Florida ROOFING

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A Publication of FRSA – Florida's Association of Roofing Professionals


2020 7th Edition Florida Building Code Changes

Soldered Joints in Sheet Metal

Oil Canning in Metal Roof and Metal Wall Systems

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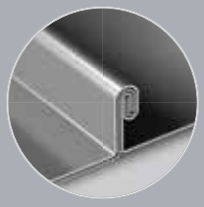

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# Combatting Common TPO Welding Problems

*Trent Cotney, CEO, Cotney Construction Law*

Thermoplastic polyolefin (TPO) is a well-known single-ply roofing system used in low slope roofing. These membranes are used for mechanically attached, adhered and induction-welded roofing systems. Over the years, we have seen a variety of warranty claims and Chapter 558 pre-suit notices related to seam welding. This article will briefly explore these issues.

Welding seams at the correct temperature is paramount. In the event that you have concerns over the adhesion of the seams, you should perform several test welds to ensure the welder is properly calibrated. The goal is to avoid excessive heat that destroys the polymer stabilizers in the TPO and leads to premature membrane deterioration. Conversely, if the weld is too cold, it may appear functional when probed but will detach over time, thereby allowing water infiltration. Test welds will help ensure that you have the proper temperature to avoid weld failure.

Another factor worth noting is what we refer to as welder drag – a condition caused by the improper alignment of the inside edge of the nozzle with the edge of the roller. Welder drag may cause improper alignment of the hot-air nozzle resulting in gouges in the membrane outside of the seam. These gouges may lead to premature failure of the system.

Maintaining power to auto-welders requires the use of a generator with at least 10k-watt output. Avoid having other equipment run off this power source to ensure a steady flow of heat from the welder. Always check your manufacturer specifications before starting the project to ensure you have the proper equipment needed to perform the work.

Watch out when using hand welders on prefabricated corners, boot and T-patches. Generally, these types of items tolerate lower temperatures. Hand welders that are not calibrated the same as automatic units tend to overheat areas. Finally, recognize that you may have to weld patches or penetrations. Make sure to properly clean the area before welding to ensure adhesion.

From a legal perspective, in-field oversight and the documentation of existing and installation conditions help defend against claims of improper installation. Documenting the temperature setting, performing test welds at the beginning of the day, after lunch breaks and any time a machine is started also helps demonstrate proper calibration.

Contractually limiting workmanship warranties to not include punctures, shrinkage-related defects and wind speeds that exceed manufacturer specifications are just a few of the ways to mitigate your potential risk of ongoing warranty work. In addition, make sure that the specifications call out the right type of welder needed for the work to be performed – one that you have used and are comfortable using on the project.

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

*Trent Cotney is Board Certified in Construction Law by the Florida Bar, an advocate for the roofing industry and General Counsel of FRSA. For more information, contact the author at 866-303-5868 or go to www.cotneycl.com.*

# Session 2021 Preview: COVID-19 Liability Protections, Rioting and Public Safety Reforms

The Florida Legislature is in the middle of its annual committee week process and will kickoff the 2021 regular session in early March. While a myriad of topics will be addressed this year, two major policy initiatives are gaining traction and will consume significant legislative bandwidth in the weeks to come: COVID-19 liability protections for Florida's businesses and a major package from Governor DeSantis to strengthen the state's laws against rioting and civil unrest. Let's explore these bills in a little more detail.

## COVID-19 Liability Protections for Florida's Businesses

For months, there has been a national conversation on the need to pass liability protections for businesses seeking to operate or resume operation in the midst of the ongoing COVID-19 pandemic. Congress, thus far, has been unable to reach a compromise. Therefore, Florida legislators will take matters into their own hands this legislative session with a statewide liability reform package related to the virus. The effort is comprised of two pieces of legislation, HB 7 by Representative Lawrence McClure (R – Plant City) and SB 72 by Senator Jeff Brandes (R – St. Petersburg), both entitled "Civil Liability for Damages Relating to COVID-19." Under this legislation, Florida businesses, schools, nonprofits and religious institutions would have immunity from many lawsuits resulting from the COVID-19 pandemic and it would be harder for plaintiffs to sue in cases stemming from the outbreak. Notably, health care entities are currently excluded from the protections, as negotiations between the House and Senate are ongoing on that group. Another potential sticking point in the bills is the issue of retroactivity of the afforded protections, which businesses desire but some attorneys challenge on constitutional grounds.

## Rioting and Civil Unrest Reforms

During the Summer and Fall of 2020, amid nationwide protests and violence, Governor Ron DeSantis proposed a sweeping reform package aimed at strengthening state laws against rioting and civil unrest. As the nation has watched further unrest in Washington, DC this year, the Legislature has doubled down on the effort with two bills aimed at fulfilling the Governor's request: House Bill 1 by Representative Juan Alphonso Fernandez-Barquin (R – Miami) and Senate Bill 484 by Senator Danny Burgess (R – Zephyrhills). The identical pieces of legislation are comprised of 21 sections covering 60 pages. The legislation would amend many statutes by increasing the offenses (e.g., from a misdemeanor to a felony) for established crimes when committed during a riot or aggravated riot. In so doing, the legislation also proposes three new crimes (mob intimidation; destroying or demolishing a memorial and cyber intimidation by publication). Finally, an affirmative defense is created for defendants in civil actions when the plaintiff suing for injury or wrongful death sustained that injury during the participation in a riot. The legislation also addresses law enforcement funding and efforts to "defund the police" by creating a right for citizens to formally appeal a municipality's proposed law enforcement budget if the total amount was reduced from the previous year. The appeal would be sent to the Governor's office and ultimately adjudicated by the Administration Commission which has final say. Lastly, the legislation would waive a municipality's sovereign immunity for claims resulting from a riot, if the municipality is found to have limited its police department's ability to maintain safety.

These bills will play significant roles during the 2021 regular session of the Florida Legislature and, upon passage, could be defining topics of the year in state government. We will keep you informed every step of the way as we continue to advocate for FRSA and industry priorities in Tallahassee.

**FRM**

*Chris Dawson is an attorney and professional lobbyist for GrayRobinson's Orlando office and is licensed to practice law in both Florida and Alabama. He primarily focuses on lobbying and government relations for public and private sector clients at the executive and legislative levels of state government. He is credentialed as a Designated Professional Lobbyist by the Florida Association of Professional Lobbyists. Chris also holds two degrees in Civil Engineering and has experience in construction litigation and design professional malpractice defense.*

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# Industry Updates

## NRCA Releases Updated Roof Coatings Guide

NRCA released *NRCA Guidelines for the Application of Roof Coatings* guide that updates the 2015 guide and serves as a reference for roof coating designers and installers.

The guide provides technical information about the application of various types of roof coating systems, preparations necessary for their successful performance and quality control guidelines for onsite evaluation. Also included are best practice guidelines for the application of common roof coatings to various types of roof surfaces, such as membrane roof systems or existing coating systems.

The guide has been reorganized to more closely follow the chronological order of events surrounding the roof coating process and terms and definitions have been modified, added or removed to better capture the wide range of applications currently available for roof coatings. Step-by-step guidance on some quality control and quality assurance procedures have also been added.

Hard copies of *NRCA Guidelines for the Application of Roof Coatings* are available at www.nrca.net/shop. NRCA members can download the guide for free in electronic format.

## Cotney Construction Law Helps Raise $23,450 for Roofing Foundations

Cotney Construction Law is pleased to announce the success of its 2020 year-end fundraising drive supporting several roofing foundations. Through a Giving Back campaign with RoofersCoffeeShop, they helped raise $23,450 in donations for four different roofing foundations.

The four roofing foundations involved in this campaign were Florida Roofing & Sheet Metal Contractors Association Educational & Research Foundation, Chicago Roofing Contractors Association Foundation, Roofing Alliance Melvin Kruger Endowed Scholarship and Western States Roofing Contractors Association's Davis Memorial Foundation. Each of these foundations support the roofing industry through various means, such as scholarships, education, charitable programs and research.

"Trent Cotney and the Cotney team continue to live their core values of giving back," stated Heidi J. Ellsworth of RoofersCoffeeShop. "By using the power

of digital marketing and overall promotional drive for greater causes, we all win. Cotney is the leader when it comes to roofing industry support and respect."

Giving back has always been a core value of Cotney Construction Law. Since inception, Trent Cotney, CEO, has sought to affect positive change in the roofing industry and one of those ways has been donating his time, treasure and talent to roofing foundations.

"Not only are the roofing foundations vital for the current generation in roofing, but they also ensure that roofing continues to be a significant player in America's future workforce. I am blessed to be able to help these foundations raise money that will go towards helping sustain and elevate the roofing industry," Trent Cotney stated.

Cotney matched donations made during the December 2020 campaign using his connections, advertising dollars and social media promotions to encourage donations. This resulted in substantial donations generated for 2021 scholarships, research and education through these influential foundations. Cotney encourages all roofing professionals to continue supporting roofing foundations in 2021 and beyond.

## ICP Building Solutions Group Acquires Gardner-Gibson

Innovative Chemical Products ("ICP Group" or "ICP"), a leader in specialty coatings, adhesives and building envelope solutions, has acquired Gardner-Gibson and Sun Coatings, a leading manufacturer of liquid-applied roof coatings, roofing products, driveway sealers and specialty paints primarily serving professional contractors for commercial and residential applications. The acquisition builds upon ICP Group's extensive line of building solutions and global distribution network and creates one of the largest privately-held coatings and adhesives companies in North America.

"The Gardner-Gibson acquisition and combination with ICP Group will strengthen the product offerings and distribution network for both companies," said Doug Mattscheck, CEO, ICP Group. "We were strong individually and will be even stronger together as we enhance our portfolio of coatings, adhesives and building envelope solutions. ICP Group welcomes the Gardner-Gibson employees to the ICP family and looks forward to supporting the continued growth of the combined businesses."

The integration of Gardner-Gibson into ICP's Building Solutions Group unites premier brands to offer a wide range of products for roofing, building envelope and flooring applications, primarily serving

commercial facilities and repair and maintenance applications.

"ICP Group has the infrastructure, networks and experience to take Gardner-Gibson to new levels of success," said Sean Hyer, CEO, Gardner-Gibson. "We're looking forward to working together and delivering more value to our customers, retail partners and distributors for years to come. It's an exciting time to be at Gardner-Gibson as we enter this new era of innovation and product expansion with ICP."

## myABCsupply Now Available in Spanish and Polish

ABC Supply Co. Inc. is always looking to make its customers' jobs easier, including evaluating the need for additional language offerings for its tools. With an increasing number of Spanish speakers in its customer base, as well as a large contingent of Polish-speaking contractors in several metropolitan areas, ABC Supply has made www.myABCsupply.com, the company's order management tool, available in Spanish and Polish in addition to English.

"At ABC Supply, we strive to make doing business with us as easy as possible," said Mike Jost, Chief Operating Officer of ABC Supply. "Offering more of our customers the ability to purchase materials online and manage their orders in their primary language is one way we're making that happen."

The easy-to-use tool offers the following features to make managing orders from a desktop or mobile device simple and convenient. Features include:

- Place orders online 24/7
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- Access order and delivery details
- View order details
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Sign up for myABCsupply at myABCsupply.com or by downloading the ABC Supply app from the App Store or Google Play. ABC Supply customers can also reach out to their local branches to learn more about setting up an account.

## Richard D. Smith Roofing Becomes Evans Roofing of Central Florida LLC

Saint Vincent Master Roofers, a group of roofing companies, acquired Richard D. Smith Inc. in January 2021. Richard D. Smith had been in business for more than 42 years and has a long legacy of quality in the greater Orlando area. The company specializes in custom homes, working in copper and slate and building the most demanding roof designs. Richard D. Smith will now operate under the brand of Evans Roofing of Central Florida LLC. We wish a well-deserved retirement to Richard and Charlene Smith!

## Hunter Warfield is Now Altus Receivables Management

Hunter Warfield Commercial is an important strategic addition to the Altus Receivables Management business. As part of this transaction, nearly all Hunter Warfield Commercial employees will transition to the Altus Receivables Management team. Staff currently supporting Hunter Warfield clients will remain in place, including collectors, sales and administrative personnel.

Altus Receivables Management, headquartered in Kenner, LA, provides commercial accounts receivable services across multiple industries, including technology services, transportation and logistics, building supply, financial services and credit insurance, along with traditional third-party collections, legal escalation, first party services, credit reporting and management of complex international credit insurance contracts.

FRSA currently offers collection service through Altus for members. For more information, please contact Robert Andreu by phone at 813-283-4523 or by email at robert.andreu@trustaltus.com.

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# What's Wrong with These Pictures?

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# Providing Durable and Reliable Soldered Joints in Sheet Metal

*Joseph D. Rogers, P.E., Keith B. Nelson and David S. Slick, P.E., CFM*

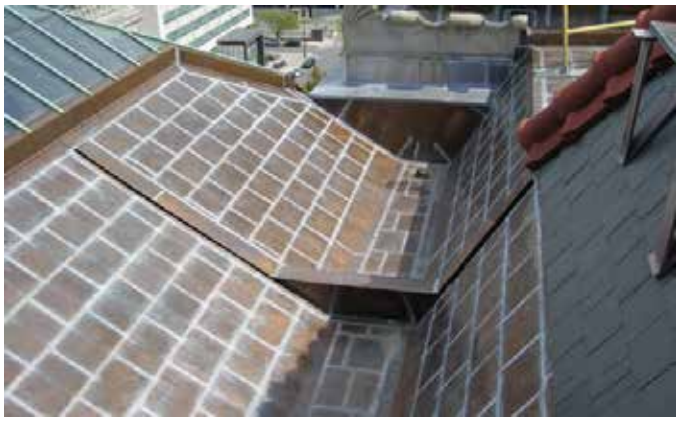
Architectural sheet metal components such as flat-seam roofing and flashings must be joined properly to maintain durable and reliable watertight assemblies. The most common ways of making architectural sheet metal joints watertight are through the use of sealants or solder. While sealants can provide watertight integrity on steep-sloped applications, the relatively short service life of sealants, when compared to the expected service life of sheet metal, make them an unreliable choice for assemblies that must rely on long-term watertight integrity of the joints to prevent water intrusion. This is especially critical in low-slope applications where water may linger or pond on the surface of the sheet metal. Since most architectural sheet metal components are formed from materials of less than 1/16-inch in thickness, the joints cannot feasibly be welded and must be joined with solder.

Unlike welding, soldering involves melting a soft alloy metal that must fill the joint between and bond with the base metal to produce a strong, durable joint. Due to its relatively low melting point and intrinsic ductile nature, solder is generally weak and fails when exposed to tensile or shear stresses. Architectural sheet metal installations are often subject to widely varying temperatures in service and the resulting thermal stresses will expose any weakness in soldered joints and will lead to cracking or failure of the joints. To prevent stress-induced failure, soldered sheet metal joints must be mechanically strengthened with a lock-seam or rivets to prevent premature failure. Since the watertight integrity of a soldered joint is dependent on the continuity and bond of the solder within the joint of the base material, rigorous quality control measures for material selection, joint preparation and soldering techniques must be implemented to avoid failed joints that are vulnerable to water infiltration.

This article discusses the materials, preparation and construction processes necessary to reliably assemble watertight soldered sheet metal roofing and flashing components. It also discusses other considerations for designing and inspecting soldered sheet metal joints and provides additional resources to assist designers and installers in understanding, selecting and constructing soldered joints in sheet metal.

## Materials and Tools

Soldering a particular joint in architectural sheet metal begins with the selection of materials and tools to successfully perform the work. Soldering is performed on the joint between sections of base sheet metal by using flux to clean the base metal and flowable solder



*Steep-sloped flat-seam roofing.*

to fill the joint. To successfully solder, a sheet metal mechanic must also use the appropriate tools and other miscellaneous materials when forming, cleaning and installing the joint. The following sections discuss the requirements and considerations for selecting materials and tools necessary to install reliable and durable soldered joints.

## Sheet Metal Base Material

Sheet metal material selection is driven largely by aesthetics and chemical compatibility with adjacent building components. Copper, coated copper (zinc, tin or lead), stainless steel and galvanized steel can all be soldered successfully if the correct materials and techniques are used. For example, soldering stainless steel requires higher heat compared to copper due to the base material's relatively low thermal conductivity and the higher melting point of lead-free solder that is commonly used with stainless steel. The metal's lower thermal conductivity also requires a cooler iron to prevent severe thermal gradients within the stainless steel which can cause warping and buckling. A mechanic must use a cooler iron in good contact with the metal to transmit more heat to the work; this requires attention to good technique and patience. [Note: Aluminum and other sheet metals can also be soldered in the factory; however, the materials and technique required are significantly different from those sheet metals listed above, making field-soldering such metals impractical; therefore, they are not discussed in this article.]

## Flux

Flux is used to clean the surface of the sheet metal base material and improve the wetting ability (flow) of the solder. Flux improves the wetting of the base metal

by dissolving oxidation from the metal surface, permitting the solder to bond to the base metal. Flux must be brush-applied to only the surfaces of the joint where the solder bond is desired.

The three most common types of flux are rosin-based, organic acid and inorganic acid. Inorganic acid flux, specifically hydrochloric acid, phosphoric acid or zinc chloride (a.k.a. "killed acid"), are the fluxes most commonly used for architectural sheet metal. Corrosive (acid-based) fluxes require neutralization after the joint is soldered. Other than corrosion considerations, there are few concerns regarding specific flux selection from within the group of inorganic acids listed above. Zinc chloride and hydrochloric acid are commonly used as fluxes for soldering copper sheet material, while phosphoric acid-based fluxes are often used for soldering stainless steel. See ASTM Standard B813 for additional information on the material standards and testing for flux.

## Solder

The most common solders used in architectural sheet metal applications are 50/50 or 60/40 tin/lead solder, or 95/5 tin-silver solder. Tin is the primary soldering element and is alloyed with other metals to affect melting temperature, strength, corrosion resistance or other properties. Solder alloys typically have a "pasty" range where the material will flow but is still somewhat solid as well. Varying the composition of the other metals alloyed with tin alters the pasty range by changing the "liquidus" point at which the solder is fully melted. The workability of a solder is closely related to its melting temperature; solders that melt at lower temperatures are more workable because they flow readily with less heat applied to the metal. Conversely, maintaining higher joint temperatures, required for some solders, can be difficult because under-heating can result in a weak and leaking joint, while overheating can cause oxidation of the base metal that affects solder bond and damage to adjacent building components. Solders with a wider pasty range can be shaped as they cool, whereas eutectic solders, which solidify all at once, are difficult to shape.

Of the three solder types noted above, 50/50 tin-lead solder is the most commonly used in architectural sheet metal applications, because it is readily available and commonly accepted. 60/40 tin-lead solder is closer to the eutectic point of tin-lead alloys and, as such, has a lower melting temperature and narrower pasty range. 60/40 solder is commonly selected for use with lead-coated sheet metals so that, as the solder alloys with the lead coating, the resulting joint does not become lead-rich, thereby weakening the joint. 95/5 tin-silver solder is commonly selected when lead-free joints are required; it has a significantly higher melting point than tin-lead solders and is therefore more difficult to work with.

*Commonly used soldering irons: hand coppers with propane pot.*

*A commonly used soldering iron: copper-bit gas-fired soldering iron.*

## Soldering Irons

There are three types of soldering irons used for architectural sheet metal work: soldering coppers that are heated in a propane (or occasionally charcoal) pot; copper-bit gas-fired soldering irons that use a gas-burning nozzle oriented at the back end of a heavy copper bit and electric soldering irons which are rarely used for sheet metal. Regardless of the type of iron selected, the critical consideration is providing sufficient heat to the joint at all times without substantially overheating either the iron or the base metal. Large soldering irons with more mass provide a greater heat capacity than smaller irons, provide more consistent and uniform heat and are generally best for architectural sheet metal work. Smaller irons are used for intricate detailing work where large irons cannot be used.

In the next issue of FRM, we will discuss the procedure and quality control measures for joint preparation and soldering techniques that must be implemented to avoid soldered architectural sheet metal joints that are vulnerable to failure and water infiltration due to thermal movement.

**FRM**

*This article was originally published in Building Enclosure at www.buildingenclosureonline.com.*

# Oil Canning in Metal Roof and Metal Wall Systems

*Metal Construction Association*

## What is Oil Canning?

Oil canning can be defined as visible waviness in the flat areas of metal roofing and metal wall panels. In technical terms, oil canning is referred to as elastic buckling (more commonly known as "stress wrinkling"). Oil canning can occur in any type of metal panels: steel, aluminum, zinc or copper. For purposes here, all four terms shall be considered synonymous: waviness, elastic buckling, stress wrinkling and oil canning. The degree of waviness can be difficult to measure, but may be visually apparent, especially under specific lighting conditions.

Generally, the period and amplitude of the wave will become more pronounced as the panel width increases (flat portion of the panel) and the panel thickness decreases. Reflected light may make the oil canning more prominent at certain times of day.

Conditions such as the time of year, the viewing angle and the angle at which sunlight strikes the panel may also have an impact on the ability to discern oil canning. The eye perceives the reflection of light. When the reflective surface is irregular, the reflected light is also irregular, making oil canning more perceptible. If oil canning is present, it is usually apparent at the time of construction.

However, oil canning may become more (or less) apparent over an extended period of time for a variety of reasons. Oil canning can be an unintentional byproduct of the fabrication process and mill producers' tolerances. Panels with oil canning differ from panels intentionally formed with a corrugated, ribbed or fluted design and narrower flat sections intended to provide greater bending strength.

## What Causes Oil Canning?

Oil canning is caused by differential stresses within the metal itself. As the metal tries to relieve these stresses in panels with high width-to-thickness ratios, the material buckles out of plane, producing the characteristic waviness of oil canning. The stresses may be introduced at a number of stages in panel manufacturing.

*The only difference between invisible (left) and visible (right) oil canning is one hour and the changing of the sun's angle.*

*Left and right photos were taken only minutes apart. The only difference is the camera (eye) angle.*

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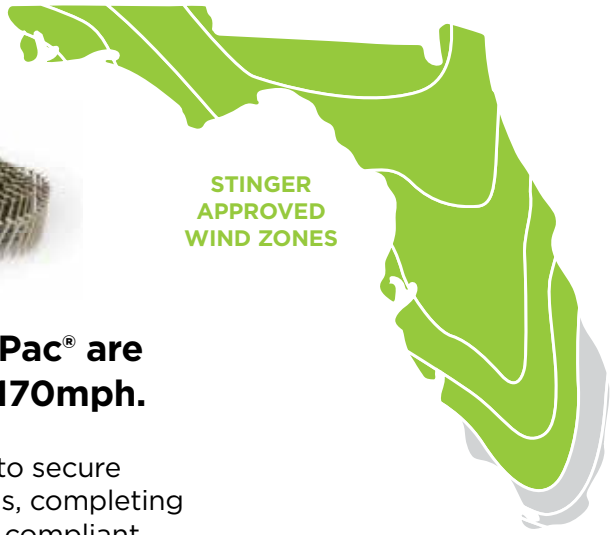


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## Metal Coil Production

All fabricated metal roof and wall products begin in a "coil" form. Coil is produced in a rolling process under pressure to create very thin strips which are then "coiled" for ease in handling. Stresses induced during coil production may contribute to oil canning. Examples of these types of stresses are:

- Full Center – Coil is longer in the middle of the strip which creates ripples or buckles near the mid-coil area
- Wavy Edge – Coil is longer along the edge of the strip
- Camber – Coil deviation of a side edge from a straight line

These conditions exist to some extent in all light gauge flat rolled metal coil and tend to become more exaggerated as the material tensile strength increases. Thinner material and dimensionally wider coil are also more prone to oil canning than thicker, narrower coil.

## Coil Processing and Panel Fabrication

**Slitting** – Generally several narrower coils are cut by slitting from a single (wider) master coil. The economies of producing wider coils makes this secondary process a common practice. Slitting of a master coil can release and redistribute residual forces. This redistribution of stresses can increase the occurrence of oil canning within the final product.

**Forming** – Stresses are introduced during forming of either roof or wall panels. Architectural panel profiles typically require more forming along the edges than in the middle of the sheet. This often necessitates more forming and bending along one side than the other and the stresses produced are not symmetrical within the sheet. Formed panel profiles require "working" (bending) of the sheet. Bending occurs along the edges and there is a tendency to "trap" uneven stresses within the center portion of the finished profile, producing oil canning. In contrast to flat, architectural profiles, corrugated ribbed profiles are most often roll formed from the center and moving outward, thereby "pushing" the differential stresses to the edges of the sheet.

Forming sheet metal inherently introduces stresses to the material. Equipment tooling, setup and operation can minimize these stresses. Proper feed rates, tooling maintenance, proper tooling design and proper adjustment of the equipment will minimize the differential stresses that cause oil canning.

## Support Systems and Substrate Suitability

**Misalignment of the Support System** – If the structural supports or perimeter framing system of a roof or wall panel system are not flat, "non-planar" or contoured, additional stresses can be induced into

the sheet as the panels are forced to conform to this uneven surface. This can be the case even when the support structure is produced, fabricated and installed within allowable industry tolerances.

**Movement of the Primary Structure** – If the primary structure moves due to differential deflection, racking, drift, settlement or other causes, oil canning can occur as the panels are forced to conform to this movement. This oil canning is sometimes temporary as the support system continues to move but could be permanent depending on the root cause of the movement.

**Camber** – Commercial support structural elements such as roof rafters and trusses are often designed with an intentional bow or camber, anticipating deflection under load. If the rafter, truss or joist is fabricated with camber (crowning at mid-span), it produces a contoured substrate that can induce oil canning of the finished surface at installation or after a load is imposed.

## Panel Installation

**Over-Engagement of Panels (Roof Panels)** – Roof panels are designed to a specific coverage dimension and accommodate transverse thermal expansion by flexing the rib and seam areas of side joints. When panels are not installed true to the intended coverage dimensions, these stress relief features can be minimized or eliminated altogether. In the extreme case, the over engagement process itself can generate oil canning within the flat areas of the panel.

**Improper Installation (Wall Panels)** – Wall panels are generally designed to a specific coverage dimension and to accommodate thermal expansion. Panels often do this by expanding or contracting at the joints located between the panels. Panels can be designed with slotted connections or extrusions that slide across each other to accommodate this movement. When panel joints are not designed or located properly, stress relief cannot take place and oil canning can result.

Often wide, concealed fastened, flat-faced panels are desired for use in wall applications. These panels are often direct-attached to the structure (in contrast with clip-attached). This installation method does not allow for panel thermal movement. In such cases, designers should minimize the panel length or look to other means of thermal relief to minimize the effects of oil canning. Contractors should ensure the panels do not flex or bow outward during the installation process because this also exaggerates the visual appearance of panel bow. Finally, panels should normally be fastened in a sequential manner (i.e., top to bottom, middle outward or left to right) to push potential panel bow in one direction so the panel is not locked in place with a built-in bow.

**Over Driving of Fasteners** – This installation error can create stresses in the panel and cause visible oil canning along fastener lines. Use of an impact driver is not recommended. Reference the MCA Technical Bulletin on Proper Tools for Fastening Metal Panels.

**Thermal Expansion** – Due to the profile of panels, longitudinal expansion is generally the primary concern. Any expansion across the width of the panel is generally taken up at the raised portion of each profile. The surface temperature of exposed panels cycles throughout the year and even fluctuates daily. The range and cycle depend on many variables (e.g., project location and building orientation, cloud cover, surface finish or color, solar absorption characteristics, etc.).

As the panel surface temperature fluctuates, panels expand or contract. Surface temperature may be more than 100 degrees higher than ambient air temperature. Fasteners, clips and perimeter connections should be designed and installed to accommodate the anticipated thermal movement of the panel. If panel expansion or contraction is inhibited by perimeter flashing conditions or inadvertent “dual pinning” at other details, the result can be seen as oil canning.

Waviness caused by thermal forces differs from the other forms of oil canning because waves can appear and disappear daily as the panel temperature varies due to solar absorption or radiation. Often, over a period of time, if clips and perimeter connections allow movement, the panels will find a thermodynamic equilibrium and the oil canning may be diminished.

**Improper Storage and Handling –** For certain types of metal panels, storing or carrying panels in a flat orientation, twisting or buckling panels can induce a wavy appearance to a previously flat panel. Twisting can occur if one corner of a panel is used to lift a panel or to remove the panel from a bundle or pallet. Manufacturer's recommendations should be followed.

## How Can Oil Canning be Minimized?

Certain designers regard oil canning as inherent to the material and treat it as a desired effect accentuating the material's natural characteristic, while others do not. Coil producers and panel manufacturers generally attempt to minimize unintentional non-flat conditions. Research continues on improved production and fabrication methods. While a number of factors are involved in panel design, there are steps that the project designer, panel manufacturer, panel fabricator and installer can take to reduce the probability, severity and visual impact of oil canning.

**Coil** – Tension ("stretch" or in line) precision leveling is a process that stretches the metal beyond the yield point while the metal is in coil form. Once stretched to this point, the metal will not creep back to its previous, non-level state. This provides a flatter surface less prone to oil canning and may correct inconsistencies of coil production and secondary coil operations. For this reason, tension leveling should be done after secondary operations such as slitting. The effect of oil canning can be reduced by ordering tension leveled material.

**Gauge** – In general, the thicker the metal (the smaller the gauge number) the less likely a panel is to oil can.

**Panel Design** – In general, the use of attachment systems that allow panels to move without inducing thermal stresses is another means of controlling oil canning. The addition of stiffening ribs in the panel profile "break-up" the flat surface and may make oil canning less apparent but may also add minor shadow lines.

**Panel Finish** – The eye perceives reflection of light, which is why oil canning on a lower gloss surface is less perceptible than a high gloss surface. Low gloss finish systems or embossed surfaces, which are less reflective, may reduce the visual perception of oil canning seen in the metal.

There is less difference in the appearance of reflected light from a lighter color panel with oil canning than from a darker color panel, which makes oil canning more noticeable on darker colored panels.

**Installation Issues** – Stringent specifications regarding the alignment of the supporting structure or the deck would focus attention on this critical aspect. Normal trade practices and tolerances concerning the substrate may not be adequate to minimize oil canning of the finished surface. Manufacturer recommendations regarding proper handling, spacing and fastening of panels should be part of the manufacturer's installation recommendations.

**Forming Equipment** – Deal with reputable, experienced suppliers who utilize appropriate, well-tuned forming equipment.

**Uses of Backer Rod or Other Similar Shimming Materials** – Some designers specify the use of "backer rod" or other similar types of shimming materials (see photo, right) on the panel underside when installation is over a solid substrate. Backer rod is a compressible foam strip normally used in the concrete and masonry trades in joints to serve as a backing for a caulk joint. For certain types of metal panel systems, it causes the center of the panel to "pillow" uniformly, relieving stress and reducing the visual effects of oil canning.

## Concluding Remarks

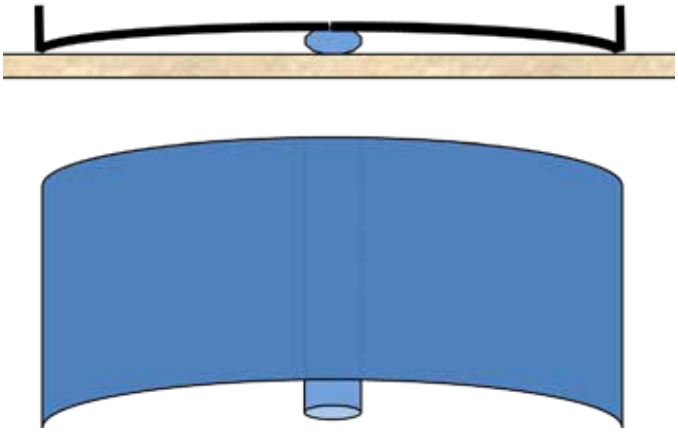
Many uncontrollable factors contribute to oil canning and no panel manufacturer, fabricator or installer can assure the total prevention of oil canning on any given project. With careful attention to the production, material selection, panel design and installation practice, the tendency for oil canning can be minimized.

If oil canning is caused by external factors, such as detailed in "Support Systems" and "Substrate Suitability," even replacing panels may be ineffective if the root cause is not addressed.

Oil canning is generally an aesthetic issue. Structural integrity is typically not affected. In the absence of specific contract requirements, oil canning should not be the sole grounds for panel rejection.

**FRM**

*Some designers specify the use of "backer rod" or other similar types of shimming materials on the panel underside when installation is over a solid substrate.*



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# 2020 7th Edition Florida Building Code Changes

*Mike Silvers, CPRC, Owner of Silvers Systems Inc. and FRSA Technical Director*

The 2020 7th Edition Florida Building Code (FBC) went into effect on December 31, 2020. This article will cover some of the roofing-specific changes made to the code with regards to the *Florida Building Code, Building* Chapter 15 (FBCB), *Residential* Chapter 9 (FBCR) and *Existing Building* Chapter 7 (FBCEB) and the requirements for roof coverings, noting changes from the 2017 6th Edition Florida Building Code.

In the current code, Florida uses the 2017 Florida Building Code as the base code and includes some of the changes in the 2019 International Building Code (IBC) and adds in Florida-specific modifications to create the FBC. In **black text** you'll see the current code language (no changes), in **blue text** (underlined) you'll see the new 2020 FBC language and in **red text** (~~strikethrough~~) is the 2017 FBC language that has been removed.

## *FBCB Chapter 2 Definitions*

**Vegetative Roof**. An assembly of interacting components designed to waterproof ~~and normally insulate~~ a building's top surface that includes, by design, vegetation and related landscape elements.

Wind-Borne Debris Region. Areas within hurricane-prone regions located:
1. Within 1 mile (1.61 km) of the coastal mean high-water line where the ultimate design wind speed, V*ult*, is 130 mph (58 m/s) or greater; or
2. In areas where the ultimate design wind speed, *Vult*, is 140 mph (63.6 m/s) or greater.

For Risk Category II buildings and other structures and Risk Category III buildings and other structures, except health care facilities, the wind-borne debris region shall be based on Figure 1609.3.(1). For ~~Risk Category IV buildings and structures and~~ Risk Category III health care facilities, the windborne debris region shall be based on Figure 1609.3(2). For Risk Category IV buildings and other structures, and Risk Category III health care facilities, the wind-borne debris region shall be based on Figure 1609.3(3).

## *FBCR Chapter 2 Definitions*

**Building-Integrated Photovoltaic Roof Panel**. A photovoltaic panel that functions as a component of the building envelope.

## *FBCEB Chapter 2 Definitions*

**Existing Structure~~s (for flood hazard areas).~~** ~~See Section 1612.2 of the *Florida Building Code, Building*~~. A structure erected prior to the date of adoption of the appropriate code, or one for which a legal building *permit* has been issued.

**Positive Roof Drainage.** The drainage condition in which consideration has been made for all loading deflections of the roof deck, and additional slope has been provided to ensure drainage of the roof within 48 hours of precipitation. (Editor's note: This definition has been included in the Building and Residential volumes).

## *FBCEB Chapter 7 Alterations - Level 1*

**Section 706 Existing Roofing**

**706.5 Reinstallation/Reuse of materials.** Existing or salvaged slate, clay or ~~cement~~ concrete tile shall be permitted for reinstallation or reuse, to repair an existing slate or tile roof, except that salvaged slate or tile shall be of like kind in both material and profile. ~~d~~Damaged, cracked or broken slate or tile shall not be reinstalled. The building official may permit salvaged slate, clay and concrete tile to be installed on additions and new construction, when the tile is tested in compliance with the provisions of Section 1507 or 1523 (HVHZ shall comply with Section 1523) and installed in accordance with Section 1507 or 1518 (HVHZ shall comply with Section 1518). Existing vent flashing, metal edgings, drain outlets, collars and metal counter flashings shall not be reinstalled where rusted, damaged or deteriorated. Aggregate surfacing materials shall not be reinstalled. (High-Velocity Hurricane Zones shall comply with Sections 1512 through 1525 of the *Florida Building Code, Building)*.

**706.7 Mitigation.** When a roof covering on an existing ~~site-built single-family residential~~ structure with a sawn lumber, wood plank, or wood structural panel roof deck is removed and replaced, the following procedures shall be permitted to be performed by the roofing contractor:
(a) Roof-decking attachment shall be as required by Section 706.7.1.
(b) A secondary water barrier shall be provided as required by Section 706.7.2.
**Exception:** ~~Single-family residential~~ Structures permitted subject to the Florida Building Code are not required to comply with this section.

**706.7.1 Roof decking attachment for existing ~~site-built single-family residential~~ structures with wood roof decks**. ~~For site-built single-family residential structures the f~~Fastening for sawn lumber, wood plank, or wood structural panel roof decks shall be


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in accordance with Section 706.7.1.1 or 706.7.1.2 as appropriate for the existing construction. 8d nails shall be a minimum of 0.113 inch (2.9 mm) in diameter and shall be a minimum of 2-1/4 inches (57 mm) long to qualify for the provisions of this section for existing nails regardless of head shape or head diameter.
***Remaining section unchanged.***

**706.7.2 Roof secondary water barrier for existing ~~site-built single-family residential~~ structures with wood roof decks**. A secondary water barrier shall be installed using one of the following methods when roof covering is removed and replaced:
1. In High-Velocity Hurricane Zone regions:
a) All joints in structural panel roof sheathing or decking shall be covered with a ~~minimum~~ 4 inch (102 mm) to 6 inch (153 mm) wide strip of self-adhering polymer modified bitumen tape applied directly to the sheathing or decking. The deck and self-adhering polymer modified bitumen tape shall be covered with one of the underlayment systems approved for the particular roof covering to be applied to the roof.

**706.8** When a roof covering on an existing ~~site-built single family residential~~ structure with a sawn lumber, wood plank, or wood structural panel roof deck is removed and replaced on a building that is located in the wind-borne debris region as defined in the *Florida Building Code, Building* and that has an insured value of $300,000 or more or, if the building is uninsured or for which documentation of insured value is not presented, has a just valuation for the structure for purposes of ad valorem taxation of $300,000 or more:
(a) Roof to wall connections shall be improved as required by Section 706.8.1.
(b) Mandated retrofits of the roof-to-wall connection shall not be required beyond a 15 percent increase in the cost of reroofing.
**Exception:** ~~Single-family residential~~ sStructures permitted subject to the Florida Building Code are not required to comply with this section.

**706.8.1** Roof-to-wall connections for ~~site-built single family residential~~ structures with wood roof decks.
***Remaining section unchanged.***

## *FBCEB Chapter 7 Alterations - Level 1*

**Section 707 Structural**

**707.3.2 Roof diaphragms resisting wind loads in high-wind regions.** Where ~~roofing materials are~~ the structural roof deck is removed from more than ~~50~~ 30 percent of the ~~roof~~ structural diaphragm of a building or section of a building located where the ultimate design wind speed, V*ult*, is greater than 115 mph, as defined in Section 1609 (the HVHZ shall comply with Section 1620) of the *Florida Building Code, Building*, roof diaphragms, connections of the roof diaphragm to roof framing members, and roof-to-wall connections shall be evaluated for the wind loads specified in the *Florida Building Code, Building*, including wind uplift. If the diaphragms and connections in their current condition are not capable of resisting at least 75 percent of those wind loads, they shall be replaced or strengthened in accordance with the loads specified in the *Florida Building Code, Building*.
**Exceptions:**
This section does not apply to buildings permitted subject to the Florida Building Code.
~~2.This section does not apply to buildings permitted subject to the 1991 Standard Building Code, or later edition, or designed to the wind loading requirements of the ASCE 7-88 or later editions, where an evaluation is performed by a registered design professional to confirm the roof diaphragm, connections of the roof diaphragm to roof framing members, and roof-to-wall connections are in compliance with the wind loading requirements of either of these standards or later editions.~~
~~3.Buildings with steel or concrete moment resisting frames shall only be required to have the roof diaphragm panels and diaphragm connections to framing members evaluated for wind uplift.~~
~~4. This section does not apply to site-built single-family dwellings. Site-built single-family dwellings shall comply with Sections 706.7 and 706.8.~~
~~5. This section does not apply to buildings permitted within the HVHZ after January 1, 1994 subject to the 1994 South Florida Building Code, or later editions, or where the building's wind design is based on the wind loading requirements of ASCE 7-88 or later editions.~~

## *FBCR Chapter 9*

**Section 902.4 Fire Classification**

**R902.4 Rooftop-mounted photovoltaic ~~panels and modules~~ panel systems**. Rooftop-mounted photovoltaic panel systems installed on or above the roof covering shall be tested, listed and identified with a fire classification in accordance with UL 1703 and UL 2703. Class A, B or C photovoltaic panel systems and modules shall be installed in jurisdictions designated by law as requiring their use or where the edge of the roof is less than 3 feet (914 mm) from a lot line.

## *FBCB Section 1501 General*

**1501.1 Scope.** The provisions of this chapter shall govern the design, materials, construction and quality of roof assemblies, and rooftop structures.
**Exception:** Buildings and structures located within the High-Velocity Hurricane Zone shall comply with the provisions of Section 1503.7, Section 1507.18.1 and Sections 1512 through 1525.

**Section 1503 Weather Protection**

**1503.1 General.** Roof decks shall be covered with approved roof coverings secured to the building or structure in accordance with the provisions of this chapter. Roof coverings shall be designed in accordance with this code and installed in accordance with this code and the ~~approved~~ manufacturer's

approved instructions such that the roof covering shall serve to protect the building or structure.

**Section 1504 Performance Requirements**

**1504.3.3 Metal roof shingles.** Metal roof shingles applied to a solid or closely fitted deck shall be tested in accordance with FM 4474, UL 580, UL 1897, ASTM D3161, or TAS 107. Metal roof shingles tested in accordance with ASTM D3161 shall meet the classification requirements of Table 1504.3.3 for the appropriate maximum basic wind speed and the metal shingle packaging shall bear a label to indicate compliance with ASTM D3161 and the required classification in Table 1504.3.3.

**Table 1504.3.3**
**Classification of Metal Roof Shingles Tested in Accordance with ASTM D3161**

| Maximum Basic Wind Speed from Figure ~~1609A, B, C or ASCE 7~~ 1609.3(1), (2), (3), (4) or ASCE 7 | *Vasd* | ASTM D3161 |
|---|---|---|
| 110 | 85 | D or F |
| 116 | 90 | D or F |
| 129 | 100 | D or F |
| 142 | 110 | F |
| 155 | 120 | F |
| 168 | 130 | F |
| 181 | 140 | F |
| 194 | 150 | F |

**1504.5 Edge securement for low-slope roofs.** Low-slope built-up, modified bitumen and single-ply roof system metal edge securement, except gutters, shall be designed and installed for wind loads in accordance with Chapter 16 and tested for resistance in accordance with Test Methods RE-1, RE-2 and RE-3 of ANSI/SPRI ES-1, or RAS 111 except V*ult* wind speed shall be determined from Figure 1609.3(1), 1609.3(2), or 1609.3(3), or 1609.3(4) as applicable.

**1504.7 Impact resistance.** Roof coverings installed on low slope roofs (roof slope < 2:12) in accordance with Section 1507 shall resist impact damage based on the results of tests conducted in accordance with ASTM D3746, ASTM D4272, ~~CGSB 37-GP-52M~~ or the "Resistance to Foot Traffic Test" in Section ~~5.5~~ 4.6 of FM 4470. All structural metal roofing systems having a thickness equal to or greater than 22 gage and all nonstructural metal roof systems having a thickness equal to or greater than 26 gage shall be exempt from the tests listed above.

**Section 1505 Fire Classification**

**1505.8 Building-integrated photovoltaic products.** Building-integrated photovoltaic products installed as the roof covering shall be tested, listed and labeled for fire classification in accordance with Section 1505.1.

**1505.9 ~~Photovoltaic panels and modules.~~ Rooftop mounted photovoltaic panel systems.** Rooftop mounted photovoltaic panel systems shall be tested, listed and identified with a fire classification in accordance with UL 1703 or UL2073. The fire classification shall comply with Table 1505.1 based on the type of construction of the building.

**Section 1507 (FBCR R905) Requirements for Roof Coverings**

**1507.1.1 (R905.1.1) Underlayment.** ~~Unless otherwise noted u~~ Underlayment ~~for asphalt shingles, metal roof shingles, mineral surfaced roll roofing, slate and slate-type shingles, wood shingles, wood shakes and metal roof panels~~ for roof slopes 2:12 and greater shall conform to the applicable standards listed in this chapter. Underlayment materials required to comply with ASTM D226, D1970, D4869 and D6757 shall bear a label indicating compliance to the standard designation and, if applicable, type classification indicated ~~in Table 1507.1.1~~. Underlayment for roof slopes 2:12 and greater shall be applied and attached in accordance with Section 1507.1.1.1, 1507.1.1.2, or 1507.1.1.3 as applicable. ~~Table 1507.1.1~~.

**Exceptions:**

(Chapter 15 only) 1. For areas of a roof that cover exterior walkways and roofs of agricultural buildings, underlayment shall comply with the manufacturer's installation instructions.

(Chapter 15 only 2. & Chapter 9) Compliance with Section 1507.1.1.1 (R905.1.1.1) is not required for structural panels that do not require a substrate or underlayment.

**1507.1.1.1 (R905.1.1) Underlayment for asphalt, metal, mineral surfaced, slate and slate-type roof coverings.** Underlayment for asphalt shingles, metal roof shingles, mineral surfaced roll roofing, slate and slate-type shingles, ~~wood shingles, wood shakes~~ and metal roof panels shall comply with one of the following methods:

1. The entire roof deck shall be covered with an approved self-adhering polymer modified bitumen underlayment complying with ASTM D1970 installed in accordance with both the underlayment manufacturer's and roof covering manufacturer's installation instructions for the deck material, roof ventilation configuration and climate exposure for the roof covering to be installed.

**Exception**: An existing self-adhering modified bitumen underlayment which has been previously installed over the roof decking and where it is required, re-nailing off the roof sheathing in accordance with 706.7.1 of

the *Florida Building Code, Existing Building* can be confirmed or verified. An approved underlayment in accordance with **Table 1507.1.1.1** for the applicable roof covering shall be applied over the entire roof over the existing self-adhered modified bitumen underlayment.

2. A minimum 4-inch-wide (102 mm) strip of self-adhering polymer-modified bitumen membrane complying with ASTM D1970, installed in accordance with the manufacturer's instructions for the deck material, shall be applied over all joints in the roof decking. An approved underlayment in accordance with Table 1507.1.1.1 for the applicable roof covering shall be applied over the entire roof over the 4-inch-wide (102 mm) membrane strips.

**Exception:** A ~~reinforced~~ synthetic underlayment that is approved as an alternate to underlayment complying with ASTM D226 Type II and having a minimum tear strength of 15 lbf in accordance with ~~ASTM D1970 or~~ ASTM D4533 ~~of 20 pounds~~ and a minimum tensile strength of 20 lbf/inch in accordance with ASTM D5035 shall be permitted to be applied over the entire roof over the 4-inch wide (102 mm) membrane strips. This underlayment shall be installed and attached in accordance with the underlayment attachment methods of Table 1507.1.1.1 for the applicable roof covering and slope and the underlayment manufacturer's installation instructions. ~~except metal cap nails shall be required where the ultimate design wind speed, *Vult* equals or exceeds 150 mph~~.

3. A minimum 3-3/4-inch-wide (96 mm) strip of self-adhering flexible flashing tape complying with AAMA 711-13, Level 3 (for exposure up to 176° F (80° C)), installed in accordance with the manufacturer's instructions for the deck material, shall be applied over all joints in the roof decking. An approved underlayment in accordance with Table 1507.1.1.1 for the applicable roof covering shall be applied over the entire roof over the 4-inch-wide (102 mm) flashing strips.

**Exception:** A reinforced synthetic underlayment that is approved as an alternate to underlayment complying with ASTM D226 Type II and having a minimum tear strength of 15 lbf in accordance with ASTM D4533 and a minimum tensile strength of 20 lbf/inch in accordance with ASTM D5035 shall be permitted to be applied over the entire roof over the 4-inch-wide (102 mm) membrane strips. This underlayment shall be installed and attached in accordance with the underlayment attachment methods of Table 1507.1.1.1 for the applicable roof covering and slope and the underlayment manufacturer's installation instructions.

4. Two layers of ASTM D226 Type II or ASTM D4869 Type III or Type IV underlayment shall be installed as follows: Apply a 19-inch (483 mm) strip of underlayment felt parallel to and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply 36-inch-wide (914 mm) sheets of underlayment, overlapping successive sheets 19 inches (483 mm), end laps shall be 6 inches and shall be offset by 6 feet. The underlayment shall be attached to a nailable deck with corrosion-resistant fasteners with one row centered in the field of the sheet with a maximum fastener spacing of 12 inches (305 mm) o.c., and one row at the end and side laps fastened 6 inches (152 mm) o.c. Underlayment shall be attached using annular ring or deformed shank nails with metal or plastic caps with a nominal cap diameter of not less than 1 inch. Metal caps are required where the ultimate design wind speed, *Vult*, equals or exceeds 170 mph. Metal caps shall have a thickness of not less than 32-gage sheet metal. Power-driven metal caps shall have a minimum thickness of 0.010 inch. Minimum thickness of the outside edge of plastic caps shall be 0.035 inch. The cap nail shank shall be not less than 0.083 inch for ring shank cap nails. Cap nail shank shall have a length sufficient to penetrate through the roof sheathing or not less than 3/4 inch into the roof sheathing.

5. Two layers of a reinforced synthetic underlayment that has a Product Approval as an alternate to underlayment complying with ASTM D226 Type II shall be permitted to be used. Synthetic underlayment shall have a minimum tear strength of 15 lbf in accordance with ASTM D4533, a minimum tensile strength of 20 lbf/inch in accordance with ASTM D5035, and shall meet the liquid water transmission test of Section 8.6 of ASTM D4869. Synthetic underlayment shall be installed as follows: Apply a strip of synthetic underlayment that is half the width of a full sheet parallel to and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply full sheets of reinforced synthetic underlayment, overlapping successive sheets half the width of a full sheet plus the width of the manufacturers single ply overlap. End laps shall be 6 inches and shall be offset by 6 feet. Synthetic underlayment shall be attached to a nailable deck with corrosion-resistant fasteners with a maximum fastener spacing measured horizontally and vertically of 12 inches (305 mm) o.c. between side laps, and one row at the end and side laps fastened 6 inches (152 mm) o.c. Synthetic underlayment shall be attached using annular ring or deformed shank nails with metal or plastic caps with a nominal cap diameter of not less than 1 inch. Metal caps are required where the ultimate design wind speed, *Vult*, equals or exceeds 170 mph. Metal caps shall have a thickness of not less than 32-gage sheet metal. Power-driven metal caps shall have a minimum thickness of 0.010 inch. Minimum thickness of the outside edge of plastic caps shall be 0.035 inch. The cap nail shank shall be not less than 0.083 inch for ring shank cap nails. Cap nail shank shall have a length sufficient to penetrate through the roof sheathing or not less than 3/4 inch into the roof sheathing.

**Table 1507.1.1 (R905.1.1.1)**
**Underlayment with Self-Adhering Strips Over Roof Decking Joints**

| Roof Covering | Underlay-ment Type | Underlayment Attachment | |
|---|---|---|---|
| | | 2:12 = Roof Slope < 4:12 | Roof Slope > 4:12 |
| Asphalt Shingles, Metal Roof Panels, Photovoltaic Shingles | ASTM D226 Type II, ASTM D4869 Type III or IV, ASTM D6757 | Apply in accordance with Section R905.1.1.1 Item 4 or Section R905.1.1.3 Item 3 as applicable to the type of roof covering | Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 4 inches (51 mm), end laps shall be 6 inches and shall be offset by 6 feet. The underlayment shall be attached to a nailable deck with two staggered rows in the field of the sheet with a maximum fastener spacing of 12 inches (305 mm) o.c., and one row at the end and side laps fastened 6 inch-es (152 mm) o.c. Underlayment shall be attached using annular ring or deformed shank nails with metal or plastic caps with a nominal cap diameter of not less than 1 inch. Metal caps are required where the ultimate design wind speed, V*ult*, equals or exceeds 170 mph. Metal caps shall have a thickness of not less than 32-gage sheet metal. Power-driven metal caps shall have a minimum thickness of 0.010 inch. Minimum thickness of outside edge of plas-tic caps shall be 0.035 inch. The cap nail shank shall be not less than 0.083 inch for ring shank cap nails. Cap nail shrank shall have a length sufficient or not less than 3/4 inch into the roof sheathing. |
| Metal Roof Shin-gles, Mineral-Sur-face Roll Roofing, Slate and Slate-type Shingles, Wood Shingles, Wood Shakes | ASTM D226 Type II ASTM, ASTM D4869 Type III or IV | | |

**** Tables from 2017 FBC have been removed. ****

~~**Underlayment Attachment**~~

~~1. Roof slopes from two units vertical in 12 units horizontal (17-percent slope), and less than four units vertical in 12 units horizontal (33-percent slope). Apply a 19-inch (483 mm) strip of underlayment felt parallel to and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply 36-inchwide (914 mm) sheets of underlayment, overlapping successive sheets 19 inches (483 mm), end laps shall be 6 inches and shall be offset by 6 feet. The underlayment shall be attached to a nailable deck with corrosion-resistant fasteners with one row centered in the field of the sheet with a maximum fastener spacing of 12 inches (305 mm) o.c., and one row at the end and side laps fastened 6 inches (152 mm) o.c. Underlayment shall be attached using metal or plastic cap nails with a nominal cap diameter of not less than 1 inch. Metal caps shall have a thickness of not less than 32-gage sheet metal. Power-driven metal caps shall have a minimum thickness of 0.010 inch. Minimum thickness of the outside edge of plastic caps shall be 0.035 inch. The cap nail shank shall be not less than 0.083 inch for ring shank cap nails and 0.091 inch for smooth shank cap nails. Cap nail shank shall have a length sufficient to penetrate through the roof sheathing or not less than 3/4 inch into the roof sheathing.~~
~~2. Roof slopes of four units vertical in 12 units horizontal (33-percent slope) or greater. Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 4 inches (51 mm), end laps shall be 6 inches and shall be offset by 6 feet. The underlayment shall be attached to a nailable deck with two staggered rows in the field of the sheet with a maximum fastener spacing of 12 inches (305 mm) o.c., and one row at the end and side laps fastened 6 inches (152 mm) o.c. Underlayment shall be attached using metal or plastic cap nails with a nominal cap diameter of not less than 1 inch. Metal caps shall have a thickness of not less than 32-gage sheet metal. Power-driven metal caps shall have a minimum thickness of 0.010 inch. Minimum thickness of the outside edge of plastic caps shall be 0.035 inch. The cap nail shank shall be not less than 0.083 inch for ring shank cap nails and 0.091 inch for smooth shank cap nails. Cap nail shank shall have a length sufficient to penetrate through the roof sheathing or not less than 3/4 inch into the roof sheathing.~~
~~3. Roof slopes from two units vertical in 12 units horizontal (17-percent slope) and greater. The entire roof deck shall be covered with an approved self-adhering polymer modified bitumen underlayment complying with ASTM D1970(2015a) installed in accordance with both the underlayment manufacturer's and roof covering manufacturer's installation instructions for the deck material, roof ventilation configuration and climate exposure for the roof covering to be installed.~~
~~Exception: A minimum 4-inch-wide (102 mm) strip of~~

~~self-adhering polymer-modified bitumen membrane complying with ASTM D1970(2015a), installed in accordance with the manufacturer's instructions for the deck material, shall be applied over all joints in the roof decking. An approved underlayment in accordance with Table 1507.1.1 for the applicable roof covering shall be applied over the entire roof over the 4-inch-wide (102 mm) membrane strips.~~

**1507.1.1.2 (R905.1.1.2) Underlayment for concrete and clay tile.** Underlayment for concrete and clay tile shall comply with **1507.3.3 (R905.3.3).**

**1507.1.1.3 (R905.1.1.3) Underlayment for wood shakes and shingles.** Underlayment for wood shakes and shingles shall comply with one of the following methods:

1. A minimum 4-inch-wide (102 mm) strip of self-adhering polymer-modified bitumen membrane complying with ASTM D1970, installed in accordance with the manufacturer's instructions for the deck material, shall be applied over all joints in the roof decking. An approved underlayment in accordance with Table 1507.1.1.1 for the applicable roof covering shall be applied over the entire roof over the 4-inch-wide (102 mm) membrane strips.
2. A minimum 3-3/4-inch-wide (96 mm) strip of self-adhering flexible flashing tape complying with AAMA 711-13, Level 3 (for exposure up to 176° F (80° C)), installed in accordance with the manufacturer's instructions for the deck material, shall be applied over all joints in the roof decking. An underlayment complying with Table 1507.1.1.1 for the applicable roof covering shall be applied over the entire roof over the 4-inch-wide (102 mm) flashing strips.
3. Two layers of ASTM D226 Type II or ASTM D4869 Type III or Type IV underlayment shall be installed as follows: Apply a 19-inch (483 mm) strip of underlayment felt parallel to and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply 36-inch-wide (914 mm) sheets of underlayment, overlapping successive sheets 19 inches (483 mm), end laps shall be 6 inches and shall be offset by 6 feet. The underlayment shall be attached to a nailable deck with corrosion-resistant fasteners with one row centered in the field of the sheet with a maximum fastener spacing of 12 inches (305 mm) o.c., and one row at the end and side laps fastened 6 inches (152 mm) o.c. Underlayment shall be attached using annular ring or deformed shank nails with metal or plastic caps with a nominal cap diameter of not less than 1 inch. Metal caps are required where the ultimate design wind speed, V*ult*, equals or exceeds 170 mph. Metal caps shall have a thickness of not less than 32-gage sheet metal. Power-driven metal caps shall have a minimum thickness of 0.010 inch. Minimum thickness of the outside edge of plastic caps shall be 0.035 inch. The cap nail shank shall be not less than 0.083 inch for ring shank cap nails. Cap nail shank shall have a length sufficient to penetrate through the roof sheathing or not less than 3/4 inch into the roof sheathing.

**1507.2.7.1 Wind resistance of asphalt shingles. (R905.2.6.1 Classification of asphalt shingles)** Asphalt shingles shall be classified in accordance with ASTM D3161, ASTM D7158 or TAS 107. Shingles classified as ASTM D3161 Class D or ASTM D7158 Class G are acceptable for use where V*asd* is equal to or less than 100 mph. Shingles classified as ASTM D3161 Class F, ASTM D7158 Class H or TAS 107 are acceptable for use for all wind speeds. Asphalt shingle wrappers shall be *labeled* to indicate compliance with one of the required classifications, as shown in Table 1507.2.7.1. (R905.2.6.1)

**1507.2.9.3 (R905.2.8.5) Drip edge.** Provide drip edge at eaves and gables of shingle roofs. Overlap to be a minimum of 3 inches (76 mm). Eave drip edges shall extend 1/2 inch (13 mm) below sheathing and extend back on the roof a minimum of 2 inches (51 mm). Drip edge at gables shall be installed over the underlayment. Drip edge at eaves shall be permitted to be installed either over or under the underlayment. If installed over the underlayment, there shall be a minimum 4 inches (51 mm) width of roof cement installed over the drip edge flange. Drip edge shall be mechanically fastened a maximum of 12 inches (305 mm) on center. Where the V*asd,* as determined in accordance with Section 1609.3.1, is 110 mph (177 km/h) or greater or the mean roof height exceeds 33 feet (10 058 mm), drip edges shall be mechanically fastened a maximum of 4 inches (102 mm) on center.

**1507.3 Clay and concrete tile.** The installation of clay and concrete tile shall comply with the provisions of this section.

**1507.3.2 Deck slope.** Clay and concrete roof tile shall be installed in accordance with the recommendations of FRSA/TRI *Florida High Wind Concrete and Clay Roof Tile Installation Manual*, ~~Fifth~~** Sixth Edition where the V*asd* is determined in accordance with Section 1609.3.1 or the recommendations of RAS 118, 119 or 120.

** All other mentions in the FBC referring to the *FRSA-TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual*, reference the ***Sixth Edition***. **

**FBCR (R905) Requirements for Roof Coverings**

**905.4.4.1 Wind Resistance of Metal roof shingles.** Metal roof shingles applied to a solid or closely fitted deck shall be tested in accordance with ASTM D3161, FM 4474, UL 580, UL 1897 or TAS 107. Metal roof shingles tested in accordance with ASTM D3161 shall meet the classification requirements of Table R905.2.4.1 for the appropriate maximum basic wind speed and the metal shingle packaging shall bear a label to indicate compliance with ASTM D3161 and the required classification in Table R905.4.4.1.

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**Table 905.4.4.1**
**Classification of Metal Roof Shingles Tested in Accordance with ASTM D3161**

| Maximum Basic Wind Speed from Figure ~~1609A, B, C or ASCE 7~~ R301.2(4) or ASCE 7 | *Vasd* | ASTM D3161 |
|---|---|---|
| 110 | 85 | D or F |
| 116 | 90 | D or F |
| 129 | 100 | D or F |
| 142 | 110 | F |
| 155 | 120 | F |
| 168 | 130 | F |
| 181 | 140 | F |
| 194 | 150 | F |

## *FBCB Section 1507 (R905) Requirements for Roof Coverings*

**Table 1507.9.6 (905.8.5)**
**Wood Shake Material Requirements**

| Material | Minimum Grades | Applicable Grading Rules |
|---|---|---|
| Wood shakes of naturally durable wood | 1 | CSSB |
| Taper sawn shakes of naturally durable wood | 1 or 2 | CSSB |
| Preservative-treated shakes and shingles of naturally durable wood | 1 | CSSB |
| Fire-retardant-treated shakes and shingles of naturally durable wood | 1 | CSSB |
| Preservative-treated taper sawn shakes of Southern pine treated in accordance with AWPA U1 (Commodity Specification A, Special Requirement 4.6. ~~Use Category 3B and Section 5.6)~~ | 1 or 2 | TFS |

CSSB = Cedar Shake and Shingle Bureau
TFS = Forest Products Laboratory of the Texas Forest Services

## *FBCB SECTION 1507 (R905) Requirements for Roof Coverings*

**1507.11.2 (R905.11.2) Material standards.** Modified bitumen roof coverings shall comply with ~~CGSB 37-GP-56M~~, ASTM D6162, ASTM D6163, ASTM D6164, ASTM D6222, ASTM D6223, ASTM D6298 or ASTM D6509.

**1507.12.2 (R905.12.2) Material standards.** Thermoset single-ply roof coverings shall comply with ASTM D4637, or ASTM D5019. ~~or CGSB 37-GP-52M~~

**1507.13.2 (R905.13.2) Material standards.** Thermoplastic single-ply roof coverings shall comply with ASTM D4434, ASTM D6754, or ASTM D6878. ~~or CGSB CAN/CGSB 37-54~~.

**(R905.15.3) Application.** Liquid-applied roofing shall be installed in accordance with this chapter and the manufacturer's approved installation instructions. The approved allowable uplift resistance for the liquid-applied coatings shall be equal to or greater than the uplift resistance for the roof based on Table R301.2(2).

**(R905.17.1) Wind resistance.** Rooftop mounted photovoltaic systems shall be designed for wind loads in accordance with ASCE 7. ~~for component and cladding in accordance with Chapter 16 of the *Florida Building Code, Building* using an effective wind area based on the dimensions of a single unit frame.)~~

## *FBCR SECTION (R907) Requirements for Roof Covers*

**R907.1 Rooftop-mounted photovoltaic systems.** Rooftop-mounted photovoltaic panel systems shall be designed and installed in accordance with Section R324, NFPA 70 and the *Florida Fire Prevention Code*.

~~Reserved.~~
~~R907.2 Wind resistance.~~
~~Reserved.~~
~~R907.3 Fire classification.~~
~~Reserved.~~
~~R907.4 Installation.~~
~~Reserved.~~
~~R907.5 Photovoltaic panels and modules.~~
~~Reserved.~~
~~SECTION R909 ROOFTOP-MOUNTED PHOTOVOLTAIC PANEL SYSTEMS~~
~~R909.1 General.~~
~~Reserved.~~
~~R909.2 Structural requirements.~~
~~Reserved.~~
~~R909.3 Installation.~~
~~Reserved~~.

## *FBCB SECTION 1510 Rooftop Structures*

**1510.2.5 Type of construction.** Penthouses shall be constructed with walls, floors and roofs as required for the type of construction of the building on which such penthouses are built.

**Exceptions:**

1. On buildings of Type I construction, the exterior walls and roofs of penthouses with a *fire separation distance* greater than 5 feet (1524 mm) and less than 20 feet (6096 mm) shall be permitted to have not less than a 1-hour fire-resistance rating. The exterior walls and roofs of penthouses with a fire separation distance of 20 feet (6096 mm) or greater shall not be required to have a fire-resistance rating.
2. On buildings of Type I construction two stories or less in height above grade plane or of Type II construction, the exterior walls and roofs of penthouses with a *fire separation distance* greater than 5 feet (1524 mm) and less than 20 feet (6096 mm) shall be permitted to have not less than a 1-hour fire-resistance rating or a lesser fire-resistance rating as required by Table 602 and be constructed of fire-retardant-treated wood. The exterior walls and roofs of penthouses with a *fire separation distance* of 20 feet (6096 mm) or greater shall be permitted to be constructed of fire-retardant-treated wood and shall not be required to have a fire-resistance rating. Interior framing and walls shall be permitted to be constructed of fire-retardant-treated wood.
3. On buildings of Type III, IV or V construction, the exterior walls of penthouses with a fire separation distance greater than 5 feet (1524 mm) and less than 20 feet (6096 mm) shall be permitted to have not less than a 1-hour fire-resistance rating or a lesser fire-resistance rating as required by Table 602. On buildings of Type III, IV or VA construction, the exterior walls of penthouses with a fire separation distance of 20 feet (6096 mm) or greater shall be permitted to be of ~~Type IV~~ heavy timber construction complying with Sections 602.4 and 2304.11 or noncombustible construction or fire-retardant-treated wood and shall not be required to have a fire-resistance rating.

**1510.7.1 Wind resistance.** Rooftop-mounted *photovoltaic* systems shall be designed for wind loads in accordance with ASCE 7. ~~for component and cladding in accordance with Chapter 16 using an effective wind area based on the dimensions of a single unit frame~~.

**1510.11 Cable- and Raceway-Type Wiring Methods.** Cable- and raceway-type wiring methods installed on rooftops, when not encased in a structural concrete environment, shall be supported above the roof system and covering. Cable- and raceway-type wiring methods installed in locations under metal-corrugated sheet roof decking shall be supported so there is not less than 38 mm (1-1/2 in.) measured from the lowest surface of the roof decking to the top of the cable or raceway. A cable or raceway shall not be installed in concealed locations in metal-corrugated sheet decking–type roof.

## *FBCB SECTION 1511 Existing Roofing*

**1511.5 (EB 706.5) Reinstallation/Reuse of materials.** Existing or salvaged slate, clay or ~~cement~~ concrete tile shall be permitted for reinstallation or reuse, to repair an existing slate or tile roof, except that salvaged slate or tile shall be of like kind in both material and profile. ~~d~~Damaged, cracked or broken slate or tile shall not be reinstalled. The building official may permit salvaged slate, clay and concrete tile to be installed on additions and new construction, when the tile is tested in compliance with the provisions of Section 1507 and installed in accordance with Section 1507. Existing vent flashing, metal edgings, drain outlets, collars and metal counter flashings shall not be reinstalled where rusted, damaged or deteriorated. Aggregate surfacing materials shall not be reinstalled.

## *FBCB HIGH-VELOCITY HURRICANE ZONES Weather Protection*

**1514.4 Roof drainage.** Unless roofs are sloped to drain over roof edges, roof drains shall be installed at each low point of the roof. If required, roof drains shall comply with the *Florida Building Code, Plumbing*. Where required

for primary roof drainage, scuppers shall be placed level with the roof surface in a wall or parapet. The scupper shall be located as determined by the roof slope and contributing roof area. Scuppers shall be sized in accordance with the provisions contained in ASCE 7, ~~Section~~ Chapter 8 with commentary and shall comply with Section 1611 herein.

**1514.4.2.1** When overflow scuppers and roof drains are installed, they shall be lined with approved metal or other approved materials set forth herein. ~~in the roofing system assembly product approval~~.

**1514.4.2.2** When recovering, reroofing or repairing an existing roof, the existing number or size of required scuppers and/or roof drains shall not be reduced, unless a new drainage system is designed by *a registered design professional* ~~an architect or engineer~~, in compliance with the provisions of this code.

**1514.4.3 Sizing and discharge.** Roof drains, gutters, conductors and leaders shall be sized and discharge in accordance with the *Florida Building Code, Plumbing* and ASCE 7, Chapter 8 with commentary.

## *FBCB HIGH-VELOCITY HURRICANE ZONES Performance Requirements*

**Table 1515.2 Minimum Slope**

| System Type | Slope |
|---|---|
| Fibrous Cement Shingles | 4:12 |
| Metal Panels | |
| Architectural | 2:12[1] |
| Metal Shingles | 4:12 |
| Mortar or Adhesive Tile | 2:12 |
| Mechanically Fastened Tile | 4:12 |
| Asphalt Shingles | |
| Laminated | 2:12 |
| 3-Tab | 2:12 |
| Quarry Slate | 3-1/2:12 |
| Wood | |
| Shakes | 4:12 |
| Shingles | 3-1/2:12 |

*1. 1523.6.5.2.4.1 Standing seam metal roof panel systems that pass the requirements of the Static Water Leakage Test criteria of FM 4471 Appendix G, or ASTM E2140 shall be permitted to be installed to a minimum slope of 1:12.*

## *FBCB HIGH-VELOCITY HURRICANE ZONES Reroofing*

**1521.13** Prior to starting the work the contractor has the responsibility of notifying the owner ~~by means of the roofing permit and required owner's notification for roofing considerations herein~~ of any possibility of ponding water and recommend a structural review if ponding water is a possibility.

## *FBCB HIGH-VELOCITY HURRICANE ZONES Testing*

**1523.6.4** The building official may request that a quality control field uplift test be carried out on a continuous roofing system in compliance with test procedure TAS 124. Single-ply systems are not required to meet the deflection requirements established in the test protocol. ~~if mechanically attached.~~ The roofing system shall resist the design pressures as calculated in compliance with Chapter 16 (High-Velocity Hurricane Zones), and as established in TAS 124, Section 4.

**1523.6.5.2.4.1** All metal roofing shall be tested in compliance with requirements set forth in TAS 110 and TAS 125 and shall be tested for wind-driven rain infiltration resistance in compliance with TAS 100.

**1523.6.5.2.4.1.1** Standing seam metal roof panel systems that pass the requirements of the Static Water Leakage Test criteria of FM 4471 Appendix G, can be installed to a minimum slope of 1:12.

**1523.6.5.2.8 Roof board insulation.** All roof board insulation shall be tested for physical properties as set forth in Section ~~7~~ 8 of TAS 110.

## *SECTION 1525 FBCB HIGH-VELOCITY HURRICANE ZONES Uniform Permit Application*

*Florida Building Code* ~~6~~ 7th Edition (20~~17~~20)
High-Velocity Hurricane Zone Uniform Permit Application Form

**Section C (Low Slope Application)**

**Design Wind Pressures, From RAS 128 or Calculations:**
~~P1~~ Zone 1': ____ ~~P2~~ Zone 1: _____ ~~P3~~ Zone 2: _____ Zone 3: _____

**Fastener Spacing for Anchor/Base Sheet Attachment:**
~~Field~~ Zone 1': ____" oc @ Lap, # Rows ____ @ ____" oc
Zone 1: _____" oc @ Lap, # Rows _____ @ ____" oc
~~Perimeter~~ Zone 2: ____" oc @ Lap, # Rows ___ @ ____" oc
~~Corner~~ Zone 3: ____" oc @ Lap, # Rows ____ @ ____" oc

**Section E (Tile Calculations)**
For Moment based tile systems, choose either Method 1 or 2. Compare the values for $M_r$ with the values from $M_f$. If the $M_f$ values are greater than or equal to the $M_r$ values, for each area of the roof, then the tile attachment method is acceptable.

**Method 1 "Moment Based Tile Calculations Per RAS 127"**

(~~P1~~ Zone 1: ____ × ? ____ = ____) – Mg: ____ = $M_{r1}$ ____ Product Approval $M_f$ _____
(~~P2~~ Zone 2e: ____ × ? ____ = ____) – Mg: ____ = $M_{r2}$ ____ Product Approval $M_f$ _____
(~~P3~~ Zone 2n: ____ × ? ____ = ____) – Mg: ____ = $M_{r3}$ ____ Product Approval $M_f$ _____
(Zone 2r: _____ x l _____ = _____) – Mg _____ = $M_{r1}$ _____ NOA $M_f$ _____
(Zone 3e: _____ x l _____ = _____) – Mg: _____ = $M_{r2}$ _____ NOA $M_f$ _____
(Zone 3r: _____ x l _____ = _____) – Mg: _____ = $M_{r3}$ _____ NOA $M_f$ _____

For Uplift based tile systems, use Method 3. Compared the values for F' with the values for $F_r$. If the F' values are greater than or equal to the $F_r$ values, for each area of the roof, then the tile attachment method is acceptable.

**Method 3 "Uplift Based Tile Calculations Per RAS 127"**

(~~P1~~ Zone 1: ____ x L ____ = ____ x w: = ____) – W: ____ x cos? ____ = $F_{r1}$ ____ Product Approval F' _____
(~~P2~~ Zone 2e: ____ x L ____ = ____ x w: = ____) – W: ____ x cos? ____ = $F_{r2}$ ____ Product Approval F' _____
(~~P3~~ Zone 2n: ____ x L ____ = ____ x w: = ____) – W: ____ x cos? ____ = $F_{r3}$ ____ Product Approval F' _____
(Zone 2r: ____ x L ____ = ____ x w: = ____) – W: ____ x cos? ____ = $F_{r1}$ ____ Product Approval F' _____
(Zone 3e: ____ x L ____ = ____ x w: = ____) – W: ____ x cos? ____ = $F_{r2}$ ____ Product Approval F' _____
(Zone 3r: ____ x L ____ = ____ x w: = ____) – W: ____ x cos? ____ = $F_{r3}$ ____ Product Approval F' _____

**Where to Obtain Information**

| Description | Symbol | Where to Find |
|---|---|---|
| Design Pressure | ~~P1 or P2 or P3~~ Zones 1, 2e, 2n, 2r, 3e, 3r | From applicable Table in RAS 127 ~~Table 1~~ or by an engineering analysis prepared by PE based on ASCE 7 |

As mentioned earlier, these are some of the changes to the FBC 2020. In addition, contractors should be familiar with the Roofing Application Standard (RAS) and the Testing Application Standard (TAS) mentioned throughout the code.

For more information on the code, to purchase code books and to view the code online, please visit the ICC website, https://codes.iccsafe.org/codes/florida.

FRSA offers roofing-specific continuing education seminars on code changes during the year, at our annual Convention and online. For more information, please visit www.floridaroof.com.

**FRM**

*Mike Silvers, CPRC is owner of Silvers Systems Inc. and is consulting with FRSA as Director of Technical Services. Mike is an FRSA Past President, Life Member, and Campanella Award recipient and brings over 40 years of industry knowledge and experience to FRSA's team.*

*John Kenney*

# Successful Strategic Planning in the New Year

With the New Year now upon us – something we have all been looking forward to – now is the time to look back and look forward to ensuring a successful twelve months ahead.

Carve out some time now to work on strategic planning, a vision for the near future and a roadmap for what you hope to achieve in 2021. Take either a formal or casual approach to set your course for a successful year.

Review 2020 with all of its ups and downs to determine your future goals during this process. Come up with benchmarks to help you measure your progress. Specifics are your friend when it comes to setting long-term goals.

Look back over 2020 first to review every aspect of your organization, from marketing to budgeting and programs, assess what worked and what did not. Also, look at your strategic plan for 2020 and incorporate some of it into your new plan. Use data on hand to find realistic steps forward.

Digging into the data from the past year is a tool to help you imagine your company's future. Identify any gaps you find or additions needed, including projects, areas of service and new objectives. How can you improve, support and expand existing programs? Determine how you can embody your mission statement in the coming year.

Think in measured terms about how you will achieve each objective, being very specific. This will allow you to assess how close you are to achieving your desired outcomes as the year progresses.

Set timelines for achieving your goals, either by a specific date, by quarter or by month.

Take stock of where your company currently stands before setting your goals. Answer these questions: What business goals do you have for 2021? How is your business performing today? What is the best way to meet your goals?

## Follow These Steps

Spell it out — the first step in strategic planning is to determine where you are headed. Be as specific as possible. For example, how much do you want to increase sales? How will you accomplish that?

Take stock in your vision for the company, your mission and your values. What do you see when you look at the future? Your mission is the specifics you would like to accomplish, whether that is installing 30 more roofs in the next 12 months or winning 15 new bids. Your personal values set the way you run your company, how you treat your employees and the experience you give your customers.

Your strategic plan will affect everything in your business, from the services you offer to how many new employees you will hire.

- Perform a reality check. Once you have analyzed where you want to be, figure out where you stand now and what it will take to reach your goals. Success can mean many things, so determine what it means for you.
- Think past the money. How will you get involved in your community? How will you improve your business, so it is more environmentally friendly? What kind of programs do you have in place to help your employees grow professionally?
- Determine your focus. Once you have analyzed where you are, it is time to figure out how to get to where you want to be. Narrow the focus by choosing your priorities and order in which to proceed. Assess your resources and capabilities to target and plan. Work toward your strengths, choosing what you will focus on first.
- Do not be afraid to reject what you do not think will work. Keep your company's vision and purpose in mind as you come up with ideas. Shelve the ideas for which you do not have the resources. Zero in on making sure you have the right people, facilities, money and time to implement your strategies. Do not plan what you know you cannot accomplish—plan for the accomplishments.

  Do not be afraid to follow through on ambitious plans. Strategize on how to get there, if not now, then in the future. Focus on growing your business, improving the services and products you offer and improving how you run your business.
- Implement your strategy. Now, for the big challenge – implementing your strategic plan. Execute your ideas making changes as needed and monitor their effects. Determine when and how you will address each part of your plan. It is helpful to delegate; assign responsibilities, deadlines, activities and budgets.

*Continued on page 35*

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# Six Qualities Homeowners Look for in a Roofer and How to Achieve Them

*Equipter*

Being a professional residential roofer is easy: just deliver what your customer wants! But how do you know what homeowners want? Get into the mindset of your ideal customer. If you're a homeowner, think about what you would appreciate in a roofing contractor, how you'd like to be treated. Then take a look at these six easily achievable qualities and incorporate them into your roofing company's values and business practices.

## Reliability

Reliability is key in any industry, but even more important when you're providing a service like roof replacement or restoration.

Here are a few suggestions on how to be a roofer that homeowners and property managers can count on.

- **Arrive on time every time.** One simple way to demonstrate true professionalism is to show up on time–or early–every day. It's just one way to show you're dedicated to completing the job on time. If you choose to arrive early, remember to be respectful of your customer's lifestyle. Make sure the doorway is clear when the kids are leaving for the bus stop or when your customer(s) may be leaving for work.
- **Never make a promise you can't keep.** Honesty is the best policy. If a situation arises that either holds up production or changes the job, like a conflict in supply availability or unforeseen damage not mentioned in the bid, do your research. Find a few potential solutions and bring them to your customer's attention immediately. They'll appreciate your honesty and diligence in ensuring they're receiving quality service.

## Quality Craftsmanship

It's important to offer your roofing prospect a variety of roofing options, from style to color to price. Then, keep them engaged with an in-depth discussion and explain the benefits of each option. In providing this experience, you show your potential customer that you care not only about how their structure will look when complete but also about working within their budget.

Materials matter, but so does your work's quality. Top-of-the-line roofing systems are only effective if properly installed on solid, high-quality decking with the right materials positioned in between. Make sure everyone on your crew is trained appropriately for the

roof replacement process, whether they're involved in tear-off, installation or cleanup. Your roofing foreman should be trained in every aspect of the job. Together, this training strengthens quality and efficiency.

## Efficiency

Oftentimes, the sooner you get the job done, the happier your customer. But how can you be efficient without sacrificing the quality of your craftsmanship?

- **Take advantage of technology.** Nowadays, nearly everything is going digital. Many supply and technology companies have developed apps specifically to help roofing companies complete and manage a variety of tasks including but not limited to:
  - ☐ Measuring the area and pitch of your customer's roof
  - ☐ Automating quotes
  - ☐ Ordering materials
  - ☐ Managing job progress
  - ☐ Managing contacts

  Many of these apps are free with in-app purchase options. Be sure to do your research to determine which app(s) is right for your roofing startup or will enhance how your decades-old company does business.
- **Use innovative equipment.** Using the right tools and equipment makes all the difference not only in the quality of your work but also in your efficiency. Your choices are nearly endless. One piece of equipment becoming more popular is the self-propelled dump trailer. Equipter offers a variety of lightweight, liftable dump containers for use on nearly any job, such as the RB4000 self-propelled

dump trailer. It virtually eliminates setting up and hauling standard tarps. It also serves as a tool and material lift, reducing the risk of job site injuries from lugging heavy supplies up ladders every day.

## Cleanliness

Keeping the work site clean is a paramount part of your customer service. Your customer will cringe if they catch your cleanup crew hauling overflowing tarps across their yard, imagining their pets or children stepping on stray nails.

When customers are comfortable during your roof replacement process, they're less likely to scrutinize your work. Make sure to keep their flowerbeds clean and avoid damaging any other landscape obstacles.

## Personable

Customers can be quick to pick out flaws in the finished product if they have issues with the company or roofing crew during the roof replacement process. That's where this skill comes into play.

If you own a roofing startup company, then you likely wear most of the hats. It's important that you maintain a professional and relatable demeanor throughout every step of the job. When you show you can relate to your customers, they'll be more comfortable with you during and after the project. If they happen to have issues after the roof is replaced, they'll be much more confident that you'll treat their situation with the care and attention it deserves.

***Bonus Tip***: Check in with your customer after the most recent storm following their roof replacement. They'll appreciate your concern and likely contribute to your word-of-mouth referrals.

## Affordability

Homeowners go into every home improvement project with a budget, but the company with the lowest bid doesn't always win. If you own a home, you know that all of the above qualities are essential in whoever you hire to work on the place where you lay your head at night. If a company comes in at a slightly higher price than its competitors, it will need to be able to justify what makes its company the right choice by addressing the homeowner's biggest concerns.

When you're able to differentiate yourself from the competition in a way that highlights your care and quality performance, your prospect is much more likely to commit.

Homeowners want a professional. Be that professional. Reliability, efficiency, quality craftsmanship, cleanliness and being personable and affordable all combine to build an unbeatable customer experience for any homeowner. These qualities are easy to achieve whether you have been in business for decades or are just starting out.

**FRM**

*For more information about Equipter, please visit www.equipter.com and follow them on Facebook and Twitter (@equipter) for tips and tricks for improving efficiency and increasing referrals.*

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*Stategic Planning, continued from page 32*

- It is an ongoing process. Strategic planning is not a one-and-done. Evaluate how the plan is working. Moving forward, do not be afraid to shift directions if something is not working out. Do not be afraid to change up the way you operate if you deem that necessary.

Your strategic plan is an exercise that can benefit you throughout the year. Make it a priority by keeping it active during office meetings and by sticking with calendar goals. Keep your objectives at the forefront.

**FRM**

*John Kenney has over 45 years of experience in the roofing industry. He started his career by working as a roofing apprentice at a family business in the Northeast and worked his way up to operating multiple Top 100 Roofing Contractors. As Chief Operating Officer, John is intimately familiar with all aspects of roofing production, estimating and operations. During his tenure in the industry, John ran business units associated with delivering excellent workmanship and unparalleled customer service while ensuring his company's strong net profits before joining Cotney Consulting Group. If you would like any further information on this or another subject, you can contact John at jkenney@cotneyconsulting.com.*

# Giving Back


## FRSA Members Giving Back to the Community

### Reliant Completes Fourth Annual Every Shingle Heart Initiative

Reliant Roofing, Solar & Hurricane Shutters (Reliant) has completed their Fourth Annual Every Shingle Heart Initiative. This program was created in 2017 as a way for the Jacksonville-based company to give back to the community by providing families and local organizations in need with new roofs. This year, they selected a COVID-19 hero and a large local non-profit organization.

"As a local company, we knew it was our duty to step up and give back to our community during these difficult times of COVID-19," said Cameron Shouppe, President and Co-Owner of Reliant. Reliant, a family-owned company that opened in 2015, partnered with roofing manufacturers GAF and Carlisle, to provide a free roof to one healthcare worker in Northeast Florida, along with a local non-profit organization.

In December, Reliant replaced the roof of COVID-19 Heroes Jared and Patty Menefee at no charge. These healthcare workers from Wolfson Children's Hospital provide care for the youngest patients in Jacksonville. Jared and Patty work opposing shifts in order to care for their four children. Jared is known as "Jingle Beard." The nickname started several years ago when he decided to add ornaments to his beard during the winter holidays. Jared brightens the days of not only the nurses, doctors and other team members he works with but also the patients and families. Jared's wife, Patty, specializes in creating Intravenous Nutrition for all patients in the Baptist Health System, including the premature newborns in the Neonatal Intensive Care Unit.

The Daily Manna Serving Center was the non-profit organization that Reliant selected as a recipient this year. Founded nine years ago by Worship Center Pastor Gerald Dinkins, the food pantry serves about 2,500 people a month and launched a program helping clients eat and live healthier. They provide many other resources to their community such as free GED tutoring, clothing, paper goods, health screenings, nutritional classes, HIV testing, electric bill service and youth services. The entire Reliant office team came out to provide a $30,000 free roof to the serving center.

### Just in time for Christmas: South Florida Volunteers Help 87-Year-Old Woman

Dick Spalding knew his neighbor of more than 40 years in Pompano Beach had troubles. Holes in her roof went untended for decades. The electricity and water often went out and, at times, she wouldn't eat unless he fed her or bought her groceries.

But when 87-year-old Gloria Mugford slipped and fell last month after record rainfall streamed through her roof and flooded her home, Spalding learned the true extent of how hard the woman had been living. Mold covered the walls. Furniture was drenched. Garbage bins were set up around the home to catch what water they could.

While Mugford recovered from a broken shoulder in the hospital, Spalding called Rob Kornahrens, CEO of Advanced Roofing in Fort Lauderdale, to see about getting his neighbor a tarp. But Mugford got much more.

Before long, a coalition of South Florida business owners and nonprofits were pitching in full time to

completely transform Mugford's home in the span of six weeks.

Kornahrens said he didn't make a conscious decision to give Mugford what is perhaps the best Christmas present she's ever gotten. It just kind of happened. But during a year that turned the world upside down, he is happy to play a part in it. "It does make for a good Christmas story," he said.

A coalition of businesses and community leaders came together to repair Mugford's home when she was hospitalized after the fall. "She kept saying 'I have to pinch myself; I have to pinch myself.'" And she cried as she expressed her gratitude to Kornahrens.

Kornahrens said he felt moved to do something after hearing about how Mugford had lived for so long. "It just kind of tore on me." After seeing the decrepit home with his own eyes, he knew he couldn't let Mugford live there. "I just picked up the phone and started calling people." Soon, a new roof was installed. Plumbing was replaced. Mold was cleared off the walls. The pool, which hadn't been tended to in 20 years, was drained and cleaned. City Furniture donated a new bed, sofa and other furniture. In total, Kornahrens estimates that over $100,000 was poured into the home. All of the work was done for free, without much arm-twisting.

"People kept pitching in," Kornahrens said. "It's just truly amazing what we've done in six weeks." While the work continued, Lamar Fisher, Broward County Commissioner and former Mayor of Pompano Beach, arranged for Mugford to stay at a hotel in the city. Sonrise Mission, a Christian rehab center, provided her with food. Spalding had been trying to persuade Mugford to sell the place for years. Take the money and put herself in a condo or somewhere cleaner.

But she always refused, feeling attached to the home she had moved to with her mother more than 40 years ago. The home in which she took care of her mother before she died.

"Kornahrens made it possible for Gloria to come home and live the rest of her life in this house," Spalding said, "and the real gift will come the next time it rains in Pompano Beach and Mugford can rest soundly."

**FRM**

*FRSA is proud of the volunteer work completed by members in the industry and would like to share those projects as often as possible. If you have a community service project you've completed, please send it to Lisa Pate at lisapate@floridaroof.com.*

# *Daniela Fugon-Dessources, General Manager at Nine Square Roofing and Construction LLC, Orlando*

Daniela Fugon-Dessources is General Manager at Nine Square Roofing and Construction LLC, Orlando. She has worked at the company for five years and serves as Co-chair on FRSA's Young Professional Council.

**How did you get started in the roofing industry?**
My Dad opened Nine Square Roofing in 2011 and I would help him here and there with small tasks. In 2015, I joined the company as the General Manager and the rest is history.

**What's your favorite part of the job?**
Working with my family! I am so grateful to come to work and see my Mom, Dad, sister, husband and future brother-in-law every day.

**What is the most unusual roofing project that you've been a part of?**
We had a job where we had to install Colombian hand-made imported clay tile. Our crew's workmanship was really put to the test.

**What do you consider a waste of time?**
Inefficiencies due to poor planning. I'm a planner!

**What's your favorite vacation?**
My family decided to visit our extended family in Honduras in 2018. I, my three sisters, our partners and my parents were able to travel together. It was a blast.

**What is your dream job?**
I believe my current job is actually my dream job. However, if you asked me a couple of years ago, I would have said a NASA engineer.

**If you could spend time with three people (living or not), who would they be and why?**
I'd love to speak with both my grandfathers. They passed before I was able to really get to know them. Both were successful business owners and I'd love to pick their brain on how they did it and ask them for any advice they would have for me. I'd also love to sit down with Oprah.

**How long have you been involved with FRSA?**
Since 2015.

**What do you personally find most rewarding about being involved with FRSA?**
I think that the access FRSA gives to other industry professionals is invaluable. Whether it is access to legal experts, other contractors or manufacturers, it's a great way to grow your network.

**What advice would you give to someone interested in joining the roofing industry?**
Do it! It is a great opportunity, great people and just a great industry to be part of.

**What's your favorite pastime activity?**
Relaxing and spending time with my family. I have three sisters that live in Orlando with their partners. It's always a party when we get together.

**What would be your ideal place to live and why?**
I enjoy living in Orlando. The food scene is great, there is always something to do and my family is all nearby.

**What other activities and organizations are you involved with?**
National Women in Roofing, National Association of Minority Contractors and Hispanic Chamber of Commerce of Greater Orlando.

**What would surprise others to learn about you?**
I have a degree in Aerospace Engineering. Yes, I am a rocket scientist turned roofer!

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