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### **ON THE COVER:**

Umbrella Roofing, Inc. out of Eagle, Colorado, was awarded the Outstanding Residential Project Snow Retention System award from Rocky Mountain Snow Guards for their use of RG16 snow guards and No-Flash II - 2-Pipe fence-style snow retention system on a residence in Avon, Colorado.

## **COMING NEXT ISSUE:** Cold-weather application of mod-bit

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the physical environment and how "Elements" like heat, moisture, wind and sun affect roofing systems.

The Elements need to be considered in every aspect from material choice and design to installation techniques. **Roofing Elements** provides industry white papers and institutional knowledge from the experts who learned their trade in the real world.

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# **TECH REPORT**

### PLAIN FACTS ABOUT BUCKLED SHINGLES

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.

#### DESCRIPTION

Buckling of asphalt shingles can occur in new roofs or reroofing, and is most often the result of wrinkles in the roofing underlayment or movement of the wood decking.

Moisture-induced deck effects typically show a pattern of shingle distortions coincidental with joints in the roof deck panels/lumber.

#### **POSSIBLE CAUSES INCLUDE:**

- Exposure of the wood roof deck panels to rain or dew during new construction or roof replacement can lead to the wood absorbing moisture. As moisture content increases in the wood, movement of the decking can occur.<sup>1</sup>
- Shingle installation onto dimensional lumber (aka board or plank decks) may lead to buckling due to differential expansion or contraction of individual/adjacent boards as their moisture content varies. Lack of proper ventilation of the attic space, which restricts the free flow of air directly

beneath the roof deck, can create problems with moisture and temperature management in the attic space, contributing to wood deck movement.

- Roof deck joints should be staggered to minimize the effect of normal deck movement. Roof decking not spaced a minimum of 1/8" apart can lead to buckling due to expansion from moisture.
- Uneven decking, whether boards or panels, unrelated to structural movement may result in uneven/buckled shingles.
- As a new roof is installed, moisture can be trapped within the roofing system, and the underlayment may absorb moisture and wrinkle. Shingle buckling distortions due to wrinkled underlayment will be random throughout the roof area and not coincidental with joints in the roof deck.
- In some cases, there may be abnormal deck movement, unrelated to moisture issues, due to either structural deficiencies in the home's/building's construction or seismic/ foundation effects. The resulting distortions are generally catastrophic and result in an obvious large roof system disruption.
- Shingles may exhibit an apparent "buckling-like" distorted

DISCLAIMER OF LIABILITY: This document was prepared by the Asphalt Roofing Manufacturers Association and is disseminated for informational purposes only. Nothing contained herein is intended to revoke or change the requirements or specifications of the individual roofing material manufacturers or local, state and federal building officials that have jurisdiction in your area. Any question, or inquiry, as to the requirements or specifications of a manufacturer, should be directed to the roofing manufacturer concerned. THE USER IS RESPONSIBLE FOR ASSURING COMPLIANCE WITH ALL APPLICABLE LAWS AND REGULATIONS.

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Example of buckled shingles. Photo courtesy of CertainTeed.



Example of buckled shingles. Photo courtesy of GAF.

appearance due to other factors, such as nails not driven flush with the shingle surface, shingles deformed prior to installation due to poor storage conditions, or foreign material under the shingles. These isolated distortions are usually randomly located on the roof and have very specific causes and, therefore, very specific remediations.

#### **PREVENTION/CORRECTION**

Industry experience indicates shingle buckling can be minimized if the following procedures are followed:

- 1. Whether new construction or re-roofing, ensure the space beneath the roof deck is properly ventilated according to applicable minimum building code requirements and shingle manufacturer's recommendations. See ARMA's additional resources regarding achieving proper ventilation.<sup>2</sup> Proper ventilation will minimize moisture ingress into deck materials and therefore minimize potential moisture-induced deck distortions.
- 2. For new construction, use and install deck materials in compliance with applicable minimum building code requirements and shingle manufacturer's instructions. Ensure the deck installation results in a smooth and even surface. Avoid exposing deck materials to excessive moisture prior to shingle installation. Additional information can be found in "How to Minimize Buckling of Asphalt Shingles," published by APA The Engineered Wood Association.
- 3. Install underlayments/membranes (ASTM D226, ASTM D4869, ASTM D6757, ASTM D1970, or CSA A123.3) according to the underlayment and shingle manufacturer's

requirements. Avoid exposing roof underlayments to excessive moisture prior to shingle installation.

- 4. Install the shingles as soon as practical after underlayment installation, according to the shingle manufacturer's requirements. It is particularly relevant that nails are the correct length, fully driven, and flush without cutting into the shingle surface.
- 5. If the above procedures have been followed and shingles still buckle, the roof system should be professionally evaluated to check for the root cause (such as, but not limited to, building structural issues, fasteners backing out of the deck, or foreign material beneath the shingles).
- 6. After the existing shingles have been removed and the root cause of the shingle buckling has been remediated, either the existing shingles should be re-installed flat or, if the existing shingles have been compromised, new shingles should be installed. In cases of wrinkled/buckled underlayment, consult the manufacturer or contractor for recommended underlayment repair procedures. ●
- 1 For additional information on roof deck materials and deck preparation see the ARMA Residential Asphalt Roofing Manual – Design and Application Methods.
- 2 For additional information regarding ventilation, see the ARMA Residential Asphalt Roofing Manual – Design and Application Methods, ARMA's "Why Ventilation Is Important" Technical Bulletin, and ARMA's "Considerations in Attic Ventilation System Selection" Technical Bulletin.

BY JENNIFER MORGAN



# LIGHTNING RISKS

magine a billion-volt lightning bolt striking a building; not just a cinematic scenario, but a real, imminent risk in today's increasingly unpredictable climate.

For over 120 years, the National Fire Protection Association's (NFPA) Standard 780 has stood as the definitive guide for effective lightning protection. Within the standard lies a crucial tool: the Simplified Risk Calculator, designed to quantify lightning risk for specific structures, empowering architects, engineers and building owners to shield properties from nature's electric wrath.

#### SIMPLE TOOLS TO QUANTIFY LIGHTNING RISK

Lightning's ability to ravage concrete, disrupt intricate electrical systems and undermine critical infrastructure raises a pressing question: What does this risk mean for your project? The NFPA 780's Simplified Risk Calculator offers a tailored answer, providing a matrix to precisely quantify this natural force's threat to specific structures. This knowledge is pivotal for building professionals in determining the necessity of a lightning protection system. Accessible as an app on various commercial websites, this quick-to-use tool often yields surprising results.

#### PARAMETERS OF THE SIMPLIFIED RISK CALCULATOR

The tool evaluates five key parameters to assess a facility's vulnerability:

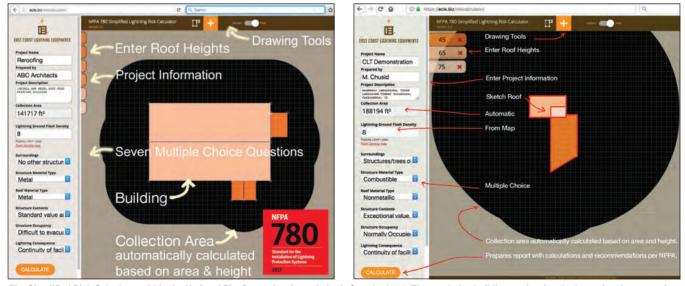
**Structural Type and Location:** Assessing the geographic location, essential in determining lighting strike frequency.

**Structural Dimensions:** Reviewing the size and height, as larger footprints and taller structures typically increase vulner-ability.

**Surrounding Environment:** Considering general locale such as nearby taller structures and natural elements, such as trees, to evaluate exposure to lightning strikes.

**Occupancy and Contents:** Gauging risk based on building occupancy and contents, especially those flammable, hazardous, valuable or challenging to access or evacuate.

Consequences of a Lightning Strike: Weighing the potential for human injury, operational disruption, environmental



The Simplified Risk Calculator within the National Fire Protection Association's Standard 780. The app helps building professionals determine the necessity of a lightning protection system.

impact, historical preservation and damage to irreplaceable equipment.

#### BEYOND GEOGRAPHIC LOCATION: A HOLISTIC ASSESSMENT

Lightning risk is not solely determined by high-lightning activity regions. The NFPA 780 calculator's comprehensive approach can reveal unexpected risks – a smaller structure in a lower-zone risk may face heightened danger due to specific contents or construction materials. In contrast, a larger building in a high-risk area might have a reduced risk due to its construction type and occupancy. This tool emphasizes the importance of a holistic risk assessment over a generalized approach.

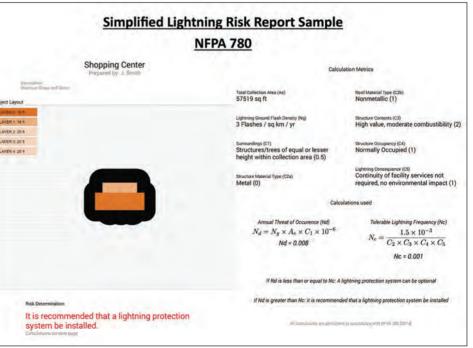
#### **CASE STUDY: A PRACTICAL APPLICATION**

Consider a large, 60-pump gas station and convenience store in the Midwest, a region with moderate lightning activity. Initial assessments placed its risk as moderate based on location. However, the NFPA 780 calculator identified a highrisk score due to the building's large footprint, the presence of flammable materials and high occupancy. This insight led to the installation of a lightning protection system on the store and the fuel canopies, demonstrating the tool's vital role in preventing potential disasters.



A high lightning risk assessment resulted in the installation of a lightning protection system on the store and fuel canopies. Images courtesy of East Coast Lightning Equipment Inc.

mission critical facilities, such as rocket launch pads, power generation facilities and mines. She has served as the Education Coordinator for the Lightning Safety Alliance, a not-for-profit business league since 2009 and joined the NFPA 780 Technical Committee as an alternate member in 2019.



Simplified lightning risk report.

#### **CONCLUSION: A CALL TO ACTION**

The NFPA 780 Simplified Risk Calculator is indispensable for forward-thinking building professionals. As changing weather patterns increase the frequency and unpredictability of lightning strikes, this tool becomes essential in designing safer, lightningresilient structures. With around 25 million lightning strikes annually in the U.S., addressing this natural threat is not just prudent, it's imperative. ●

Jennifer Morgan is co-owner of East Coast Lightning Equipment Inc. Her role at ECLE includes oversight of purchasing, accounting, hiring and business development. She also serves as the CEO of Scientific Lightning Solutions of Titusville, Florida. SLS solves lightning related problems for

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# GAME ON!

### REGISTER ROOFING INSTALLS COMMERCIAL ROOF AND WALL PANELS FOR NEW JAGUARS TRAINING FACILITY

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he Jacksonville Jaguars' new practice and training facility houses all of the Jaguars' football operations, including locker rooms, an indoor practice field, training, and medical facilities, office space, a team store, and a draft room.

The Miller Electric Center is the result of a public-private partnership between the Jaguars and the city of Jacksonville.



Register Roofing was chosen in March 2022 to perform fasttrack commercial roofing services for this \$120 million, stateof-the-art 125,000 sqft facility. Construction just northwest of TIAA Bank Field is currently in progress; Register Roofing will finish the roofing system construction by January 2023.

Jaguars owner Shad Khan contracted general contractor Haskell, an established partner of Register Roofing, for the construction of the team's football operations headquarters. Due to our expertise, capacity to overcome budget and time constraints, and ability to leverage our partnership with Soprema Inc. on quick-turn-around construction projects, Haskell swiftly selected Register Roofing to collaborate with their team on the commercial roofing phase.

#### THE CHALLENGE

With the looming deadline of the 2023 Jaguar training camp, the general contractor had to partner with a roofing contractor they could trust. They needed to ensure the quality roofing installation would work within their budget, meet all qualifications, and most importantly execute within an aggressive timeline even with current supply chain constraints. This project called for us to provide 15-20 truckloads of materials for the



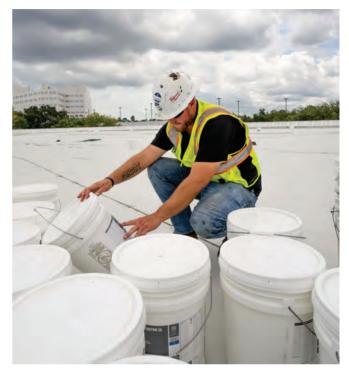


80,000 sqft roof, meet all code-compliant qualifications and complete a quality roof installation and exterior wall panel installation within the allotted time.

When we were contracted in March 2022, we had a 9-month timeline to order the materials and finish the commercial roofing phase. We immediately set off to make use of the supplier and manufacturer relationships we've developed over our 40 years in the business in order to complete the roof installation. However, the architect and owner wanted PVC membrane and Polyisocyanurate thermal insulation, a popular low-slope insulation material, which was backlogged 12 months from the time of the order from almost all suppliers. We needed to install the roof in August, in only five months' time.

#### THE SOLUTION

We started talking to our network of manufacturers and suppliers in March 2022 to see what would be possible within the



5-month delivery timeline Shad Khan requested. We considered numerous roofing insulation materials but knew that both the architect and owner had polyiso at the top of their lists.

The training facility designer preferred Soprema, our longtime supplier, from the beginning, and we kept working with Soprema to find a solution to the supply issue. Finally, after careful consideration and much collaborative problem-solving with Soprema, Soprema, and Register Roofing were able to guarantee the PVC commercial roofing system for the Jaguar training center within the specified timeframe.

#### RESULTS

Register Roofing was able to overcome the supply chain challenges and meet the budget and building qualifications thanks to its strong relationship and collaboration with Soprema. Soprema made it work to deliver the materials in August when all other suppliers found it impossible, and they delivered supplies within a 5-month delivery timeline instead of 12 months.

Without the solid relationship between Register Roofing and Soprema, it is possible that the commercial roofing work would not have been able to begin before the 2023 NFL season, leaving the Jaguars without a finished building. Instead, the fast-track installation has stayed on track despite supply chain limitations. The roof installment on the new Jaguar practice and training facility complies with all regulations, be entirely operational, and look fantastic to onlooking Jags fans.

# STRUGGLE & REDEMPTION

ike Rannigan is the owner of Doc's Roofing [www.docsroofing.net] in Northern Texas. 2023 brought a new sales record as Doc's expanded their services and reach. Mike has been honored by numerous civic organizations and continues to guide others to find their success in life.

Mike's own story is one of struggle and redemption.

Mike grew up in Texas with three brothers and a very unstable family life. By the time he reached high school, every brother had interactions with the police. The family moved numerous times in his childhood. Mike ended up joining ROTC in high school, knowing that if he joined the military, he would enter as an E-3. During this time, he met the love of his life, Rachelle, at a house party.

Mike joined the Navy after high school as a corpsman. He was attached to a US Marine unit and saw action in Iraq and Afghanistan. Mike survived an attempted suicide bombing and a mortar attack during his service. These experiences would weigh heavily on his psyche as he separated from the military and tried to acclimate to civilian life.

At this time in his life, he was now a husband and father. He had turned to heavy drinking to cope with financial issues, stress, and PTSD. He often fought with his wife and admits that this was one of the most challenging times of his



Mike and the Doc's Roofing crew.

life. After a separation, Mike realized that he had to change his lifestyle drastically or risk losing everything he loved in his life.

He started attending church more, and opened up communication with his wife. Mike stopped drinking and attended meetings often to help reinforce sobriety. Mike founded Doc's Roofing and applied his personal philosophy to business and it took off.

Mike found that by focusing on five areas, he could create success in his life: Faith – Family – Fitness – Fellowship – Finance. Mike took time to develop Doc's as more than just a roofing company. His business philosophy has a few vital components:

#### **TEAM BUILDING**

Mike spends time with his work team, helping them to map out their personal and business growth. He creates opportunities for growth within his organization and makes sure they all have a clear path for career success. He also spends time teaching them safety and workplace skills. Training is everything at Doc's Roofing.

#### **CONSUMER EDUCATION**

Doc's Roofing is often the liaison between the customer and the insurance company. By educating the customer on the roofing claim process, Doc's Roofing ensures that the customer knows what to expect. The Doc's website has a helpful blog that gives tips on weather trends and preventative maintenance. Mike also teaches customers how to document damage and to create a claim.

#### INVESTMENT

Investment in the company is vital to help growth. Mike purchases work trucks and applies branded vehicle wraps to them so they will get maximum visibility in town. They are also a tax write off that helps each fiscal year.

#### SELF DEVELOPMENT

This is a huge part of a successful business owner. Seminars, business books, conferences, and coaching help to create a well rounded individual that thinks expansively and can handle any contingency that life throws at them.

#### **GROWTH PLAN**

Doc's Roofing has 1-, 5-, and 10-year strategies laid out so that the path to future success is clear. Growth comes from reinvestment, innovative marketing, strong social media and Doc's even has a dedicated PR team that has helped him land more interviews and issue press releases.

#### BALANCE

Mike believes that work should never interfere with the balance of family life. Weekends are family bonding time with his three children and wife. Sunday is for church and reflection. Mike is active in the gym and also makes sure that he is active in his community. Achieving this level of balance has helped Mike to ease stress levels and perform at a high level in his industry.



Mike and Rachelle Rannigan

#### PHILANTHROPY

Each year Mike budgets an amount for charity from his business. He donates to several veteran causes and recently committed \$65,000 to local non profits. He recently sponsored para athlete Brian "Big Country" Conwell on his competition tour as well. In summary, Doc's Roofing is founded upon simple principles that anyone can follow. Adhering to them has helped Mike Rannigan create the life of his dreams. 2024 promises to be exciting as Mike will also be releasing his first book detailing how he managed to succeed despite tremendous odds.

#### EVEREST SYSTEMS LAUNCHES NEW ROOF COATING SPEC DOCUMENT

Everest Systems, a leading manufacturer of high-performance roof coatings, has released its new specification document for FLUOROSTAR, a field-applied PVDF (Polyvinylidene Fluoride) roof coating. Formulated with Kynar Aquatec<sup>®</sup>, a PVDF resin from Arkema, FLUOROSTAR offers superior color performance and longevity for a variety of roofing applications.

The new specification document (www.everestsystemsco.com/Fluorostar), coded under Division 070150.16, complies with the Construction Specifications Institute (CSI) SectionFormat<sup>®</sup> and PageFormat<sup>®</sup>. It features autonumbering, paragraph styling, and options that integrate seamlessly with industry-leading software, ensuring ease of use for specifiers and project managers.

Key Features of the Specification Document:

Comprehensive Compliance: Aligns with CSI SectionFormat<sup>®</sup> and PageFormat<sup>®</sup>, ensuring industry-standard documentation.

Editable for Customization: Easily modified for performancebased or proprietary specifications, offering flexibility to meet project-specific requirements.

Editors Notes: Includes helpful notes to assist architects and specifiers in making informed decisions.

Performance Assurance: Detailed descriptions of material compatibility and environmental requirements.



#### EAGLEVIEW AND AURORA SOLAR LAUNCH NEW CAPACITY WITH EAGLEVIEW POWERED™ MODELS

EagleView, a provider of aerial imagery and analytics, and Aurora Solar, a platform for solar sales and design, have announced availability of EagleView Powered<sup>™</sup> models through the Aurora Solar Platform to improve the capacity of solar professionals to drive design accuracy, deliver faster project timelines, and improve the homeowner experience. Through integration of EagleView's 3D home modelling technology into Aurora's platform, solar professionals now have the best option on the market to create accurate and reliable solar designs.

Solar professionals rely on 3D roof models to accurately predict final details of the project installation and solar electricity production output for homeowners. The quality of those 3D models is essential to reducing unnecessary costs in the solar install process, improving the speed of installations and building homeowner trust that the return on investment provided by solar PV systems will be accurate over time. With this new, first-of-its-kind integration, solar professionals now have the best tool on the market.

"We understand that improvements in cost and trust are essential to the growth and healthy functioning of the solar industry," shared Piers Dormeyer, CEO of EagleView. "We know we can help solve this challenge because we're in our third decade doing the exact same thing in roofing and insurance."

#### CONSTRUCTION BEGINS ON \$270M IKO MANUFACTURING FACILITY

Dana B. Kenyon Company (DBK) has started construction of a new asphalt shingle manufacturing facility in north Florida for IKO, a worldwide leader in the roofing, waterproofing and insulation industry for residential and commercial markets.

The IKO site covers over 75 acres and will include an asphalt shingle production facility in its first stage. As market demand dictates, additional plans for an insulation board plant and a commercial rolled roofing plant are also being contemplated for the company's manufacturing campus.

When the potential development reaches its full capacity, the manufacturing facility will expand to approximately 700,000 square feet.

The IKO shingle manufacturing facility is expected to commence operations in 2025.

#### HOLCIM BUILDING ENVELOPE CONSTRUCTING NEW ROOFING PRODUCTS PLANT

Holcim Building Envelope is expanding its residential roofing segment with the construction of a new Malarkey Roofing Products<sup>®</sup> plant in Franklin, Indiana. The 300,000-squarefoot manufacturing facility and warehouse, situated on a 135acre campus, marks the latest milestone in Holcim Building Envelope's commitment to expanding operations, improving customer service, and accelerating green growth in commercial and residential applications.

The facility is expected to break ground later this year and will generate approximately 200 jobs, contributing to economic growth for the local community in Indiana. The new plant will begin producing residential roofing shingles on two manufacturing lines by mid-2026, improving access and delivery time for customers in the Midwest and Northeast regions.

Headquartered in Portland, Oregon, Malarkey operates facilities in South Gate, California; Oklahoma City, Oklahoma; and Williamsport, Maryland. In 2022, Holcim acquired Malarkey Roofing Products which resides in the Holcim Building Envelope portfolio of brands.

#### ASPHALT AWARDS PROGRAM ACCEPTING SUBMISSIONS THROUGH DECEMBER 1

The Asphalt Roofing Manufacturers Association (ARMA) has announced the 2025 Excellence in Asphalt Roofing Awards Program is now open for submissions. Roofing contractors across North America can submit their top low- and steep-slope asphalt roofing projects from the past three years for a chance to win by December 1, 2024 (www.asphaltroofing.org/excellence).

This prestigious program provides roofing contractors with a unique platform to showcase exceptional work, enhance their business profiles, and exhibit their passion for the industry. Every year, ARMA receives numerous submissions that underscore asphalt roofing as the premier choice for residential and commercial projects.

Participation in the awards program is free, and contractors are welcome to submit multiple entries. Each submission should highlight exemplary skills in asphalt roofing and include detailed project descriptions and high-quality images.

Entries will be judged on four criteria:

• I. Why Asphalt – Why was asphalt the roofing solution? What circumstances existed with the building, and what benefits made it clear that asphalt was the best roofing choice?

• II. Project Challenges – Were there any technical, operational, or environmental challenges successfully overcome through the innovative use of asphalt roofing materials? Does the project demonstrate the reliability, durability, and overall system strength of asphalt roofing?

• III. Distinction – Why is this project different from its peers? Was the quality of the craftsmanship extraordinary, and were there any circumstances, pre-existing conditions, or challenges that made it stand out? Can this project be considered a step above the rest?

• IV. Beauty – Does the project showcase an aesthetic appeal or exhibit impressive technical complexity? Does it possess visual allure or intrigue, elevating the skyline, building use, or design?

A panel of judges will evaluate and score the submissions. In recognition of their exceptional achievement, the top projects will be awarded monetary prizes: \$2,000 for Gold, \$1,000 for Silver, and \$500 for Bronze.

In addition to the prominent awards, judges may recommend projects for specific Best-in-Class Categories, each recognizing one winner:

• In the Neighborhood – This category showcases homes that combine affordability with style. It focuses on how color and design choices can elevate the appearance of a typical neighborhood home.

• Commercial/Mixed Use – This category focuses on the complexities of flat roof projects. These projects are multifaceted, involving numerous components that work together to create a waterproof roofing system found in commercial, industrial, educational, data centers, hospitals, retail, and other non-pitched roof systems.

• Craftsmanship – Roofing is an art, and it takes a true craftsman to install roofing materials on complex structures such as steeples, turrets, and geodesic designs or large flat roofing projects exceeding 1,000 squares. These projects blend skill and artistry, showcasing intricate designs and sheer sizes. This category is open to low- and steep-slope applications.

• Technical Difficulty – This category emphasizes operational and installation challenges, including projects involving multiple penetrations, work during nighttime, skyscraper steeples, and cold weather applications. Contractors share the challenges of orchestrating the job, ensuring a safe environment, and addressing the various design aspects.

Winning companies will receive an official ARMA certificate, promotional materials, national and local trade media exposure, and features on ARMA's website and social media platforms. Winners will also be recognized at the 2025 International Roofing Expo, which will take place from February 19-21, 2025, in San Antonio, Texas.



#### GAF ENERGY LAUNCHES TIMBERLINE SOLAR™ ROOF IN MINNESOTA

GAF Energy has announced the launch of its Timberline Solar<sup>™</sup> roof for sale in Minnesota. Timberline Solar<sup>™</sup>, the only system on the market to directly integrate solar technology into traditional roofing processes and materials, will initially be available in the Twin Cities metro area for purchase and installation by local roofers. The solar roofing system incorporates the world's first nailable solar shingle, the Timberline Solar<sup>™</sup> Energy Shingle (ES) and is assembled at GAF Energy's U.S. manufacturing facilities.

GAF Energy's Timberline Solar ES<sup>™</sup> boasts a depth of less than 1/4" and integrates with traditional shingles to create a sleek and attractive look. Timberline Solar was the first product to achieve UL's 7103 certification, which certifies that GAF Energy's product meets UL's rigorous electrical, building, and safety standards as a roofing product and a solar energy product. ●