasner, residential sales manager and solar energy consultant for Bachman’s Roofing, oversees every project. “GAF Energy gives us a plan set for each solar array, and then we have all of that information with our production team prior to going out,” Harter explains. “Robert does a wonderful job of taking a look at everything and making sure everything is correct, so that on the day of install, we are typically able to put most of our systems in in one day. There are some we can’t quite finish in one day, but that’s our goal with every

For other roofers without such capabilities, GAF Energy offers a full suite of electrical and other services to make selling and installing solar as seamless as possible with the existing business infrastructure.

“One of the great things about the DecoTech system is that there is no shingle you are penetrating to put this system in,” Harter says.

Furthermore, the solar roofing kit concept from GAF Energy makes installation easy for crew members. “Having the inverters and flashing kit all there makes the day of installation and job-site management immensely easier,”

he says. “That roof-in-a box concept really works well for us.”

With his new roof-integrated solar system in place, Mr. Fischer estimates he is saving more than \$100 a month on his electric bill. Additional benefits include durability and great aesthetics. “There is a flashing kit that goes in, but you shingle over the flashing kit, so it’s completely integrated,” Harter says. “There is no way for water to run off that panel and get behind it. That’s what I really feel sets it apart. Beyond the look of the DecoTech 2.0 – it’s much more sleek-looking, obviously – having that flashing kit integrated is one of the real differentiators for this system. The solar panel becomes a part of the roof itself, and it’s a very attractive system. That’s a very strong selling point for us.”

Bachman’s Roofing is always ready to tackle expected and unexpected problems. “It makes the installation process as painless for the customer as possible,” Harter says. “We were able to come out, set up, and do this install in a single day. That in and of itself – that we were able to put up split array system in a single day and close up his roof says a lot about what we are able to do. Moving those vent pipes shows the expertise that we have, and that roof itself is a beautiful roof. And, the customer is extremely happy, and that’s the most important piece.” **R**

FISCHER RESIDENCE SINKING SPRINGS, PENNSYLVANIA

TEAM

ROOFING AND SOLAR INSTALLER:
Bachman’s Roofing, Building & Remodeling, Inc., Wernersville, Pennsylvania, bachmansroofing.com

MATERIALS

SHINGLES: Timberline HDZ, GAF, gaf.com

UNDERLAYMENT: Deck Armor, GAF

SOLAR SYSTEM: DecoTech 2.0, GAF Energy, gaf.energy

The Big One

Massive Restoration Project Allows Resort to Reopen Ahead of Schedule After Hailstorm

WRITTEN BY | CHRIS KING

When a devastating winter hailstorm hit the Holiday Hills Resort in Branson, Missouri, the standing seam metal roofs on 92 separate three- and four-story buildings were destroyed. The storm not only damaged roofs but also siding and windows on buildings throughout the 450-acre vacation property. The owners wanted to complete the building envelope

repairs before the July 4 holiday, their busiest time of the year. The insurance adjuster wanted one company to tackle all phases of the project and meet the aggressive schedule.

BluSky Restoration Contractors was up to the challenge. Headquartered in Centennial, Colorado, BluSky provides commercial and residential renovation and roofing services across the United States and Puerto Rico. The company specializes in large restoration projects, including repairing and rebuilding

commercial roofs after storms, fires, or other events.

“We fix broken buildings,” says Vice President of Commercial Roofing Troy Osborne. “We excel in tight time frame, large-scale projects. We get you back up and running.”

The Holiday Hills project involved roofing, siding, painting, gutters, and windows — and BluSky was perfectly suited to coordinate every phase of the project, according to National Project Director John Corbin. “For this project in



All 92 buildings at the Holiday Hills Resort in Branson, Missouri, had to be restored after a massive hailstorm.

particular, the scope really wasn't limited to the roof," says Corbin. "So, for us to offer all of the full roofing services alongside of the kind of building envelope services, it was really what the project needed."

ASSESSING THE DAMAGE

The first step was assessing the damage. The BluSky team convened at the site to determine just what they would be dealing with. "When you have 92 buildings – not all the same, of course

– and different scopes of work on different buildings, just getting your quantities correct is a monster," Osborne says. "How many windows are we replacing? How many squares of roofing? We spent the next 24 to 48 hours just getting that 30,000-foot view."

The estimate was requested in two weeks, so the team immediately began determining the quantities of materials needed. "One of the things that we realized at the onset was if we're going to get real-world accurate numbers and quantities, we've got to take off all these buildings," Corbin says. "So, we used a little bit of the aerial measurement. We also walked nearly all of these buildings with a tape measure, just to just to really nail it down."

Ten days later, the team flew out to Dallas with the proposal in hand. "One of the things that BluSky has is a really dynamic in-house estimating department," says Corbin. "Even so, two weeks for 92 buildings is pretty tough."

Holiday Hills seized the opportunity to implement a new color scheme as part of the restoration process. "We helped the client by producing 3D renderings of all the buildings and walked them through color options and color changes," Corbin says. "We were able to show all that to the client and their design department found that to be very beneficial, seeing what the end result would be. They changed the color of every building."

Roofing and gutter systems were also standardized. "They went with the charcoal finish on all of the roofing metal, both standing seam and the AG panels," Corbin notes. "And that tied into the trim detail on most of the buildings, and the gutters and downspouts, which were arctic white."

PRODUCTION CHALLENGES

BluSky was awarded the project in February of 2020 with a hard completion date of July 1. After the final materials were selected, it left BluSky with approximately four months to complete the work.

The installation process was

complicated by the logistics of the site. The far-flung buildings wrapping around a golf course made managing crews and delivering materials a challenge. "The buildings were spread out, which gave us room to work, but it made things more complicated in terms of project management and safety," says Osborne.

As crews were ramping up, the COVID-19 pandemic hit the country. "The coronavirus came over to the mainland USA here and it just changed everything – crew availability, hotel accommodations for our crews, even how we assembled for our daily safety meetings," Corbin recalls. "Everything was just flipped upside down."

As crews adjusted to new safety protocols, travel ground to a halt. One result was fewer guests at the resort, which allowed BluSky more flexibility in its approach. "From a production standpoint, we were able to adjust, ramp up and kind of take on multiple phases at a given time and accelerate our schedule," Corbin says,

ROOFING AND SIDING

The 26-gauge, charcoal-colored metal panels for the standing seam roofs were roll-formed on site and installed over APOC Weather Armor HT high-temp underlayment. "We had to lean on a few different companies to contribute panels," Corbin notes. "The owner did want to add some uniformity to their brand, for ease of maintenance and a little bit of marketing flair. But for us, once we had the metal selections, we knew exactly what coils to procure, how much, and thankfully, we had access to enough material right out of the gate to get this going."

The re-roofing phase included removing large cupolas from many of the buildings. "The cupolas had just been a nightmare for them to maintain, so one of the requests in the scope was to pull all of those cupolas off," Corbin says. "There were about 55 of them, and they were big, they were heavy – timber framed with dimensional lumber."

The cupolas were removed with a crane. "It was interesting to see,

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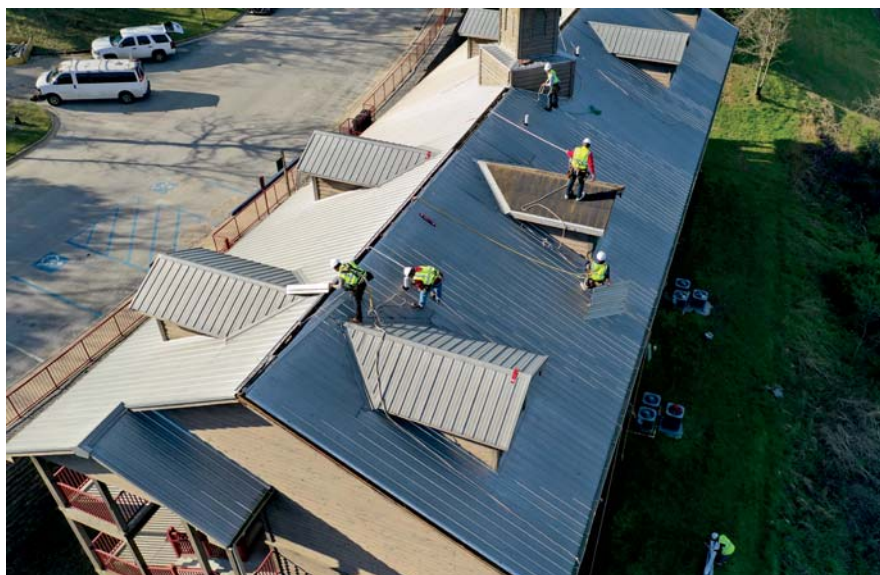
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because some of our crews had figured out very early on the best, most efficient ways to disassemble these and pull them off," Corbin notes. "It was then our responsibility to share that with the greater team so that we could get the efficiency up."

The walls featured a combination of cedar and vinyl lap siding. Damaged sections were replaced, and some existing cedar siding was stained to conform to the new, lighter color scheme. After the siding and roofing work was completed on a building, the drainage systems were installed. "The vertical and roofing crews worked independently of one another, and the gutters and downspouts were kind of the final zipper on things to tie it all together," Corbin says.

As work progressed, BluSky coordinated the work of multiple crews in each section. "We would have a roofing team start at one end of the street, have a painting and siding and windows crew at the other end of the street, and then we would have them work down the lane and then pass one another. That

allowed us to have production going on of the lower vertical elements – siding and windows – and not have roofers roofing over them."

"We were able to interface that in a way that just satisfied the safety requirements that we have the crews do. We were able to put buildings into production at a much greater rate."

BluSky had an in-house, full-time safety consultant dedicated to managing the site's safety protocol, which was developed along with SFI Compliance Inc. of Englewood, Colorado. "Before the project started, we leaned on a third-party safety consultant to come in and write a site-specific safety protocol for this scope of work on this project under these circumstances," says Corbin. "And that's what we leaned on as the Bible of how we're going to conduct this work safely."

PROTECTING THE LANDSCAPING

Ensuring the resort's meticulous landscaping would not be harmed was a key concern of the client. "To do all

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of the hoisting and all the material movement and not interrupt the landscaping was tough,” says Corbin. “We had an awful lot of equipment on site, from lifts to telehandlers to articulating booms – just about every piece of equipment you could imagine. And one of the things that we decided as a project team at the start of this project to cut down on that huge variable, is we decided that under no circumstance would any piece of equipment be allowed to go beyond the curb of the street. We were not going to have any equipment on any landscaping at all.”

The mandate took some getting used to, but superintendents quickly developed methods for hoisting materials from the street to the roof. “We did figure it out,” says Corbin. “There was little to no damage to any of the landscaping. We put a lot of effort into making sure that the equipment that we brought on to the site could reach everywhere that we needed it to and

carry the load that we needed it to. At the end of the day, it just saved a lot of headaches because that was a huge unknown.”

CELEBRATING SUCCESS

Despite the numerous challenges, BluSky finished the work ahead of schedule with no safety incidents.

“Our claim to fame on this project is 92 buildings in 92 days,” Osborne says. “So, we celebrate the success, but to be honest with you, that’s what it was going to be from day one. Failure was never going to be an option.”

Osborne points to experience and teamwork as the keys to the project’s success – and the watchful eye of John Corbin. “Corbin babysat this job like a maniac,” Osborne says. “I’ve never seen someone watch a job from inception to conclusion like Corbin. This was his baby and his pride and joy.”

“We pulled it off because John had the belief, and we were going to put

whatever team needed to be on it to get it done,” Osborne concludes. “And by the way, in that scenario, 92 different buildings gave us the opportunity to use as many people as we needed to. And this is our strength. We have strong trade partners, and we knew that as long as the material suppliers could keep up, we could produce the work.” **R**

TEAM

ROOFING CONTRACTOR: BluSky Restoration Contractors, Centennial, Colorado, goblusky.com

MATERIALS

METAL ROOF SYSTEM: 26-gauge #1 G-Rib in Charcoal, Frontier Metal, frontiermetal.biz
Underlayment Weather Armor HT, APOC, apoc.com



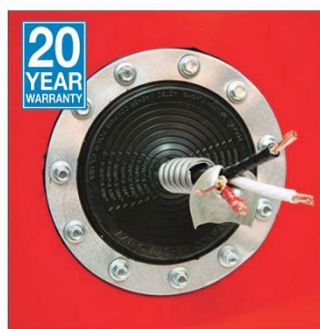
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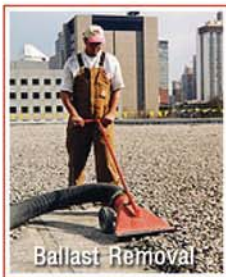
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