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SPRING 2023
Vol. 3, Issue 1

DO YOU NEED A DRONE IN YOUR TOOLKIT?

INTRO TO OPERATION BLUE ROOF

WIND UPLIFT
A CONSIDERATION FOR ANY ROOF

TYPES OF TORNADO ROOF DAMAGE

LIGHTNING PROTECTION
+ NEW CODE LANGUAGE
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BY KAREN KNAPSTEIN

IT'S ELEMENT-ARY

This edition marks the beginning of the second year of my involvement with *Roofing Elements*. I'm the first to admit that there's a lot I don't know about various roofing systems. (Having worked on *Metal Roofing Magazine* for a few years now, I know a bit more about metal than other roofing systems, but there's a lot more to learn.)

Thanks to the pros in the industry, my knowledge grows with each passing day. Roofers, suppliers, and manufacturers all contributed to my roofing education.

I'd like to acknowledge the associations that further my education and advance the roofing industry as a whole. Not only do they seek to improve the processes and materials you work with, but they work hard to provide the information you need to be successful.

For example, the Asphalt Roofing Manufacturers Association (ARMA) mission statement is: "To advocate and advance the interests of the asphalt roofing industry by leveraging the collective expertise of its members." The ARMA technical guidance for applying asphalt shingles and/or asphalt-based underlayment directly over insulation, insulated roof decks, and radiant barriers. It begins on page 16.

The Vinyl Roofing Division of the Chemical Fabrics and Film Association exists to educate architects, specifiers, building owners and roofing contractors on the attributes of PVC/vinyl as a single-ply roofing system. On page 20, you'll find an article about the reflectivity of PVC roofing membranes and how they can help reduce the urban heat island phenomenon. (It's not gone unnoticed that Roofing Elements, in general, is about the impact environmental factors have on various roofing systems, but this article is about roofing systems having an impact on the environment.)

Please join me in saying "Thanks" to associations that work hard to advance the industry. ●

CONTENTS

FEATURES

in this issue

COMING NEXT ISSUE

- Snow Loads
- Fire Resistant Roofing

ON THE COVER:

Failing shake shingles were replaced with DaVinci Multi-Width Shakes on the Horizon Pass Lodge HOA project in Bachelor Gulch, Colorado.
PHOTO COURTESY OF DAVINCI

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Gary Reichert,
Publisher, Shield Wall Media

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As Hurricane Ida struck the Louisiana coast, it brought with it sustained winds of 150 mph.

WIND UPLIFT

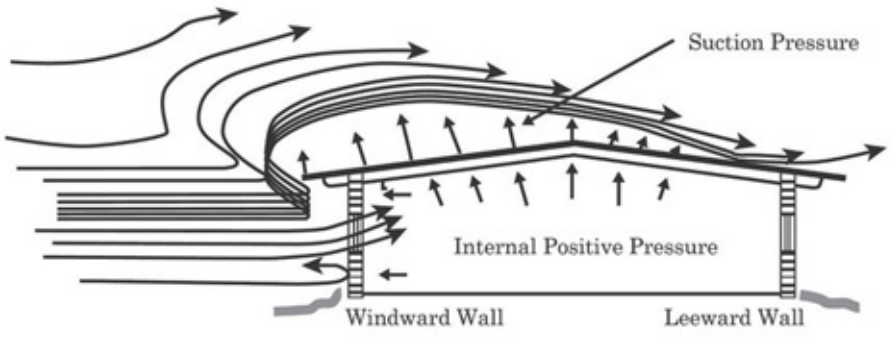
A DESIGN & ENGINEERING CONSIDERATION FOR ANY ROOF

By Rob Haddock

When designing a roof to withstand wind uplift forces, the wind speeds for that geographic region, together with many other factors that influence maximum wind forces, must be considered. No matter where a building is located or what materials it is constructed from, there are minimum standards of forces it should withstand, including wind uplift forces on its roof. So, the roof must be strong enough to withstand the maximum uplift design forces determined for the building and the building site. As the minimum uplift forces increase in areas with higher winds, such as hurricane-prone areas, roofs must be more durable. Metal roofing lends itself to high wind-prone areas since it can easily be engineered to withstand nearly any uplift force.

DESIGN WINDS SPEED & WIND FORCES

Wind speeds vary throughout the United States with high wind-prone areas found in coastal communities and in some mountainous regions, and lower wind-prone areas found in much of the interior states. The design wind speed is primarily determined by the area's highest recorded three-second wind gust (measured 33' above ground), which in turn is used to calculate the maximum



overturning forces on a building and maximum uplift forces on a roof.

Wind speed (miles per hour) is translated into units of pressure (pounds per square foot — psf) for design purposes (in accordance with ASCE-7 standard for Minimum Design Loads and Associated Criteria for Buildings and Other Structures established by the American Society for Civil Engineers). One important factor affecting the calculated wind forces is the exact location within a roof. Roofs are divided into zones (for example corner, edge, interior), and the resulting forces are different in the various roof zones. Wind uplift forces are greater in the edges than in the interior and greatest in the corners.

Additionally, a building's size and geometry impact those forces and zones. For example, a 60-foot-tall building experiences stronger wind forces than a 30-foot-tall building, even if both are located in the same area with the same design wind speed. The overall terrain and the building's immediate surroundings also impact wind speed. Valleys, hills, slopes and cliff-sides, as well as obstacles in the wind's path, such as nearby buildings and wooded areas, can reduce or increase wind speed and resulting forces. Wide-open terrain or open-water surfaces can set the stage for wind speed increases.

The figure shown (opposite page) illustrates how wind currents approaching a structure separate as it hits the roof's windward edge, re-attaching at

2019's Hurricane Dorian was a catastrophic Category 5 Atlantic hurricane, which became the most intense tropical cyclone on record to strike the Bahamas, and tied for strongest landfall in the Atlantic basin.

Hurricane Ida (August 2021) caused $75 billion in damage across the US.

a leeward point back into the roof. The resulting suction at the windward roof area is the cause of wind uplift (vacuum) pressures. As illustrated, it is also evident that the forces are greater at the edges and corners where separation occurs.

TESTING STANDARDS FOR WIND RESISTANCE

Materials, products and even site-specific project designs are tested for wind pressures to demonstrate their strength. Thus, various resistances to wind force can be attained through testing specific roof system assemblies. Some examples of common tests and standards are summarized below:

UL 580: Tests for Uplift Resistance of Roof Assemblies is one of these test standards. The uplift resistance of a roof assembly is listed as Class 15, 30, 60 or 90. The spectrums of 15-90 are comparative ratings, which are unrelated to specific wind speeds. For example, Class 90 involves 56.5 psf vacuum pressure and 48.5 psf upward pressure from below on a 10' x 10' specimen anchored at its perimeter.

Another test standard, FM-4471: Approval Standard for Class 1 Panel Roofs/Roof Assemblies lists roofs to Class (I) 60, 90, 120, 150 and 180. The nomenclatures 60-180, in the FM standard, relate to static pressure — also not wind speed. This test specimen is larger at a 12' x 20' minimum.

For metal roofs, the most notable test standard is ASTM E1592: Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference. It is somewhat different than other test standards whereby sample roof assemblies are subject to increasing loads until failure. The maximum load obtained is published as an ultimate load, from which a design load is determined using the appropriate factor of safety (FS), and then used to select the appropriate products and systems.

HIGHEST PERFORMING ROOF TYPE TO RESIST WIND UPLIFT

According to Monroe County Florida's staff summary post-Hurricane Irma inspections found that "metal roofs fared far better than those roofs covered by asphalt shingles," and in recent years, county officials even proposed an ordinance to require all new or replacement roofs to be metal. That's a true testament to the sustainability and durability of metal roofing, particularly in high-wind-prone areas.

Metal roofing is known for its long-lasting performance and reliability. The exceptional performance of metal roofing in high-wind conditions is due in part to its attachment methods and interlocking installation where roof panels are overlapped and attached to the structure of the building, reducing the ability of wind to disrupt the panels. The most important factor is that metal (unlike membranes or asphaltic materials) is an inert material, so its mechanical properties do not diminish with age and exposure to ultraviolet and other environmental conditions. In other words, it will behave as tested throughout its life of 60 years or more.

Standing seam metal roofing has a distinct advantage over other roof types, such as membrane and hot-applied asphaltic roofs because it serves as a "structural" covering, meaning it can be engineered to withstand almost any force imposed by wind. When so designed, some structural standing seam profiles can withstand extremely high forces, making metal the roof of choice in high-wind regions.

MAIN TAKEAWAYS

A variety of factors affect wind uplift performance on a roof, such as geographic region, building geometries, valleys, hills and adjacent buildings. Resulting forces on a single roof also vary in different roof zones. Together, all these factors impact maximum wind forces. Understanding all the considerations is critical to ensuring proper roof design to withstand the maximum wind uplift forces the building's roof will experience on any specific project site. ●

Rob Haddock *is president of the Metal Roof Advisory Group as well as CEO and founder of S-5!, the leading authority on metal roof attachment solutions. He is a former contractor, award-winning roof forensics expert, author, lecturer and building envelope scientist who has worked in the industry for five decades.*

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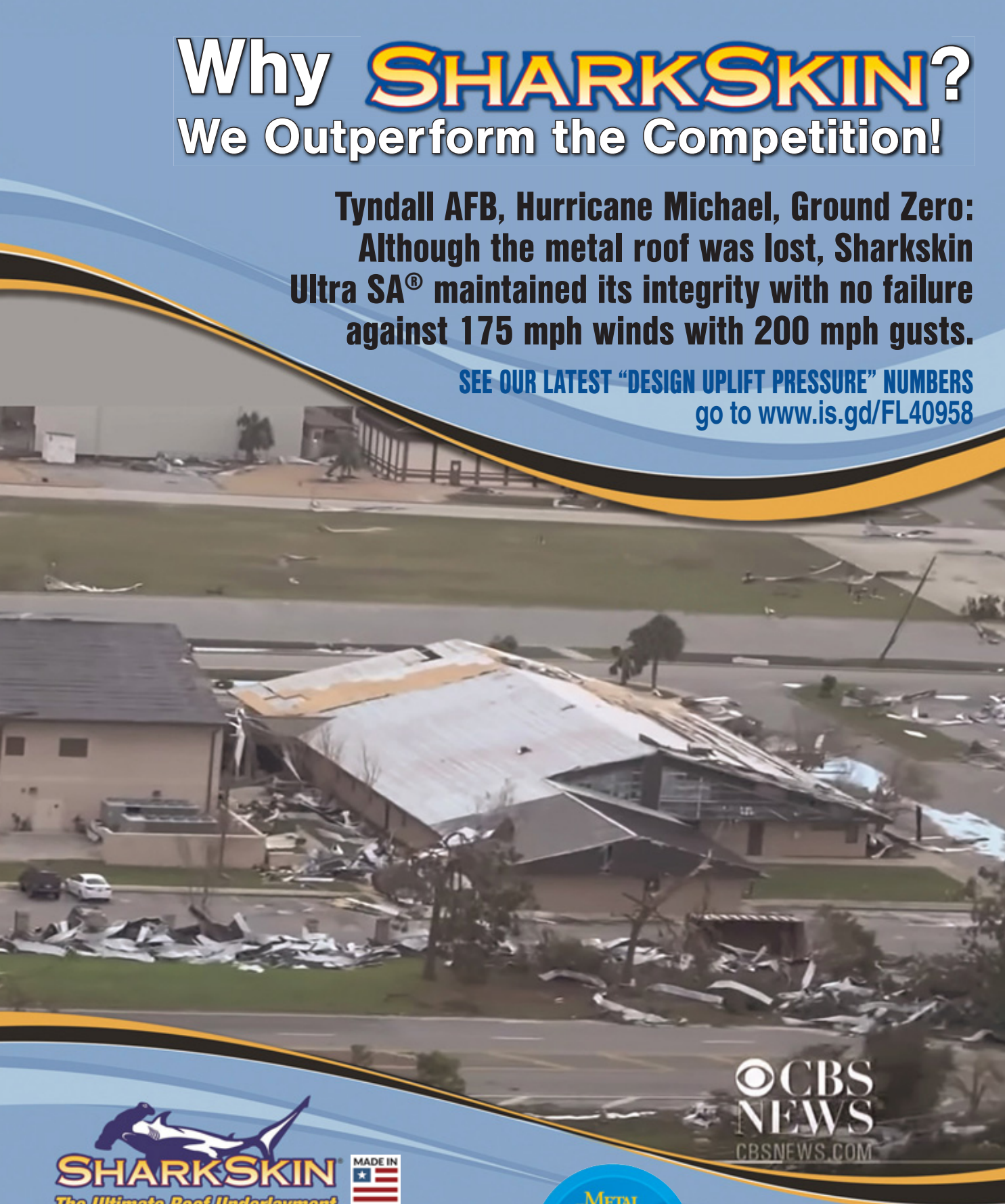

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By The Single Ply Roofing Industry

LIGHTNING LANGUAGE

SPRI HELPS BUILD CONSENSUS FOR NEW ATTACHMENT OF LIGHTNING PROTECTION CODE LANGUAGE

The 2024 edition of the International Building Code (IBC), will include new language that clarifies how Lightening Protection Systems (LPS) are secured to commercial roof assemblies, roof coverings, metal edge systems, and gutters. The language, which goes beyond the existing installation standards outlined in NFPA 780 and UL 96A, was developed by SPRI (the Single Ply Roofing Industry, www.SPRI.org), which worked closely with the National Fire Protection Association members, the National Fireproofing Contractors Association, the Lightning Protection Institute, the National Electrical Manufacturers Association, Underwriters Laboratories, the National Roofing Contractors Association, and other stakeholders to build consensus to get the new language approved and adopted for the code in 2024.

The new language, which will be added as new sub-sections in Section 1511 'Rooftop Structures,' stipulates that LPS installations must be completed in accordance with the roofing system or edge metal manufacturer's instructions, or specifications from a qualified design professional. Where LPS components are secured to, or penetrate the roof, they must be properly flashed.

"This is a significant update to the building code," said Amanda Hickman, president of The Hickman Group, and SPRI's code consultant. "The current code does not address the impact that LPS attachments have on the roof. Any attachments to the roofing assembly or edge metal system can alter the wind load and performance of these tested components. It is therefore important that the original equipment manufacturer or a qualified design professional provide direction on

the attachment methods to be used."

The new language reads as follows:

1511.7 Other rooftop structures. Rooftop structures not regulated by Sections 1511.2 through 1511.6 shall comply with Sections 1511.7.1 through 1511.7.6.2, as applicable.

1511.7.6 Lightning Protection Systems. Lightning protection system components shall be installed in accordance with Sections 1511.7.6.1, 1511.7.6.2, and 2703 of this code.

1511.7.6.1 Installation on metal edge systems or gutters. Lightning protection system components attached to ANSI/SPRI/FM 4435/ES-1 or ANSI/SPRI GT-1 tested metal edge systems or gutters shall be installed with compatible brackets, fasteners, or adhesives, in accordance with the metal edge systems or gutter manufacturer's installation instructions. When metal edge system or gutter manufacturer is unknown, installation shall be as directed by a registered design professional.

1511.7.6.2 Installation on roof coverings. Lightning protection system components directly attached to or through the roof covering shall be installed in accordance with this chapter and the roof covering manufacturer's installation instructions. Flashing shall be installed in accordance with the roof assembly manufacturer's installation instructions and Sections 1503.2 and 1507 where the lightning protection system installation results in a penetration through the roof covering. When the roof covering manufacturer is unknown, installation shall be as directed by a registered design professional.

The 2024 edition of the IBC will be published towards the end of 2023. Once published, the new language for securing LPS on commercial buildings may be adopted by states and jurisdictions across the U.S., and around the world.

SPRI is the leading authority on single-ply roofing, dealing exclusively with thermoset, thermoplastic, and modified bitumen roofing systems, and materials. Through an open forum for discussion, education and innovation, our dedicated commercial roofing industry experts provide ongoing resources and expertise to contractors, architects, and building owners. ●

BY EAST COAST LIGHTNING EQUIPMENT, INC.

LIGHTNING PROTECTION

LPS VITAL TO KEEPING FIRE STATIONS ONLINE

Calculating the risk of taking chances with lightning is a dangerous game. In June 2022, lightning struck the Orr's Island Fire Station in Harpswell, Maine, damaging equipment and disrupting operations. Equipment was damaged or destroyed, including communication equipment on the tower behind the station.

Had there been an emergency call during the time the fire station was offline, the call may not have gotten through. A lightning protection system installed in compliance with NFPA lightning protection requirements would have certainly prevented the damage and interruption of service at Orr's Island Fire Station. Recent events have brought the importance of essential workers to everyone's attention. Every day, our safety rests in the ability of fire and medical emergency personnel to immediately respond to life and death situations.

Many emergency situations occur during severe weather events, such as thunderstorms, when keeping the lines of communication up and running for emergency personnel is of the utmost importance. To ensure continuous operations during storms it is vital for fire stations to be protected from lightning damage. Fire stations not only need to provide a safe workplace for first responders and staff, but they also must remain fully functional during storms. A properly designed, installed, and maintained lightning protection system is critically important for emergency response facilities.

Kim Loehr of Loehr Lightning Protection Co. in Richmond, Virginia, points out that, "When lightning ignites fires or damages sensitive communications equipment, responsiveness and safety resources can be compromised and sometimes even crippled. It's not unusual for a lightning strike to take out generators, phones, telecommunications and paging systems. In addition, lightning can cause failures of internal building systems, damage equipment and even ignite structural fires at fire stations.

"Fortifying fire stations to withstand hurricanes, floods, earthquakes and wildfires is routinely included in our construction models and building codes.

So, doesn't it make send to safeguard against lightning, too?"

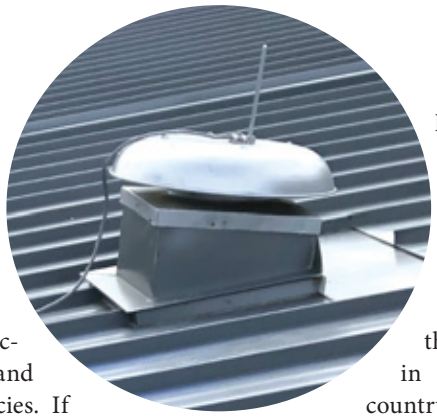
Bill Simpson, President at Smokestack Lightning Inc., in Brookfield, Massachusetts, says he recently completed the installation of lightning protection systems for the Town of Sturbridge, Massachusetts, that included five buildings.

"The town reached out to us," Simpson says. "Their police and fire station are housed in a single location and they realized they didn't want to risk their entire infrastructure going down in a storm."

Simpson points out that the procurement and subsequent building process for public projects such as fire houses can be arduous. "From the time they initially reached out to us to actually getting the job was a two- to three-year cycle," Simpson says.

Atlanta Lightning Protection of Holly Springs, Georgia, has installed and upgraded lightning protection systems for several fire stations in the Atlanta area.

"Most of the Atlanta area fire stations are staffed by firefighters as well as EMS crews," says Adam Smith of Atlanta Lightning Protection. "They are designed to fully support 15 to 20 workers for 24-hour shifts, which means they are basically living at the station. Also, they have critical equipment that must stay operational at all times in order to effectively communicate and respond to emergencies. If this equipment is not functioning properly, lives could be at risk."



Smith goes on the explain that fire stations must provide for both structural lightning protection as well as surge protection for connected equipment. "In my opinion, it is just as important to install appropriate surge suppression devices on all electrical and low-voltage services to minimize equipment downtime. The surge suppression should not be overlooked by the design team. I was at a fire station recently that had a UL compliant Lightning Protection System, but no surge protection had been installed. And yes, they were experiencing surge related issues on low-voltage equipment during storms."

There is simply no good time for a fire station to be off-line. Ensuring that lightning protection is installed and properly maintained is a must for these facilities. "After all, lightning is the severe weather event that affects the most people, the most frequently in most areas of our country," Loehr says. "It just doesn't make sense that lightning is overlooked in the vast majority of U.S. building codes."

ABOUT EAST COAST LIGHTNING EQUIPMENT, INC.

Established in 1984, East Coast Lightning Equipment, Inc. (ECLE, https://ecle.biz) provides high-quality, UL-listed lightning protection system components to lightning protection design and installation contractors throughout the United States, Canada, Central America and the Middle East. ECLE continually strives to develop high-quality, cost-effective materials that meet or exceed UL and LPI standards for safety. The family-owned company is based in Connecticut where it manufactures all of its own products in the United States. ●

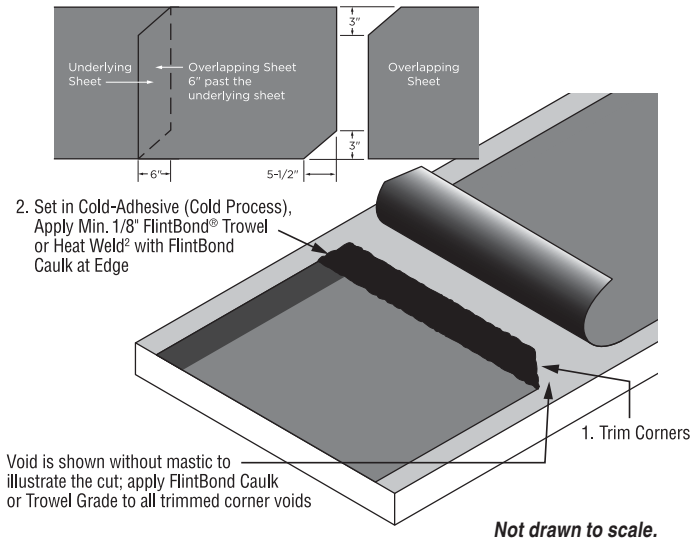
BY JOE THOMPSON, CERTAINTEED

INSTALLING MEMBRANE END LAPS

End laps are susceptible to a capillary condition that can lead to water incursion into the roof structure. That's why, when it comes time to install an end lap, it's important that you follow the proper steps to ensure a watertight seal.

For a typical cap sheet, such as a Flintlastic® SA Cap, a 6" minimum overlap securely sealed with our FlintBond® SBS-Modified Adhesive, Caulk, or Trowel Grade is critical. As I like to say, "If you don't see blue, there is something you have to do." This means that if you don't see the top blue facing of either our installed Flintlastic SA NailBase, SA PlyBase, or SA MidPly sheets, you will need to apply our FlintBond SBS Modified Adhesive — Caulk or Trowel Grade — in a uniform bed covering the entire dimension of the end lap.

Follow along below as I detail the steps to successfully prepare and install membrane end laps (Construction Detail CT-22).



Not drawn to scale.

STEPS TO INSTALL MEMBRANE END LAPS

For professional installation of end laps with CertainTeed Flintlastic SA Self-Adhered Membranes using Flintlastic SA Cap, FlintBond Trowel, and FlintBond Caulk.

1 Make sure all side and end laps are installed with the slope of the roof to ensure that no laps are installed against the flow of water.

2 Position the new roll to overlap the existing roll a minimum of 6", creating the end lap. It's helpful to score and leave release film in place until you are ready to adhere the end lap.

3 Adhere the new roll, up to the end lap.

4 If no further action was taken before adhering the end lap, this T-lap would be at risk for water incursion through capillary action. To avoid this scenario, using the selvedge dimension of 3" as your guide, cut the installed sheet on an angle to as close to the 6" dimension as possible. I recommend 5.5" to avoid overcutting. Now, the T-lap is removed, and the intersection will be smooth and watertight.

5 To avoid the T-lap on the next course, make a similar cut on the opposite corner on the sheet being installed.

6 Again using the selvedge dimension of 3" as your guide, cut the top sheet on an angle, 5.5".

7 Make all T-lap cuts in the same direction, starting about 3" into the roll, cutting out.

8 When the new roll overlaps a granulated surface, as with Flintlastic SA Self-Adhered Membranes, apply FlintBond SBS-Modified Adhesive — Caulk or Trowel Grade — to the entire 6" overlap ensuring a minimum of ¼" FlintBond bleed-out.

9 Though not required for warranty, broadcast CertainTeed FlintRock™ color-matched Roofing Granules into the wet resin if desired for aesthetic reasons. ●

Watch Joe Thompson demonstrate these and many more step-by-step instructions in his videos at https://bit.ly/CTJoeKnows.

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TECH REPORT

APPLICATION OF ASPHALT SHINGLE SYSTEMS TO DECKS INSTALLED OVER INSULATION OR RADIANT BARRIERS

By The Asphalt Roofing Manufacturers Association (ARMA)

Editor's Note: *The Asphalt Roofing Manufacturers Association (ARMA) has prepared many technical reports to aid roofers in the proper installation of various asphalt roofing systems. ARMA [https://www.asphaltroofing.org/] has granted permission to publish this report for the benefit of roofers.*

The Asphalt Roofing Manufacturers Association (ARMA) has established the following recommendations for applying asphalt shingles and/or asphalt-based underlayment directly over insulation, insulated roof decks, and radiant barriers.

ASPHALT SHINGLE AND/OR ASPHALT-BASED UNDERLAYMENT APPLICATION DIRECTLY OVER INSULATION

Applying shingles and/or asphalt-based underlayment directly over insulation is not recommended for several reasons.

- Asphalt shingles and/or asphalt-based underlayments are designed for attachment to deck surfaces such as plywood and oriented strand board or other surfaces acceptable to the asphalt shingle or underlayment manufacturer.
- Continuous free-flow ventilation is impossible to achieve when applying shingles and asphalt-based underlayment directly over insulation. Heat build-up, a typical result of inadequate ventilation, may accelerate weathering and reduce the anticipated life of the products.
- Asphalt shingles and/or asphalt-based underlayment may be damaged or punctured when nailed onto a non-rigid surface such as roofing insulation.
- Insulation does not have adequate nail-holding ability. Consequently, shingle damage and/or blow-off may occur if shingles are attached to insulation. Wind classification of the installed

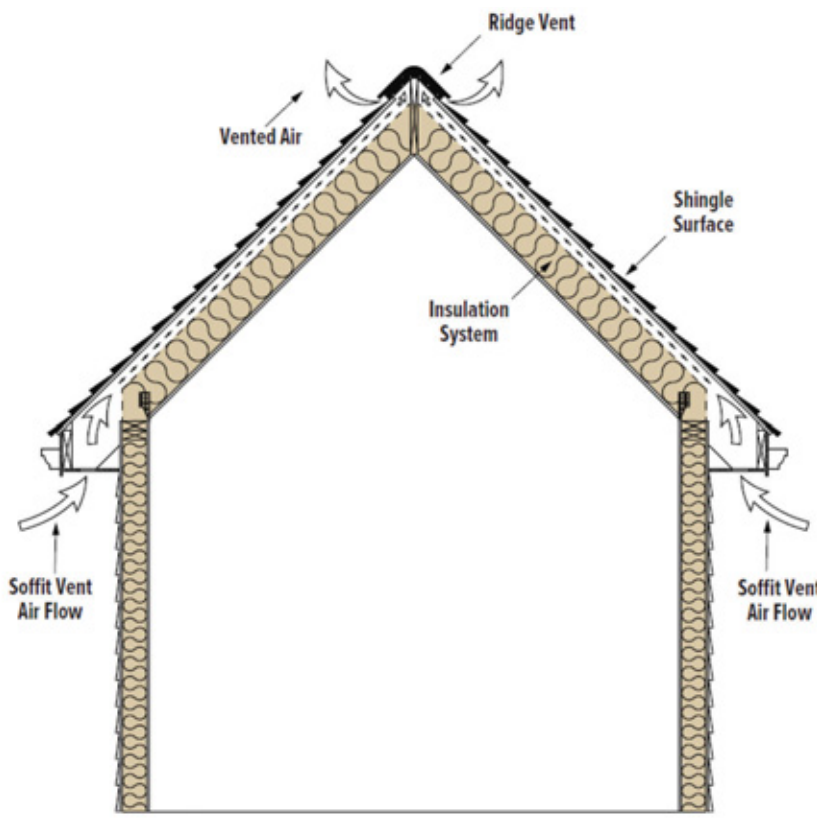

Figure A: Continuous airflow through an insulated roof system using soffit and ridge vents.
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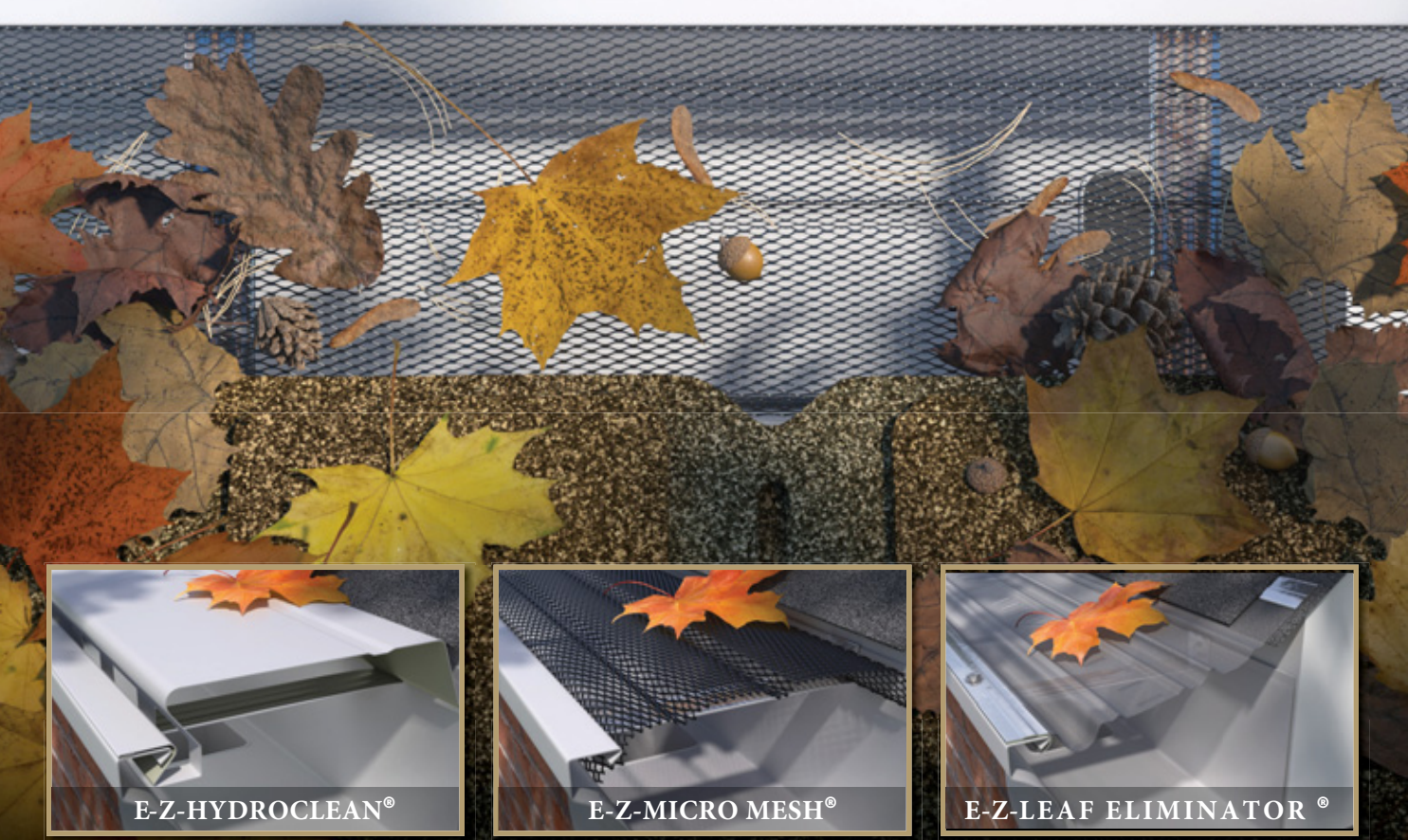

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roofing system may be affected.

The fire classification of asphalt roofing products may be adversely affected when applied directly over insulation. Individual asphalt shingle and/or asphalt-based underlayment manufacturers should be consulted to determine the effects on such classifications. Fire classification of the installed roofing system may be affected.

ASPHALT SHINGLE AND/OR ASPHALT-BASED UNDERLAYMENT APPLICATION OVER DECK SYSTEMS CONTAINING RADIANT BARRIERS

Applying asphalt shingles and/or asphalt-based underlayment to insulated roof decks is not recommended unless the following factors are considered.

- Direct installation over insulated roof decks is not recommended unless an adequate continuous ventilation space, free of obstructions, is provided between the top of the insulating material and the underside of an acceptable roof sheathing, Proper ventilation must be provided to dissipate heat and humidity build-up under the roof sheathing. More information on this can be found in ARMA's technical bulletin, *Ventilation and Moisture Control for Residential Roofing.* Factors influencing the minimum ventilation requirement include type of construction, roof pitch/run, temperature, humidity, etc. Consult the deck manufacturer, deck system designer, and asphalt shingle/underlayment manufacturer for specific requirements.
- Asphalt shingles and/or asphalt-based underlayment should only be fastened to deck surfaces such as plywood and oriented strand board or other surfaces acceptable to the asphalt shingle manufacturer.
- Application of asphalt shingles and/or asphalt-based underlayment directly over insulated deck systems without providing adequate ventilation may affect the asphalt shingle and/or asphalt-based underlayment manufacturers' product warranties. Consult individual product manufacturers for details and refer to local building codes.

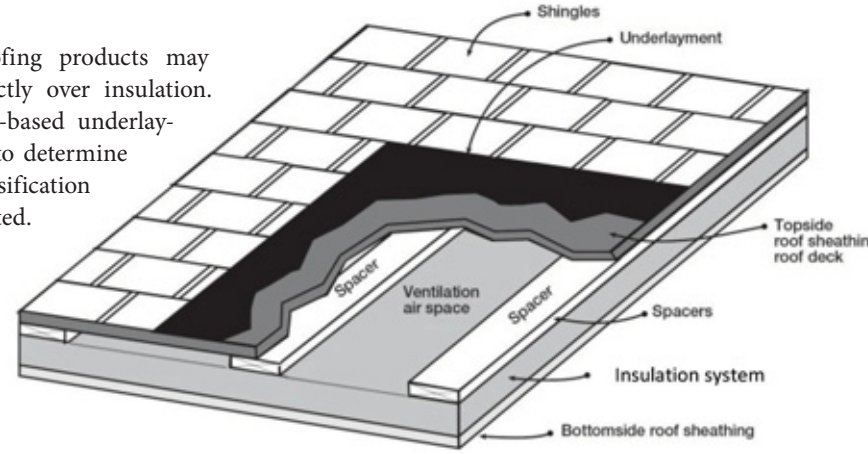

Figure B: Vented roofing assembly created by installing spacers between the rigid insulation and the nailable roof deck sheathing.

ASPHALT SHINGLE AND/OR ASPHALT-BASED UNDERLAYMENT APPLICATION OVER DECK SYSTEMS CONTAINING RADIANT BARRIERS

Applying asphalt shingles and/or asphalt-based underlayment over deck systems containing radiant barriers is at times acceptable, but several considerations should be noted.

- Radiant barrier sheets that are fastened between or beneath the roof rafters should have proper ventilation between the radiant barrier and the decking so heat and humidity build-up can be dissipated.
- Radiant barriers require a minimum 1-inch air space between the metallic surface and the next nearest surface. Otherwise, thermal conduction will override the reduction in radiant heat transfer. See the US Department of Energy's bulletin on Radiant Barriers for more information (found at https://www.energy.gov/energysaver/radiant-barriers).
- Radiant barriers installed directly beneath and in contact with the roof deck sheathing may interfere with proper deck ventilation. The asphalt shingle and/or asphalt-based underlayment manufacturers' product warranties may be affected, so consult individual manufacturers for details. Refer to local building codes for specific project requirements that may apply.

VENTILATION CONSIDERATIONS

Most vent system manufacturers recommend a soffit/ridge (inlet/outlet) venting ratio of between 50 and 60 percent. An air space of 3/4-inch (19mm) is suggested as a minimum ventilation space; a 1.5-inch (38mm) or wider space is preferred. Factors influencing this measurement include type of construction, roof pitch/run, temperature, humidity, etc. Larger roof expanses, such as those on commercial buildings, may require a much larger air space to move heat and moisture from the system because of their longer run. Adequate intake airflow must also be provided for proper ventilation dynamics. Consult the deck manufacturer, deck system designer, and asphalt shingle/ underlayment manufacturer, as well as local building codes, for specific requirements.

Some methods for creating a continuous air space for proper ventilation are shown in Figures A, B, and C.

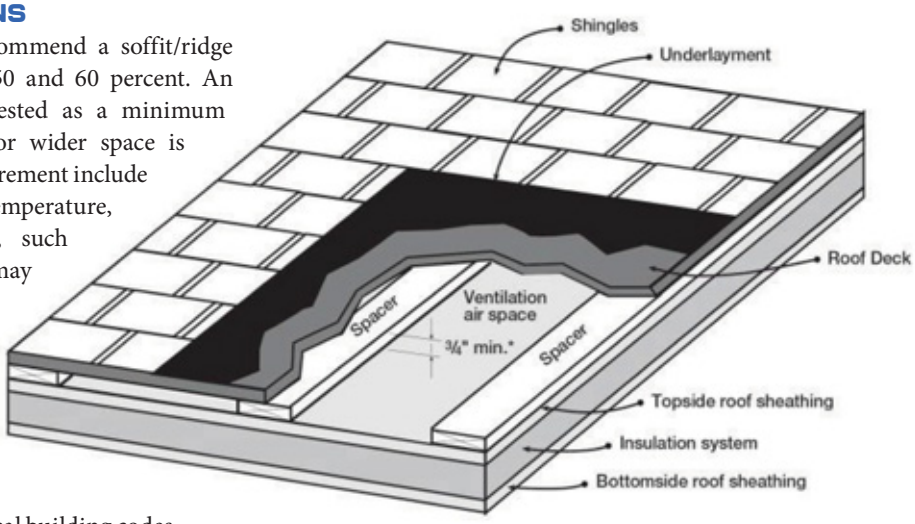

Figure C: Vented roofing assembly created by installing spacers between rigid "nailboard" roof insulation and a topside nailable deck sheathing.

'COOL' PVC

PVC ROOFING REFLECTS 80% OF SUNLIGHT, HELPS KEEP CITIES COOLER

The solution to urban heat islands (UHI) is roofing material with a high reflection rate — such as PVC/vinyl roofing. UHI is a phenomenon in which cities are hotter than rural areas — by an average of 5° to 10° Fahrenheit, and sometimes as much as 20°. Among the biggest contributors to the heat island effect is dark, impermeable roofs that absorb solar energy and radiate heat that is either transferred inside the building or blown off the roof to heat the surrounding air.

Replacing dark roofs with lighter-colored roofing materials such as PVC is a primary UHI mitigation strategy. According to the Chemical Fabrics and Film Association — Vinyl Roofing Division, it all comes down to reflection rates: How much solar energy the roof reflects away from its surface.

Dark roofs reflect no more than 20% of incoming sunlight, giving them a low reflection rate of 0.20 or less. PVC roofing, meanwhile, has initial reflectivity values starting at the 0.80 range, meaning it reflects at least 80% of sunlight. New PVC roofs are typically 28° to 36° Celsius cooler than dark roofs. Even as they age, they remain 20 to 28° Celsius cooler.

Retrofitting 80% of the 2.6 billion square meters of commercial building roof area in the U.S. would yield net annual energy cost savings of $735 million. Globally, cool roofs could save billions of dollars.

Roofs make up to 35% of the urban fabric, so implementing sustainable PVC roofs can rapidly change cities. Roofs are replaced every 15-20 years on average — a replacement rate of 5-7% per year. That means entire cities can be transformed in just two decades.

The benefits of better roofing start the minute they are installed. ●

Retrofitting 80% of the 2.6 billion square meters of commercial building roof area in the U.S. would yield net annual energy cost savings of $735 million.
PHOTO COURTESY OF THE VINYL ROOFING DIVISION OF THE CHEMICAL FABRICS AND FILM ASSOCIATION.

About the Author: *The Vinyl Roofing Division of the Chemical Fabrics and Film Association [vinylroofs.org] was created to educate architects, specifiers, building owners and roofing contractors on the attributes of PVC/vinyl as a durable, reflective, heat-weldable material for single-ply roofing systems. Representing all of the leading manufacturers of thermoplastic PVC roofing systems in North America, the Division is committed to making available sound, scientifically backed information on the environmental and functional performance of energy-efficient PVC roofing membranes.*

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OPERATION BLUE ROOFS

USACE PROGRAM AIDS IN DAMAGE CONTROL

By Marcus Josiger

Hurricanes, unfortunately, impact us all. It is an unavoidable aspect of life on the coast. The damage caused is horrific. For those who have damaged roofs, relief is available. Operation Blue Roof is a program created by the United States Army Corp of Engineers (USACE). The Federal Emergency Management Agency (FEMA) sponsors the organization.

Operation Blue Roof is unique because it allows homeowners with damaged roofs (up to 50% of the entire top) a temporary cover. This will give residents the time they need to develop a plan for roof repair. To qualify for Operation Blue Roof, natural disaster victims must live in a residential home and be in a Blue Roof-designated disaster area. There are, of course, more requirements, but contacting the agency [blueroof.us] is the first step. Furthermore, house occupants should consult Operation Blue Roof's website, https://www.usace.army.mil.

ASSESSING DAMAGE

USACE personnel will schedule a housing assessment after contacting FEMA. Before any evaluation or work can be started, a Right-of-Entry form must be signed. Details such as home ownership, county roofing regulations, and the residents' roofing are all included in the documentation. Following the

(ABOVE) Saturday, Oct. 8, 2022, the first Blue Roof install in Ft. Myers, Florida. Roofer Luis Garza, and Tom Csezk wraps FEMA's fiber-reinforced blue sheeting around a furring strip and Johnathan Whitaker passes them up furring strips. Operation Blue Roof is designed to protect property, reduces temporary housing costs, and allows residents to remain in their homes while recovering from the storm. A resident begins by submitting a Right of Entry (ROE) request through the blueroof.us website or calling 888-ROOF-BLU (888-766-3258). (USACE PHOTO BY BRIGIDA I SANCHEZ)

James Muilenburg, a U.S. Army Corps of Engineers, Omaha District employee serving as a national local government liaison, looks at a recently installed blue roof in Houma, Louisiana. The U.S. Army Corps of Engineers (USACE) is working in partnership with the local, state, and federal response to Hurricane Ida. USACE received a FEMA Mission assignment for temporary roof installations. The mission's purpose is to provide homeowners and permanently occupied rental properties in disaster areas with fiber-reinforced sheeting to cover their damaged roofs until arrangements can be made for permanent repairs. (U.S. ARMY PHOTO BY BRI SANCHEZ, U.S. ARMY CORPS OF ENGINEERS)

paperwork details, USACE representatives will determine if the project can be "repaired." For example, missing shingles, metal panels, and ridge caps are usually covered if damaged. Additionally, minor holes are often covered by the Blue Roofs contract.

Assessing the damage to the structure is as important as assessing the condition of the roof. USACE representatives examine several building components. The integrity of the roof must be sound to support roof installers. Support workers may need to install alterations. Any damage to trusses and weight-bearing components may disqualify a home from the Blue Roof service. Building disqualification may result if there is severe damage to load-bearing members.

BIDDING

After evaluating the structure, the USACE opens a bidding contest. Roofing projects are open to all contractors. Therefore, more than one crew can accept a job. This cuts down on installment time.

BUILDING MATERIAL

The temporary blue roof cover is a simple design. Consisting of polypropylene, canvas, and nylon, these tarps are unavailable on the civilian market. The tarp material is twice as thick as tarps available to consumers. However, despite the simplicity of the material in the cover, polypropylene offers superior durability and boasts excellent water-repellent abilities. Lastly, the plastics in the tarp are UV resistant, offering residents peace of mind.

THE DIFFERENCES

Unlike traditional shingling, there is much less waste when using blue tarps. There is no need to remove undamaged shingles, tiles, or other materials. Complete roof removal will be taken care of by the crew that installs the permanent roof. Before the sheets are applied, workers must secure support beams and loose boards to the roof to create stable work areas. Any cosmetic damage, such as flexible material, will be covered after the tarp and structural add-ons have been secured. Staples and nails are used to secure the tarp. It ensures the removal process for the permanent roof goes smoothly. The application itself is a short process; installation usually takes 3-5 hours. Although with multiple crews, it could take as little as 1.5 hours.

WEATHERING THE STORM

The biggest concern for the USACE personnel and job crews is the weather. In the event of poor weather, job sites are shut down. Especially if a natural disaster recently occurred. Furthermore, damages from poor weather during repairs resulted in a loss of funds. Other weather concerns may include ice. Removing all ice and debris before the tarp is installed is critical. In warm and humid conditions, contractors must monitor the temperature. Dressing appropriately for the weather is vital. Proper hydration is a part of this. Additional precautions include secured work lines and adequate headwear.

CONCLUSION

Operation Blue Roof is a significant government project to help those affected by natural disasters. It gives residents a chance to rebuild and process the damage. It also provides jobs to local contractors. Also, it offers roofers an option to install a temporary roof, which many may need to familiarize themselves with.

For additional information, visit:

- https://www.fema.gov/
- https://www.usace.army.mil/Missions/Emergency-Operations/Blue-Roof-Information/. ●

Saturday, Oct 8, 2022, the first Blue Roof install in Ft. Myers, Florida. Roofer Jonathan Whitaker removes D Ring. Operation Blue Roof is designed to protect property, reduces temporary housing costs, and allows residents to remain in their homes while recovering from the storm. A resident begins by submitting a Right of Entry (ROE) request through the blueroof.us website or calling 888-ROOF-BLU (888-766-3258). (USACE PHOTO BY BRI SANCHEZ)

WINDSTORM HAVOC

TORNADO ROOF DAMAGE AND HOW TO HANDLE IT

By Advanced Roofing and Construction, LLC

Tornadoes can strike suddenly and cause damage to homes, vehicles, trees, and other structures. Roofs are particularly vulnerable to the power of tornadoes, and some of the most common roof damages caused by tornadoes include tear-offs or uplifts caused by wind, broken shingles and ruined granules caused by hail, and compression or severe punctures caused by flying debris. We'll delve deeper into each of these damages and the specifics behind how they can impair a roof. We'll also offer advice on what you can do to temporarily or permanently fix them.

WIND DAMAGE

Tear-Offs

Perhaps the most visible type of wind damage is the tear-off, which happens when high winds or pressure vacuums caused by winds are so strong that they actually tear the roof off. In some cases, the entire roof will come off, but in others, only a part is ripped away.

Shingles are most likely to be affected by tear-offs, as strong winds can easily pull them away from the rest of the roof. The decking of the roof can also be torn away. In any scenario, tear-offs must be fixed immediately to avoid water seeping into the home or building.

An alternative if the roof can't be repaired at the moment is to cover the home or the damaged parts of the roof with a tarp until it can be properly repaired.

The best way to repair tear-offs is to install a brand-new roof. If only a part of the roof was torn off, there may still be some water damage, or maybe the decking has been impaired. In any case, the easiest path will probably be to tear off the rest of the roof and replace it entirely.

Uplifts

Another common occurrence during tornadoes is damage by uplift. Uplifts

on a roof are not as visible as tear-offs and are more likely to affect older homes, which may not have been built with wind strapping. Instead of fully tearing off the roof or part of it, uplifts caused by high winds or intense pressure from the storm lift up the edges of the roof.

What makes uplifts particularly dangerous and hard to see is that the roof might settle back in place once the storm is over. If the edges are not obviously curled over or pulled up, some signs to look out for when checking if an uplift occurred include cracked or broken shingles and damage along the eaves. Uplifts are easier to repair than tear-offs because they cause less damage. Simply replacing the broken shingles should be enough to resolve the issue, but it's also worth checking for water damage in case a more comprehensive roof repair is needed.

Asphalt shingle damage caused by flying debris.
PHOTO COURTESY OF ADVANCED ROOFING & CONSTRUCTION, LLC

HAIL DAMAGE

Coating Removal

When a tornado hits, it's not uncommon to find hail coming with it. While small pieces of hail are generally harmless, once they reach a diameter of 1 inch, they can become dangerous. Asphalt shingles are particularly susceptible to damage, which often includes the removal of the protective coating of granules. Once these granules are gone, shingles essentially can no longer complete their purpose, and the roof can quickly deteriorate and suffer leaking, mold, and other types of water damage. The easiest way to determine if the coating has been removed is to look on the ground and in the gutters. If small pieces of gravel are present, the shingles need to be replaced.

Dents or Holes in the Shingles

Shingles can also sustain breaks, splits, cracks, dents, and holes in addition to losing their protective coating. While these types of damage can also cause water damage, they are more obvious and are often noticed more quickly than a coating removal.

As long as the decking underneath the shingles is not also punctured or dented, the ruined shingles can simply be replaced. In the case of damaged decking or a majority of broken shingles, it might be more prudent to replace the whole roof and take steps to prevent future tornado damage, such as choosing stronger materials, adding multiple roof slopes, or connecting the roof to walls.

FLYING DEBRIS

Compression

Flying debris can hit roofs hard, even if it's a small piece of wreckage. The force behind a piece of debris really determines how much it will damage the roof, although the size can also determine how much damage will occur. For example, if a large branch hits a roof with a lot of force behind it due to high winds, it can compress the shingles and remove the layer of granules which protect them. Depending on the level of compression, it may not be obvious that a roof has suffered this type of damage.

Keep an eye out for shiny spots on the shingles or pieces of gravel in the gutters, as these are signs of compression which are easier to notice. In most cases of compression, replacing individual shingles can resolve the issue quickly and efficiently.

Severe Punctures

On the other hand, flying debris can cause more serious and obvious damage to a roof, such as severe punctures. Debris can impale roofs and cause leaking, dents, or even caved-in roofs. Depending on the severity of the damage and if the decking was affected, a new roof might be in order, or it might be a simple fix to replace broken or punctured shingles.

CONCLUSION

Tornado roof damage is serious and should be repaired immediately. Although damages caused by wind, hail, and flying debris are among the most common, even normal storm occurrences such as rain can weaken roofs.

While not every type of damage is as debilitating as others, and some can wait longer to be repaired, tornadoes can hit roofs hard and present a dangerous scenario if the roofs are not fixed as soon as possible. ●

About the Author: *Advanced Roofing's knowledge and expertise in construction and their experience working with a multitude of insurance companies allow them to manage both ends of the roofing industry and save clients the headache of navigating insurance as well as making sure the work is done correctly.*

TEAMWORK IS TOPS

EUSTIS ROOFING STRIVES FOR THE NASCAR MINDSET

By Linda Schmid

If you've ever watched a NASCAR team in action, then you know the kind of synergy Eustis Roofing of Tavares, Florida, strives for.

Jason Reisman, General Manager, worked in the company as a teen, but left to chase his dream of working for NASCAR. There he tried on just about every hat available: mechanic, fabricator, and pit crew chief. He learned a lot about marketing, teams, and the value of reputation and branding … some good lessons for life. Jason chose to bring them back to Eustis Roofing.

The result? The company won Roofing Company of the Year in 2021 for Roofing Insights Magazine and they've won Best Roofer four years running in Lake & Sumter Style (a local publication). They also have a perpetual backlog of work.

A METEORIC RISE

Eustis was founded in 1959 by Joe Driggers. Rod Reisman went to work for Joe Driggers in 1982. Joe hired him to do site cleanup. It was a good decision, for Reisman Sr. proved to be a willing and able worker quickly rising through the ranks to installer, then crew chief, salesman, and in 1987, he purchased the company.

Rod and Jason Reisman have collaborated to build the company. Over the last dozen years or so they have grown from 8 to 150 workers, all in-house employees. They do not subcontract. As a company that puts emphasis on being reputable and confident in their quality of work , Eustis Roofing believes in a brick and mortar style of business. Instead of prioritizing the sales portion of roofing, Eustis Roofing prioritizes the installation process. Jason is also concerned that subcontractors may not provide insurance. Having in-house employees allows the company to provide health insurance. Furthermore, it allows Jason to get to know the team on a more personal level and understand their talents. This results in a better distribution of the expertise needed for certain crews when creating a team. Eustis Roofing can assure homeowners that they will receive careful, quality work because the company knows its roofers.

Digital marketing is one of the larger factors that Jason attributes the company's recent growth. One look at the website and you will see what he is talking about. There are videos of the crew at work on the home page. You'll find reviews, blogs, and videos called "Roof Talks."

"We market how talented our roofers are," Jason said. "That made people want to work for us and it brought us customers too."

Talented people apply because they want to be on a team with good people. The Reismans have developed a culture that spotlights the importance of each individual on their team and makes sure all employees feel valued and appreciated.

ROLLING DOWN THE TRACK

Eustis does almost every style of roof, but they specialize in metal. They have their own CNC Roll Forming Machines so they can do custom work. However, when customers see the price of a metal roof, which requires more time and material than a traditional shingled roof, many opt for the shingled roof. Although metal roofs are a more cost effective option over the long run, often lasting 3-4 times as long as shingled roofs, homeowners may not have the budget for the metal roof.

The company also offers roof rejuvenation; they can revive an ugly, faded shingle roof with a natural, biodegradable oil spraying process that can add 5 years onto the life of the roof. This process can be used three times to extend the roof for a total of 15 years.

Servicing central Florida, their main suppliers are JGA and Beacon.

"We are probably the only roofers in Florida that don't like storms," Jason said. "We are happy to help people who have had storm damage," he continued, "but storms tend to draw in roofers from outside the area, and they do the job and disappear, often leaving homeowners with roofing problems."

DON'T LET THE PITFALLS KEEP YOU DOWN!

Quick growth, while a positive thing, brings challenges of its own. The company had to quickly update processes and procedures to maintain customer service.

Jason believes that while marketing helped get employees in the door, the biggest reason they are able to maintain their crew is that they have overcome the "inconsistency problem" that so many companies face. He is referring to constant layoffs either due to lack of work or lack of materials to keep working.

With plenty of work to go around, the biggest threat the company faced was the supply chain issues and supply shortages. When COVID-19 hit, other companies were laying off while Eustis Roofing starting gearing up. This was during unknown times and was a bit of a gamble, however with multiple highly talented people looking for work, Jason seized this opportunity to hire more crews to alleviate the backlog of work. Eustis Roofing went from a 6-8 month wait list down to 8-10 weeks.

Having work scheduled months in advance is great, but it can cause issues for homeowners who need help more immediately. The company does a free temporary patch job for customers who experience leaking while they are waiting for their new roof.

Every roof is different. Sometimes when tearing off a roof, there can be surprises like wood rot which can complicate job sites. Jason and his team have that challenge under control because every one of their crew vehicles and project manager's trucks is equipped with plywood, fasteners, nearly everything they could need for repairs is at their fingertips … just like NASCAR.

WINNING

The company culture is all about being part of the team; the employees work together and they play together. They go on fishing trips, have potlucks, race go-carts, and get involved in community activities.

At Christmastime they throw a party for all the employees and their families. They gift the kids with company backpacks and try to instill pride in them regarding their dads' work. The Reismans want to be the best employers they can be.

The company goal is to connect with people and solve their long-term problems, and their rave reviews say they are doing just that. It's a win for the company and a win for their customers too. ●

BY MOHIT KANSAL &
ALEXANDER CARBONE

SUPERCHARGING GROWTH

HOW PRIVATE EQUITY CAN ACCELERATE THE SUCCESS OF YOUR ROOFING BUSINESS

Private equity has been a hot topic among entrepreneurs and executives in the roofing industry in recent years, with partnerships involving companies such as Tecta America Corporation, Roofing Corporation of America and Progressive Roofing. For even the most seasoned entrepreneurs, these discussions can be complex and unfamiliar, touching on topics like valuation, capital requirements and succession planning. In our experience, entrepreneurs often have misconceptions about private equity. Our goal in this article is to demystify private equity and provide a fresh perspective.

WHAT IS PRIVATE EQUITY AND WHY WOULD I PARTNER WITH A FIRM?

Private equity ("PE") is a segment of the investment industry whereby firms make capital investments primarily into private businesses. This differs from public investors, who buy shares in companies on listed stock exchanges. PE firms seek to make investments in rapidly growing businesses, with the intention of participating in the future growth of the business to generate a return on their investment. These firms invest on behalf of a diverse group of investors including family offices, endowments and pension plans, to name a few.

There are various reasons for businesses to take external capital from a PE firm, including:

- Providing capital to fund strategic projects and acquisitions
- Providing partial liquidity to shareholders to de-risk net worth and take some "chips off the table"
- Assisting with ownership transitions for passive shareholders

At Clairvest, we believe that taking on a PE firm as a partner is as much about business growth as it is about achieving personal wealth creation and preservation.

UNDER WHAT TERMS CAN I EXPECT A PRIVATE EQUITY FIRM TO INVEST?

Private equity firms each have their own style of investing, but in the simplest terms, this can be in the form of a majority investment or minority partnership. With a majority investment, the existing shareholders cease to have operating control of the business and the PE firm steps into the role of steering the ship. This option could be attractive to those who are looking to step back from the business and receive full liquidity. In these cases, the private equity firm will still be interested in having existing

management stay involved, either as part-owners or salaried employees.

In minority partnerships, the existing shareholders retain control of the business and the PE firm simply buys a minority portion of the business to help turbocharge its growth. With this structure, existing management continues to grow and benefit from the majority of further upside in the business. Clairvest is experienced with minority partnerships, having done 35 minority deals out of its 59 platform investments.

It is important to understand the difference between ownership and rights. Even in the case of a minority partnership, the investor can have governance rights such as board representation, budget approvals, and drag rights after a certain number of years. Discussing these rights clearly at the outset will lead to a more successful partnership.

HOW WILL I OPERATE DIFFERENTLY WHEN I PARTNER WITH A PE FIRM?

Every private equity firm will have a different model to provide ongoing support for the business. Some firms provide capital and have limited involvement with the business on a go-forward basis (i.e. attending quarterly board meetings). Others work more closely with management, supporting initiatives like M&A and major capital expenditure projects. In our experience, roofing contractors could benefit from a partnership-focused private equity firm in the following ways:

- Supporting M&A acquisitions, including identification of targets, negotiations, due diligence, and closing/integration plans
- Building strong corporate governance practices, including bringing on independent board members, changing the corporate structure and implementing key policies
- Hiring key management personnel to further strengthen the organization, including finance, operations, marketing, and sales
- Accessing better and cheaper financing, (i.e. leveraging the PE firm's network of lender relationships).

In our experience, it is important to outline the terms under which a private equity firm will get involved with the business early in the deal process. Many roofing contractors are seeking a more partnership-oriented approach that leverages the capabilities and experience of a PE firm. If this is your objective, make sure you clearly define how the PE firm will support your business prior to undertaking a partner.

WHAT DOES THE PROCESS LOOK LIKE FOR WORKING WITH A PRIVATE EQUITY FIRM?

The process begins with initial negotiation of the key transaction terms – the valuation of the business, percentage of ownership being sold (majority or minority), future involvement of existing owners/management and key rights post-close. Once this is completed, a letter of intent (LOI) will be executed by both parties and due diligence would commence.

During this time, the company can grant the PE firm a period of exclusivity to finalize the transaction. Next, the PE firm conducts confirmatory due diligence where they analyze several aspects of the business including financials, operations, and management. This period is critical as it provides an opportunity to think through the future growth strategy and how the private equity firm should be involved on a go-forward basis.

Once the due diligence process is complete, the existing owners will enter into a sale and purchase agreement, as well as a shareholder agreement, defining the terms of the sale and revised rights of all owners. Once all the agreements are signed, the transaction would close and new ownership will be in effect.

Finally, the first three to six months after closing is an important time where the PE firm and management work together on implementing the new strategy of the business, including how to take advantage of opportunities like acquisitions, winning new customers or forming relationships with new suppliers.

WHAT ALTERNATIVES EXIST OTHER THAN PRIVATE EQUITY?

In addition to private equity, another option for roofing contractors is to explore what is known as a "strategic sale," involving selling the business to another player in the same industry. This would mean selling to a larger roofing company. This is an attractive alternative for some owners, as it results in a full or near-full cash-out of ownership in the business and ability to partner with a national platform to gain scale. However, the trade-off is losing control of the business. With the right private equity partnership, owners can balance the need for liquidity and growth capital with sustained operational control better than a strategic sale would achieve.

CONCLUSION

The market for roofing is rapidly changing, and with this change, business owners will increasingly need to explore alternatives to support their growth. Just as a PE firm will diligence a business, owners should diligence their prospective private equity partner as well. ●

Mohit Kansal *is a Managing Director and* **Alexander Carbone** *is a Senior Associate at Clairvest Group. Clairvest has been investing equity capital for over 35 years, partnering with entrepreneurs across various industries and looking to support their growth ambitions.*

THEY'RE NEW, THEY'RE COOL, THEY'RE FUN, BUT...

IS DRONE TECHNOLOGY REALLY NECESSARY?

By Linda Schmid

For years roofers have been backing away from ladders and chalk when it comes to roofing inspection. It only makes sense ... it's dangerous, particularly in post-catastrophe situations, and it's time-consuming. Satellite imagery made many of these inspections unnecessary and aerial imagery (imagery captured from an airplane) was often an even better picture of what was going on up on the roof. Further, the software bases measurements and data on algorithms which makes assessments more consistent than information gathered by people. In the end, this method saves time and money for everyone.

Until recently, aerial imagery is what the majority of roofers and builders used according to Piers Dormeyer, Commercial Group President at EagleView. EagleView Premium Roof Report is the product that has been popular in the industry for the past 12 years, he says.

"We fly airplanes in grids over the landscape. It's like mowing the sky," he said.

They have a fleet of aircraft capturing data from about 90% of the land mass. Some low-population areas are not covered.

The imagery they collect is very informative; it's like Google Earth with very high resolution. Not only can you see the roof and its condition, you can see the whole property, other structures, how close the neighbors are, trees that may be in the way, and anything else that may affect access. Tens of thousands of industry professionals use this technology to gather information for roofing estimates.

EAGLEVIEW ASSESS DRONES

Recently EagleView has begun tapping into drone technology. Their new product, Assess, has three basic uses:

1. Viewing specific details up close. When photographing up close for details, for example to check out a piece of flashing, the drone will hover a couple feet over the roof.

2. Basic house quotes in rural areas where aerial imagery is unavailable. This provides detailed measurements for quotes.

3. Damage scopes. These are often used for insurance purposes. The data goes into the Cloud and gets "crunched" using AI technology.

The insurance industry has been using this new product since its launch in spring of 2021, and this past summer EagleView teamed up with approximately 40 roofing companies to test the product for their purposes. As a result, there are hundreds of orders waiting to be deployed.

HOW IT WORKS

When an inspection has been requested, a pilot has to be assigned to it. The pilot is required to have the FAA code, part 107 certification to fly the drone; size aside, a drone is an aircraft after all.

The pilot drives to the site and launches the drone up to 60 or 80 feet above the site. Through the included i-pad the pilot draws a box around the property thereby confining the drone to that space, a necessary precaution so that the drone does not invade the neighbors' property. The drone will then proceed to "mow the sky" just like a plane taking aerial photography. The pilot can take over the manual manipulation of the drone if they want to go back for more detail or they require a different angle.

The imagery is then developed into a basic roof report with imagery and line diagrams. Companies develop proposals from this report, usually through their own software, but integrations for third party software are available for those who need it.

DAMAGE REPORT

The report will show roof damage. For example, if there has been a hail incident, all of the places where hail damaged the roof will be marked. They are all circled and neatly shown, and no one had to spend hours up on the roof with chalk marking them off.

CHALLENGES

When asked, 'What challenges have you had to overcome with this product?' Dormeyer chuckled.

"We are never done overcoming challenges." Dormeyer elaborated, "Technology is what we do, so we are pretty strong on that aspect of the business. For us, a challenge has been understanding the technology from the perspective of the customer who suddenly has this piece of technology in his hands and doesn't understand how to set it up or how to use it."

The company gets a lot of questions about how to connect the drone to the i-pad, how long the battery will last and concerns of that nature … things that the company as a technologically advanced group had taken for granted. It is a learning experience for them.

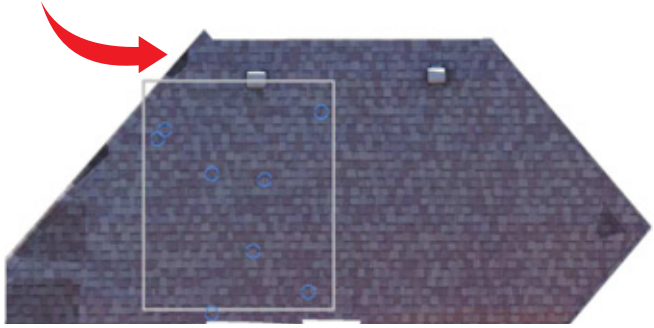
They are constantly striving to improve usability for their customers as well as the work flow of the application, and even helping their customers get their FAA part 107 certification.

"It's a simple thing, but it is one more thing for a client to have to do. We help by hosting certifying events across the country. We bring them in, educate them, feed them, and get them ready to go," Dormeyer said.

FEEDBACK

EagleView has had very positive responses from users; it makes their work easier. One thing Dormeyer hears often is that estimates roofers have had rejected by some insurance companies have been accepted once the roofer used Assess. Of course, this may not be everyone's experience in this situation, but in some cases perhaps the insurance company has used Assess or they see it as a neutral source of information. Either way, it has resolved conflict for some groups allowing the process to run more smoothly.

Imagery of each facet helps confirm damage details. Blue circles indicate confirmed damage points within the given test square.



When drones were brand new to the general population, you might have seen an angry neighbor try to bring one down with a BB gun, but that's not so today. More than anything, neighbors — kids and adults alike — will gather around to watch the drone at work and ask the pilot all kinds of questions. Dormeyer says it ends up being great marketing for the roofer and EagleView too.

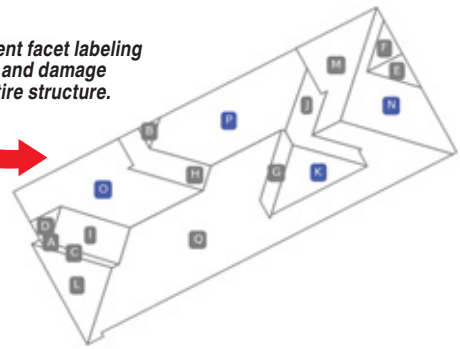
WHERE NEXT?

Technology moves quickly these days and EagleView is an innovation company, so unsurprisingly, there is a lot on the horizon. They are upgrading their software continuously and working on higher resolution capture. They're also developing EagleView Cloud software which is effectively a new platform that allows the contractor to view and access the most up-to-date imagery available. Included tools provide measurements and allow them to see changes over time, zeroing in on the building and split screens to compare views now with views from five years ago.

Use of the UAV (unmanned aerial vehicle) drone category in commercial markets and solar markets is expanding as well … it seems that the sky really is the limit. ●

MAIN STRUCTURE ROOF MODEL

Clear and consistent facet labeling organizes images and damage reports for the entire structure.



Decision	Facet
Replace	P, N, O
Repair	
No Damage	K

Decision summary by facet offers an at-a-glance review to determine the severity of the damage.

BY CHAD CONLEY,
COMPLETE ROOFING

EYE IN THE SKY

THE BENEFITS OF ADDING DRONES TO YOUR ROOFING TOOLKIT

Roof inspections for large structures can be difficult, risky, and expensive. Unlike structures built many years ago, new construction often has unique and complex roofing designs. Regardless of the shape or size of the roof, roofers still need a safe way of inspecting these buildings. This is where new drone technology in the roofing industry comes into play.

Traditional roof inspections come with many hazards for the people tasked with climbing on the roof. However, the use of drones in the roofing industry has greatly improved safety, inspection times, and has helped lower costs.

Even with the many advantages of using drones in the roofing industry most roofing businesses have yet to take advantage of this technology. Some roofers still hold to the idea that nothing beats having boots on the roof for inspections. Let's look at why this statement is becoming untrue as drone technology continues to improve.

IMPROVES WORKER SAFETY

Roofers using drone technology can get an overall view of the condition of the roof without ever having to step foot on the it. They stand firmly on the ground, fly the drone over the house or other structure, take photos and video, then land the

drone back down. Using a drone to safely inspect a property takes only a few minutes. The use of drones by roofers also reduces liability and the possibility of a lawsuit if something dangerous happens like a roofer falling off or through a roof.

When roofers get on the jobsite to inspect a roof, they usually are alone or in small teams. Setting up ladders on unstable ground to inspect an eave is an unsafe situation. Even roofing veterans are at risk of falls, and without a team to spot the ladders the potential for falls increases.

Often, roofs in need of inspection are in rough shape due to storms or erosion over the years. Using a drone to inspect the structure before anyone puts boots on the roof allows roofers to identify weak spots without jeopardizing safety.

The average size of homes has increased over the past decade. All buildings — residential and commercial — are bigger now than they were in the past. Just think, 30 years ago there were no Super Wal-Marts or mega stores. So, a drone gives the operator the ability to limit the exposure of a normal inspection by narrowing the inspector's scope prior to climbing. Maybe he or she has a question regarding a specific detail near a precarious point on the roof. That question may be answered without having to traverse the rest of roof.

REPORT AND SHARE DATA

The software available for capturing drone data eliminates the need for guesswork and remeasuring. When needed, drone software can create diagrams using the photos it has taken to calculate estimates and bids for a roofing project. The creation of detailed blueprints takes less time giving customers a higher level of confidence that the job is being done right.

Drones don't only take 2-D images of the roof. Roofers can use drones to examine other factors of roofs such as ridges, peaks, pitch, and valleys for an exact measurement to find the total square footage. Often these areas are difficult to reach to measure accurately. The collection of information on gutters, windows and walls can also take place.

BETTER WORKFLOW

Drones are great for smoothing out workflows and scheduling of events. Let's use measurements by drone as an example. The drone can gather the data needed for estimating a roof in a fraction of the time required by a roof climber. In climates that experience more inclement weather, this pick-up in efficiency is money in the bank. Days can be strategically planned for gathering immense amounts of data that, in turn, can be processed when weather isn't friendly to accessing roofs. Furthermore, roofs can still be inspected when they're still wet, after the active rainfall, but while they're still too dangerous to traverse on foot. Without drones, the time is lost while the roofer waits for the roof to dry out, weather to pass, and so on.

SHOW THE HOMEOWNER THEIR ROOF

Climbing on a roof is a difficult task for professionals let alone homeowners who have no experience walking on roofs. Homeowners also don't really know what to look for if they do climb up on the roof to look for damage. Roofing businesses using drones can supply a better overall view of the roof and any damage to homeowners.

Before drones, homeowners had to rely on pictures and descriptions provided by the roofing company. Now, drones can take high-resolution photos and video from high above so the homeowners can see the entire roof and what areas have damage. This technology provides homeowners a better understanding of the need for repairs. With a better understanding of the state of their roof, homeowners can feel confident they are spending their money in the right place and know exactly what they are paying for.

The largest benefit gained from drones in this regard is context obtained by inspecting with a drone. For example, you're inspecting a roof on foot. If it's a 45-degree pitch, or 12/12, then your eyes are never more than about arm's length from the roof's surface. This means important greater context is often lost. Not all roof slopes can be seen in their entirety and inspecting a 12/12 by foot means it still isn't seen in one shot.

The greater context gained by using the drone depends on the situation, but in insurance claims works we sometimes find that vandalism is the cause for damage and not storms. We can tell by the pattern of the damage. Someone creating damage by hand usually hits the easy to reach places. These types of damages are often created by dishonest roofers trying to make a claim where there wasn't one to be had. If you're coming behind that bad apple's inspection, you'll find this kind of stuff. However, if you're too close to the subject matter you may not pick up on this pattern of damage.

SAVE TIME AND MONEY

Traditional roof inspecting methods require roofers to set up ladders, take extensive measurements and assess roofing conditions. Measurements often need to be taken more than once for accuracy. This information is then translated to draft an estimate for the homeowner or business owner.

When using drone technology, roofers can use the images taken by the drone-mounted camera to create a more accurate estimate in less time. The time and resources the roofer saves by using drones means lower costs for both the customer and the roofing business. At Complete Roofing we pay for our entire drone program from these savings alone.

DRONES CAN REDUCE INSURANCE COSTS

Due to common risks associated with roof inspections, the workers, equipment, and structure require insurance against damage and accidents. Since many workers are often required on jobsites, insurance costs can be high, resulting in reduced revenue for the business. Drones reduce the insurance needed for workers and equipment since they have fewer risks on the job.

Drones also eliminate the need to follow many health and safety regulations required by OSHA and other organizations. These requirements, when it comes to roofers, are often required when sending workers up on roofs for inspections. For example roofers having to wear harnesses above 4 feet off the ground, tying off ladders, etc. There's obviously no need to tie off if the worker doesn't leave the ground.

Before any work takes place, jobsites need inspection for any potential safety issues. To perform these inspections, regulations require a check on workers to confirm they are in good health and can do the job properly. The use of drones eliminates the need for these tests as well as extensive insurance plans for the workers.

As drone technology continues to improve, more roofing companies are adding these tools to their arsenal. By using drones roofers can lower costs, as well as reduce risks to employees, business owners and homeowners. Although the work on roofs needs to be completed by traditional methods, drones help save time and create a better experience for the customer. ●

Chad Conley *is the CEO of Complete Roofing in Woodstock, Georgia. Complete Roofing has provided metro Atlanta homeowners with insurance quotes inspections and roofing repairs for over 14 years.*

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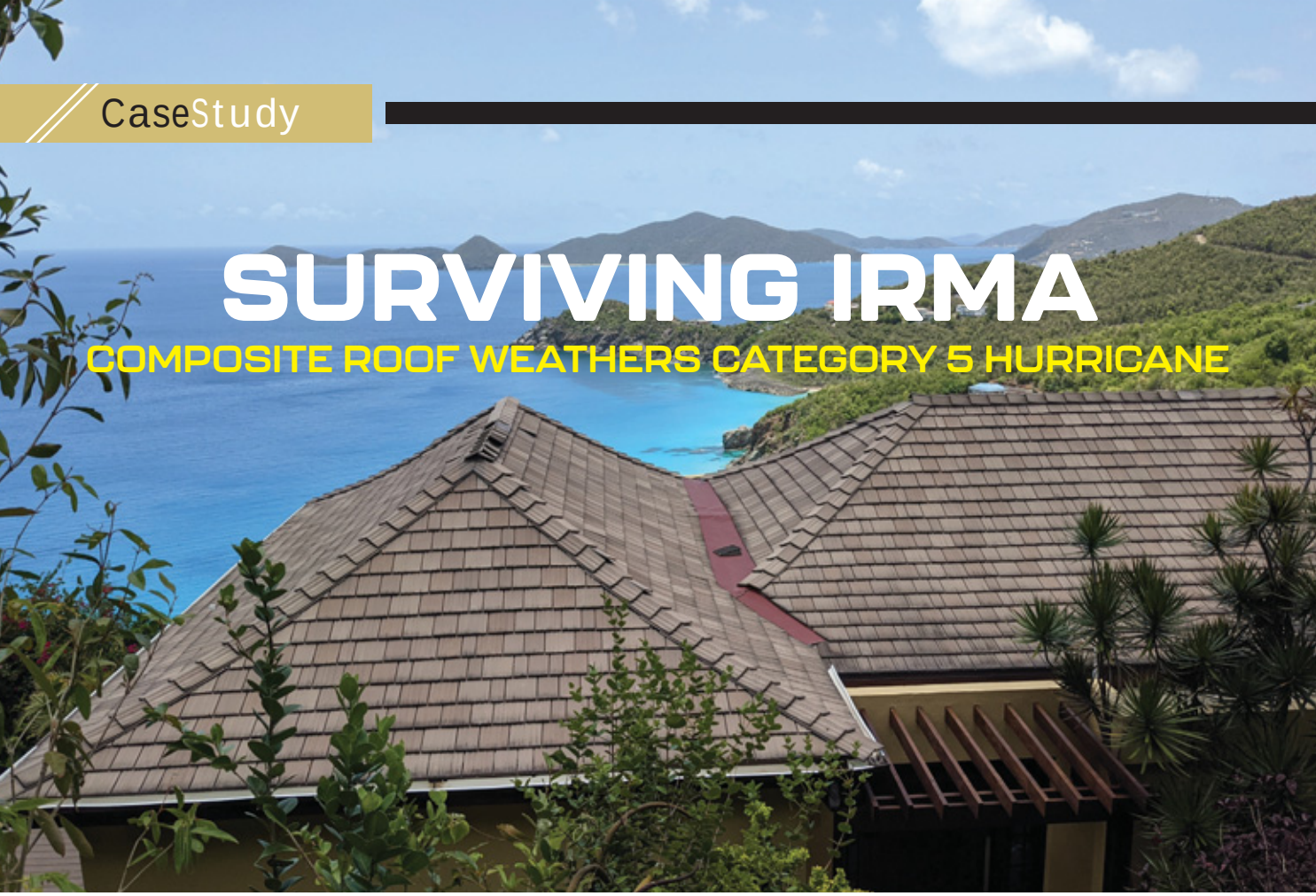


SURVIVING IRMA

COMPOSITE ROOF WEATHERS CATEGORY 5 HURRICANE

On September 6, 2017 the British Virgin Islands took a direct hit from Hurricane Irma. The Category 5 storm unleashed sustained winds of 185 mph on the islands.

Afterwards, 85% of the island's houses were severely damaged or destroyed — especially their roofs. But not Brent Brydon's home. His composite shake roof handled the intense storm with just some shakes bent up by the winds and a few minor problems.

PLANNING AHEAD

"Roofs were stripped off homes all over the island," says Brydon with Providence Engineering and Project Management Ltd. "Bark was peeled off trees. It looked like a war zone. Yet, our roof sustained very minor damage."

Brydon, an engineer by trade, relates that most roofs on the island are metal. Many of them were blown off.

"Failures were often related to compromised building practices rather than the specific roofing material," says Brydon. "When we selected our DaVinci material back in 2008, we beefed up the installation method. Instead of using nails, we used stainless steel screws and washers on the shakes. In this environment, that has made a huge difference."

As an engineer, Brydon thinks ahead to anticipate "weaker" aspects of any building project. He consulted with a DaVinci representative when placing his original roofing order about his idea for enhanced security of each shake. His advance planning paid off.

"There were wind gusts up to 200 mph during Hurricane Irma," says Brydon. "We lost just a few ridge cap shakes. In addition, a few regular shakes had been torn in half. Some of the two dozen bent shakes were literally moved by the wind, but they stayed in place. Even though the roof has been through many storms, it still looks and performs great, which makes us very happy."

STAYING WITH A WINNER

Now, almost 15 years later, Brydon is ordering more DaVinci product. He's getting ready to add a second structure on his property in Trunk Bay on Tortola. He will again use the DaVinci Multi-Width Shake in the Tahoe color blend. And, he will again use screws and washers to install the composite shakes.

"We've seen first-hand how these tiles hold up over time and through extreme weather conditions," says Brydon. "This is an impressive product. As soon as we decided to create the new studio suite/villa rental unit on our property, I knew we would go with the tiles. They'll help maintain some consistency in the character of architecture on our property. And, most importantly, we believe they'll help protect the structure from future storms." ●

NRCA INVITES ATTENDANCE OF ROOFING DAY IN D.C. 2023

The National Roofing Contractors Association invites all industry professionals to register for Roofing Day in D.C. 2023 April 18-19. The event's purpose is to bring the roofing industry together to meet with members of Congress and their staffs and deliver the industry's message with one voice.

It is crucial members of Congress see roofing contractors, distributors, manufacturers and other industry stakeholders from throughout the U.S. and hear about the critical issues facing the industry. Information about 2023 advocacy issues will be available soon; previous years' advocacy issues have included increased funding for career and technical education programs and immigration reform to meet the industry's workforce needs.

"A new Congress now is in session on Capitol Hill, and it is critically important for the roofing industry to engage with lawmakers face-to-face," says McKay Daniels, NRCA's CEO. "Join us as we bring the industry's message directly to Washington, D.C. Together, we can make a difference."

Roofing professionals are encouraged to participate and bring one or more standout crew members to help share the industry's story. Registration for Roofing Day in D.C. 2023 is $95 for company representatives and $35 for field workers, students and spouses. Registration closes April 5.

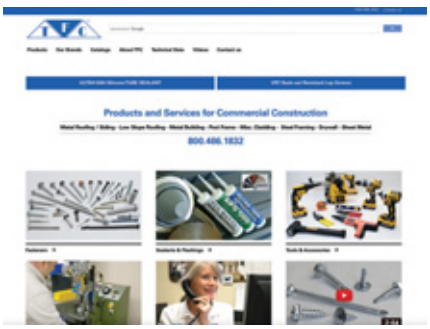
For more information about Roofing Day in D.C. 2023, contact NRCA's Washington, D.C., staff at 800-338-5765 or visit nrca.net/roofingday.

FIRST NAILABLE SOLAR SHINGLE WINS 30+ AWARDS AND HONORS

GAF Energy's Timberline Solar™, the world's first nailable solar shingle, has received more than 30 honors and awards since its introduction a year ago. The two most recent awards and honors are TIME's Best Inventions of 2022 and Popular Science's Best of What's New 2022. GAF Energy, a Standard Industries company and a leading provider of solar roofing in North America, introduced Timberline Solar™ in January 2022. The solar roof was developed and is produced at the company›s R&D and manufacturing facility in San Jose, California.

The Timberline Solar™ Energy Shingle (ES) has a depth of less than a quarter inch and integrates with traditional shingles to create a sleek and attractive look. It is the first product to achieve UL's 7103 certification, which certifies the product meets UL's rigorous electrical, building, and safety standards as a roofing product and a solar energy product.

To meet customer demand, GAF Energy is significantly increasing its Timberline Solar™ manufacturing capacity with the construction of a new 450,000 square foot manufacturing facility in Georgetown, Texas.



TRIANGLE FASTENER CORP. LAUNCHES NEW WEBSITE

Triangle Fastener Corporation has launched its new website, www.triangle-fastener.com. A new format provides easy access to product information for the metal roofing, flat roofing, post frame, and commercial/drywall industries.

New feature updates include:

- Updated dropdown navigation to include more products
- Extensive technical information and installation tips for a variety of fastening systems
- New search tool for faster navigation
- View, download, email, or print product information via .pdf format
- Product videos.

Triangle Fastener offers standard and specialty fasteners, sealants, flashings, and tools for metal building, metal roofing, low slope roofing, steel decking, steel framing, and miscellaneous cladding materials. The company has 24 locations and provides technical assistance and an inventory management program.

MFM BUILDING PRODUCTS COMPLETES EXPANSION PROJECT

MFM Building Products, a manufacturer of a full envelope of waterproofing and weather barrier products for the building industry, has recently finished a substantial Expansion Project that began in February 2021.

The thrust of the expansion project was adding 48,000 square feet to the production area and the acquisition of new production equipment to meet the rising demand for orders. MFM has been acquiring additional raw materials to ensure product availability for its customer base and the new facility now accommodates this additional inventory. The building, which was planned to be completed by the fall of 2021, was finished in June 2022 due to extended lead times for raw materials. The exterior portion of the facility was completed in November.

Other aspects of the expansion project included constructing new offices in the main headquarters building, and the addition of a new, state-of-the-art Research &

Development laboratory for increased quality control and new product development. Once the production equipment is fully operational, the company expects to hire additional full-time employees.

CORNERSTONE BUILDING BRANDS EARNS 2022 "SOCIAL IMPACT AWARD"

Cornerstone Building Brands, the largest manufacturer of exterior building products in North America, has been awarded the 2022 "Social Impact Award" by the Vinyl Sustainability Council (VSC) for its Home for Good project [www.homeforgoodproject.com]. Presented to one VSC member each year, the award recognizes a member's strong commitment to community through an outstanding project or program that addresses a social concern.

Cornerstone Building Brands' Home for Good project is a multi-year initiative that provides exterior building products to Habitat for Humanity to aid in the building of affordable housing for low-income families. Since 2016, the Home for Good project has donated more than $2.8 million in residential building products as well as hundreds of employee volunteer hours to aid in the construction of more than 600 homes in 90 communities.

"We are honored to receive VSC's Social Impact Award recognizing the impact that our annual donation of residential building products has on hundreds of families in need of an affordable place to call home," said Rose Lee, President and CEO of Cornerstone Building Brands. "As the affordable housing crisis continues across America, we are committed to positively contributing to the communities where we live, work and play by helping to build stronger, more beautiful and sustainable communities that support access to home ownership for families at all income levels."

"Giving back to the communities where you live and work is an important aspect of social sustainability," said Jay Thomas, executive director of the Vinyl Sustainability Council. "Cornerstone Building Brands' commitment to providing affordable housing is having a positive effect on thousands of lives. It is an honor to present them with the 2022 Social Impact Award."

Throughout 2021, the company partnered with Habitat for Humanity to support long-term recovery from natural disasters, providing fortified products, such as impact windows and performance siding, that are more resistant to natural disasters.

As a member of VSC, Cornerstone Building Brands has joined more than 50 other organizations in advancing sustainable performance throughout the vinyl value chain. Together, VSC members are establishing baselines and determining goals to track and report on the vinyl industry's progress.

TECTA ACQUIRES OSHKOSH INDUSTRIAL ROOFING & SHEETMETAL

Tecta America, the national leader in commercial roofing, announces the acquisition of Oshkosh Industrial Roofing & Sheetmetal based in Oshkosh, Wisconsin.

Under the leadership of William (Bill) Monteith and team, Oshkosh Industrial Roofing & Sheetmetal has served the greater Oshkosh market since 1985 by providing general contractors and industrial clients with re-roofing, service and maintenance and new construction roofing and sheetmetal services.

Bill Monteith and Paul Stueber continue to lead the operation on a daily basis. The operation will be known as Oshkosh Industrial Roofing & Sheetmetal, a Tecta America Company, LLC.

Tecta America Corporation has grown to over 90 locations nationwide and is the largest roofing contractor in the United States, with an impeccable quality and safety reputation. Tecta is an approved applicator of all major manufacturers.

HOLCIM TO ACQUIRE DURO-LAST ROOFING SYSTEMS

Holcim has signed an agreement to acquire Duro-Last, a US leader in commercial roofing systems, with pro forma net sales of USD 540 million. Duro-Last has a track record of double-digit growth in North America's highly profitable USD >40 billion roofing market, driven by premium brands, proprietary technologies and custom-made solutions. Duro-Last's systems will complement and strengthen Holcim's integrated roofing offer, with expected synergies of USD 60 million per year.

Duro-Last is recognized for its innovation and sustainability. Its Research & Development organization is continuously expanding its range of proprietary technologies and custom-made solutions for superior performance. At the forefront of sustainability Duro-Last's systems range from cool roofs and insulation boards to enhance buildings' energy efficiency, to its award-winning "Recycle Your Roof" program, driving circularity in roofing. Duro-Last is the first company in the United States to offer third-party verified environmental product declarations for its thermoplastic roofing solutions. With these credentials, Duro-Last's systems are in line with the most advanced green building certifications, such as LEED.

The acquisition advances Holcim's "Strategy 2025 – Accelerating Green Growth" with the goal to expand its Solutions & Products business to 30% of Group net sales by 2025, entering the most attractive construction segments, from roofing and insulation to repair and refurbishment. The transaction is in line with Holcim's commitment to strict financial discipline and is subject to customary conditions and regulatory clearance in the United States. It is expected to close by early Q2 2023. ●

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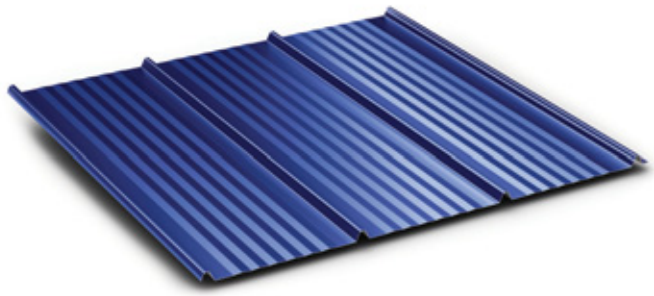


MCELROY METAL MODERN-RIB METAL PANEL

Modern-Rib from McElroy Metal combines the economics of an exposed fastener panel along with major ribs that simulate the aesthetics of standing seam panels. Modern-Rib adds beauty and sophisticated styling to residential roofs and post-frame structures with a 3/4" rib. It is available in Silicone Modified Polyester (SMP) as well as Sherwin-Williams Fluropon PVDF/ Kynar 500® coatings. The 36" striated panel comes standard in 29-ga. Galvalume, but is also available in 26-ga. Galvalume and 29-ga. G-90 bare and G-100 painted, in lengths up to 48'.

www.mcelroymetal.com

POLYGLASS WATERPROOFING MEMBRANE

Polyglass U.S.A., Inc., a leading manufacturer of roofing and below-grade waterproofing systems, has released a new structural waterproofing membrane product for the building envelope, Mapeseal™ GC.

It is a single-component, fast-curing, cold-fluid-applied, monolithic waterproofing membrane ideal for vertical and horizontal surfaces and damp and green concrete applications.

A seamless, 100%-solids, moisture-curing waterproofing membrane, Mapeseal GC is compatible with common construction materials such as concrete, concrete masonry units (CMUs), stone, metal, plastic (PVC and ABS), wood (pressure-treated and fire-treated), rigid insulation, and insulating concrete forms (ICF).

Mapeseal GC will not shrink and is VOC-compliant in virtually all municipalities. Its low odor makes it well-suited for use in and around occupied spaces.

Features and Benefits:

- Single-grade membrane for vertical and horizontal applications
- Can be applied in a variety of thicknesses or with reinforcement, making it customizable to any job
- Does not require a primer
- Applies easily with no mixing or special equipment required (can be applied by roller, brush, trowel, or squeegee)
- Free of solvents, tar, and asphalt.

polyglass.us

BP CANADA MULTI-TONED GRAY SHINGLE

In response to changing market preferences, Building Products of Canada Corp. (BP Canada) has launched a unique multi-toned pale gray shingle called Morning Mist. Part of the brand's Mystique Collection, Morning Mist is the first shingle color of its kind, consisting of a mix of gray, white and brown, and providing consumers with an alternative to traditional solid gray options currently on the market.

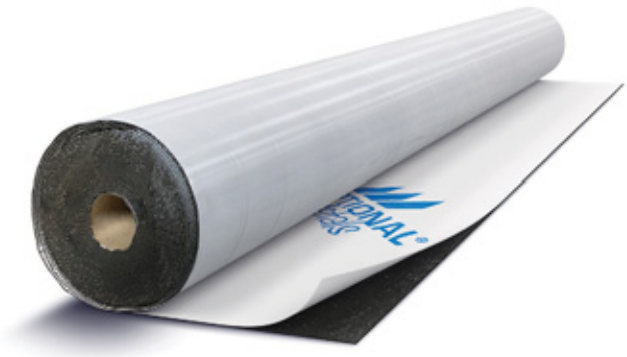
The new offering reflects the move towards more saturated, earthy shingle tones that are less uniform than traditional, monochromatic color schemes.

According to BP, Due to new technologies, today's high-performance shingles are made to withstand hail the size of golf or billiard balls, as well as category four hurricane winds.

www.bpcan.com

EXCEPTIONAL METALS HIGH TEMP UNDERLAYMENT

EXCEPTIONAL® Metals introduced EXCEPTIONAL® HT (high-temperature) underlayment and primer. The underlayment is a self-adhesive membrane composed of SBS-



modified bitumen designed to withstand service temperatures up to 240° F (116° C). EXCEPTIONAL HT can provide a durable, walkable, temporary surface for up to 90 days until a roofing system can be installed. Enhance adhesion by applying EXCEPTIONAL HT Primer. Combined with our roof panels, metal trims and accessories, these products are part of a full portfolio of products that can be ordered together for unmatched performance and reliability.

www.exceptionalmetals.com

EVEREST SYSTEMS FLUOROSTAR® COATING TECHNOLOGY

Everest Systems LLC has officially launched a new, high-performance and field-applied topcoat under the Fluorostar brand name for restoring and protecting multiple types of roofing surfaces with long lasting color. Fluorostar is a water-based and ultra-thin film roof coating formulated with Kynar Aquatec®, a world renowned polyvinylidene fluoride (PVDF) polymer resin produced by Arkema Inc. Fluorostar topcoat is ideal for use on commercial, municipal, or industrial applications over spray foam, TPO, PVC, EPDM, metal, masonry and asphaltic products such as BUR and modified bitumen.

Fluorostar has several features that lengthen the life of a roof including its superior resistance to fading from ultraviolet (UV) radiation and minimizing the absorption of solar energy. The product resists dirt, biological growth, chalking, degradation and maintains its color for 20 years. It also has excellent elongation, flexibility and permeability. When used in conjunction with an Everest acrylic EverCoat system, Fluorostar offers exceptional durability, abrasion resistance and waterproofing properties.

"We have a well-rounded and respected line of high-performance exterior roof coatings and products that last," said John Linnell, Founder, Everest Systems. "Now, Fluorostar takes us to the next level for commercial building owners with bold and colorful roofs. 20 years of color fast properties in harsh environments are normally unheard of on a restoration project."

www.everestsystemsco.com

MULE-HIDE PRODUCTS 16' WIDE TPO

Mule-Hide Products Co. now offers 16-foot-wide TPO rolls.

Ideally suited to larger roofs without many penetrations or obstructions, the wider rolls mean fewer rolls to handle, fewer seams to weld and quality-check, and less waste to dispose of. That can shave considerable time off project schedules and significantly reduce labor costs on fully adhered and induction-welded systems.

The 16-foot rolls are available in White in 45-mil, 60-mil and 80-mil thicknesses. The wider rolls cover 60% more roof area than the familiar 10' rolls, cutting by 40% the number of rolls that must be moved into place, kicked out and aligned. The number of seams that must be welded, probed and inspected is reduced by more than 25%. There are fewer T-patches to install.

With fewer rolls required to complete the job, there is less packaging and core waste to dispose of at the end of the job, saving time and making the wider rolls a better choice for the environment.

www.mulehide.com

TOPPED WITH COPPER

The customer's house was in a historic section of town so he wanted a roof that would fit into the theme. Premier Roofing installed EcoStar Synthetic Slate with all copper trims on the main roof, and installed copper standing seam on the sun porch. The project was finished out with copper snow stops and full copper guttering, downspouts and round-over leaf guards.

PREMIERROOFINGINDIANA.COM

COPPER ACCENTS GIVE SYNTHETIC SLATE ROOF HISTORIC LOOK

PROJECT OVERVIEW

INSTALLER:
Premier Roofing

BUILDING TYPE:
Residence

ROOF SIZE:
2850 sq. ft.

LOCATION:
South Bend, Indiana

ROOFING SYSTEM MANUFACTURER:
Premier Roofing (copper)

TILES:
EcoStar Synthetic Slate

PANELS:
1" copper standing seam

FASTENERS:
Direct Metals, Inc.

SNOW MANAGEMENT:
Snow Gem

UNDERLAYMENT:
Titanium

SEALANT:
Tite Bond

OTHER:
Copper gutters, down-spouts, and round-over leaf guards

By Terri Dougherty,
J. J. Keller & Associates, Inc.

FORM I-9 FINES GO UP

DEPT. OF HOMELAND SECURITY INCREASES PENALTIES FOR PAPERWORK, ILLEGAL HIRING VIOLATIONS

The Department of Homeland Security has increased fines for Form I-9 paperwork violations and the hiring of unauthorized workers.

Under fine adjustments published in the Federal Register on January 13, the new penalty amounts for paperwork violations are:

- Minimum fine: $272
- Maximum fine: $2,701.

Violations for knowingly hiring, recruiting, referring, or retaining unauthorized aliens (per unauthorized alien) are:

- $676 to $5,404 for a first offense
- $5,404 to $13,508 for a second offense
- $8,106 to $27,108 for a third offense.

WHEN DO EMPLOYERS USE THE FORM I-9?

The Form I-9 is completed when an employee begins work. Employers use the form to verify the identity and employment authorization of each worker who is hired.

Section 1 of the form must be completed by a new employee on or before the first day of work, and the employer completes Section 2 of the form within three business days after the employee starts work. Section 3 is completed when required.

WHAT FACTORS ARE TAKEN INTO ACCOUNT WHEN FORM I-9 PENALTIES ARE ASSESSED?

The U.S. Immigration and Customs Service (ICE) assesses violations relating to the Form I-9. When determining the amount of the penalty, it considers:

- The size of the employer's business
- The good faith of the employer
- The seriousness of the violation
- Whether or not the individual was an unauthorized alien
- A history of previous violations.

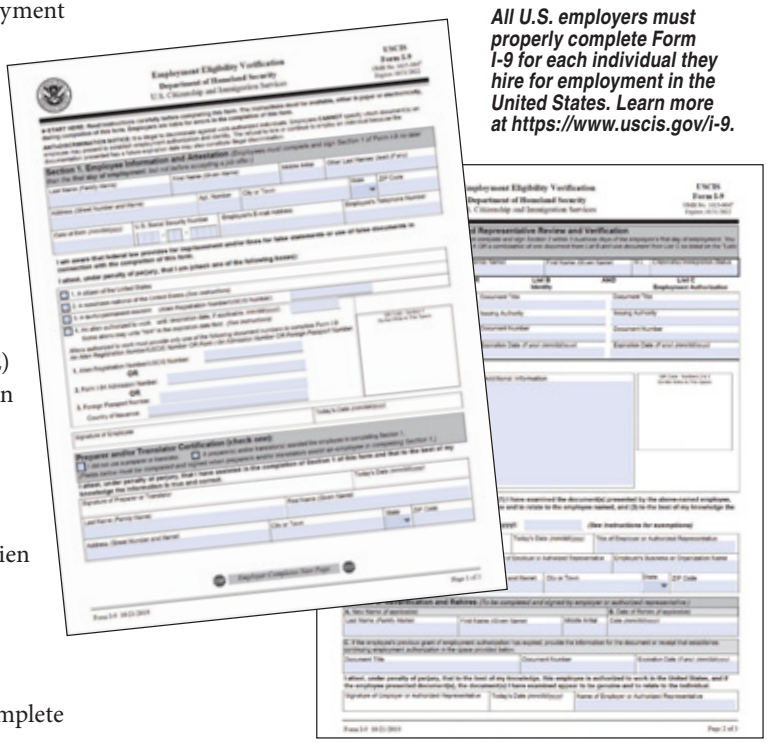
HOW CAN EMPLOYERS AVOID FORM I-9 PENALTIES?

Employers should train staff members to correctly complete the Form I-9. The form is detailed and contains a number of potential stumbling blocks relating to:

- Employee information
- Signatures
- Dates
- Documents presented for review.

An employer should regularly conduct Form I-9 audits to ensure that the form has been properly completed for all employees.

If mistakes are found, the errors can be corrected. However, employers should also update their procedures and train employees so the same errors are not made again.



All U.S. employers must properly complete Form I-9 for each individual they hire for employment in the United States. Learn more at https://www.uscis.gov/i-9.

Get Free Business Exposure Here!

COURTESY OF BECKERS GROUP

We publish a Project of the Month in each edition of our magazines to promote best design and construction practices. We have received feedback from readers that it's one of their favorite features in our magazines.

If you're a roofer or contractor, you can receive **FREE NATIONAL EXPOSURE** for your business (free PR!) by sending roof details, a component list, and a brief description. The component list should identify manufacturers and models so we can give them proper credit, too!

The general description can include details about what the customer wanted, special elements, any other features that make the project noteworthy.

These editorial placements are absolutely free!

WHAT WE NEED:

- Component List
- Brief Description
- Three to five attractive high resolution images (at least one must be the entire roof).

Submission is not a guarantee of publication. We reserve the right to edit content.

If you have any questions about the Project of the Month, contact:

Karen Knapstein • karen@shieldwallmedia.com • 715-513-6767

GET MORE INFORMATION ABOUT PRODUCTS & SERVICES SEEN IN THIS ISSUE. HERE'S HOW:

If you are looking for more information from companies featured in this issue, fill out this form.

Mail the completed form to us, and we will have those companies get in touch with you. There's no need to fill out multiple forms; we'll do the legwork for you.

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❑ Installer
❑ Other_____

PLEASE CHECK THE PRIMARY CATEGORY THAT DESCRIBES YOUR BUSINESS:

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❑ Manufacturer/Rep of Manufacturer
❑ Architect/Specifier
❑ Construction Consultant/Engineer
❑ Building Owner/Developer
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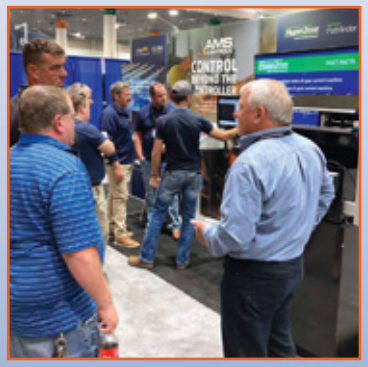

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FOR MORE INFORMATION CONTACT GARY REICHERT:

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