



# EXPOSED FASTENER DETAIL MANUAL



(888) 393-0335 | [www.gulfcoastsupply.com](http://www.gulfcoastsupply.com)



# About this Manual



## What's in this manual? It's 50 pages long...do I actually need to read it? What is this document for?

All fair questions. We hope this manual will be useful if you are curious about any of these questions.

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What kind of products does Gulf Coast have? What metal and color choices are available?  
See **Product Selection** (see page 3).

What should I be thinking about when I am designing or specifying a metal roof (as a property owner, a designer, and/or an installer)? What are some important considerations to keep in mind?  
See **Roof System Design** (see page 5).

How does a metal roof get installed? Can I do this myself? See **Installation** (see page 8).

How can I figure out how much material I need (and how much will it cost)? See **Estimating Materials** (see page 11).

What about trim? What kind of trim do I need and how is it installed? See **Trim Details** (see page 13).

How many fasteners do I need? What spacing should I use? How can I be sure my roof won't blow away? See **Load Tables** (see page 18).

What about building codes? See **Appendix B** (see page 31).

What is the HVHZ, and what do I need to know about it? Short answer: if you're not in Miami-Dade or Broward counties in Florida, you can ignore this. If you are working those two counties, see **Appendix C** (see page 34).

Even with 50 pages, it's just not possible to fit everything in one manual. Please check out our website at [www.gulfcoastsupply.com](http://www.gulfcoastsupply.com) for more information on panel profiles, colors, product approvals, project photos, and more. Or give us a call at (888) 393-0335.

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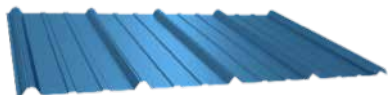
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# Product Selection

## Product Lineup

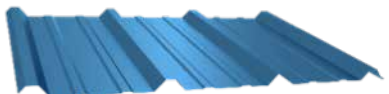
Gulf Coast Supply & Manufacturing produces the following four exposed fastener panel profiles:



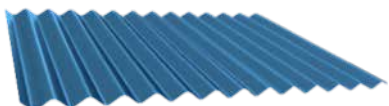
GulfRib™ is a panel made popular initially by its use in agriculture applications. GulfRib™ has a  $\frac{3}{4}$ " tall rib spaced at 9" and a total panel coverage of 36". This panel has also gained popularity in residential and light commercial construction and is available in 29ga steel, making it a very cost-efficient profile.



5V Crimp is the timeless old Florida look that is most common in residential settings but is also suitable for light commercial applications. 5V Crimp has a  $\frac{7}{16}$ " tall rib spaced at 12", with 24" of panel coverage. Double ribs on the panel edges create the classic 5V look.



GulfPBR™ is a typical R-Panel and is commonly used for residential and commercial applications. GulfPBR™ has a 1- $\frac{1}{4}$ " rib at 12", with a panel coverage of 36". The taller rib creates a stiffer panel for longer open spans (up to 5') and provides better resistance to flooding of the rib.



GulfWave™ is a classic corrugated panel. It is used in residential and light commercial roofs but is also commonly installed as wainscoting, interior accents, and other architectural uses. GulfWave™ has a corrugation depth of  $\frac{3}{4}$ " (from peak to trough), with peaks spaced at 8" and a total coverage of 29".

Most profiles are available with striations (as seen in 5V Crimp above), mini ribs (as seen in the GulfRib™ above), or flat.

## Panel Materials

Gulf Coast Supply produces roofing panels in 55% aluminum-zinc alloy coated 29ga, 26ga, and 24ga steel. Some panels are also available in 0.032 and 0.040 aluminum as well as stainless steel and pure copper. Depending on the project specifics, additional materials may be used for limited production runs. **Not all panels are available in all materials—typically exposed fastener panels are produced from steel.**

## Paint Options

Most panels are offered in three paint options. The Kynar®<sup>1</sup> Fluoropon® 70% polyvinylidene fluoride (PVDF) is the highest performing paint available, with superior UV resistance and outstanding color retention. The PVDF resin provides excellent chalk resistance while mostly ceramic pigments hold color well over time. The silicone modified polyester (SMP) chemistry has improved vastly over the years, but still lags the PVDF resins in chalk and color

<sup>1</sup> Kynar and Kynar500 are registered trademarks of Arkema Inc. Fluoropon is a registered trademark of The Valspar Corporation. Galvalume is a registered trademark of BIEC International Inc.

performance. SMP paints are harder and can offer more scratch/abrasion resistance, but the hardness can also make them brittle. Finally, a mill-finish, bare/unpainted steel is available with an acrylic finish. The mill finish metal has a hot dip AZ55 aluminum-zinc coating (generally superior to galvanization and sometimes referenced by the tradename Galvalume®). Note that the mill finish will oxidize and darken over time and may not occur evenly. The mill finish is also susceptible to smudges or other markings during installation.

## **Warranties**

Gulf Coast Supply & Manufacturing offers warranties for both corrosion of the base metal, as well as paint performance (chipping/peeling/cracking, chalking, and fading). Please refer to [www.gulfcoastsupply.com](http://www.gulfcoastsupply.com) or contact a sales representative (888-393-0335) for the most recent warranty information.

## **Life-Cycle Costs**

A common objection to metal roofing is the perception that it is more expensive. This is really only a high “initial cost”—when considered over the life of the facility, the total “life-cycle cost” of metal is often lower than other roof options. The life-cycle cost considers the total expected cost to maintain and repair a building system over the entire life of the building. For example, a shingle roof might be expected to last 20 years while a metal roof may be expected to last 40 years. This means the property owner would have to purchase two shingle roofs but only one metal roof over a 40-year period. When considering life-cycle costs, the durability of metal roofing often results in a lower total cost of ownership than shingles, despite a higher initial cost. See the “Metal vs Shingles” page at [www.gulfcoastsupply.com](http://www.gulfcoastsupply.com), which links to an ongoing study that projects 60-year life expectancies for some metal roofs.



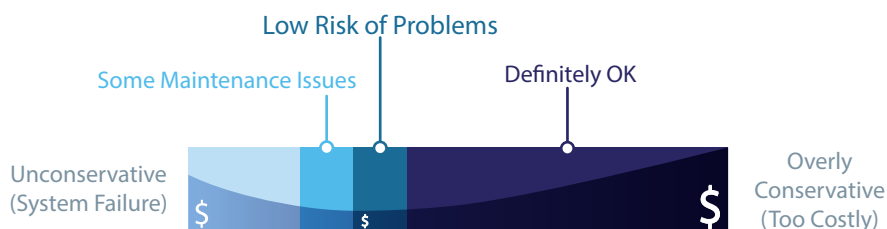
# Roof System Design

## Design Philosophy

The instructions and details presented in this manual are the manufacturer's recommendation for a quality installation of metal roofing products produced by Gulf Coast Supply & Manufacturing. The manufacturer recognizes there are multiple acceptable methods of installation and that design and construction practices can vary widely by contractor, designer or locale. Furthermore, the recommendations contained herein are intended for a typical roof; the specifics of any installation may drive different requirements.

The design of a facility falls along a spectrum which must balance cost and risk. An attempt to completely eliminate risk would result in a cost-prohibitive design that is overly conservative (refer to image). On the other hand, a design which accepts too much risk may fail and cause property damage, serious injury, or death.

**It is the responsibility of the designer to specify a design which establishes a balance between cost and risk that is acceptable for the intended facility use.** Even an outstanding design will still require some maintenance and/or repair throughout the lifespan of the facility.



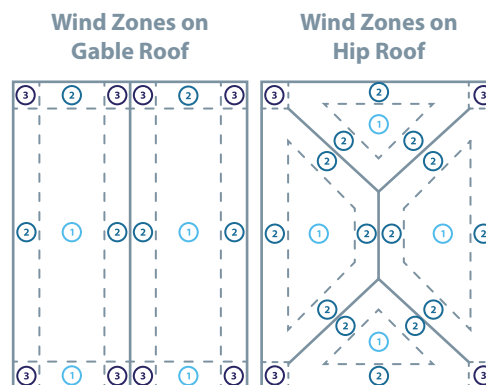
The minimum standards in this manual provide a low cost, generally low-risk installation. Recommended components or design standards will further reduce the risk of water intrusion, wind damage, or other maintenance/repair needs.

## Water Tightness:

- Pipes and other penetrations are common areas for leaks to develop. When these penetrations are necessary, take extra care to flash and seal properly.
- Installing the proper trim items and panel closure strips will reduce the risk of water intrusion at roof edges and transitions, which are high-risk areas for leaks to develop.
- Use of a quality underlayment on the decking beneath the metal panels provides an important secondary water barrier. Underlayment is required by code in many areas, and Gulf Coast Supply recommends it in most scenarios. Generally speaking, a synthetic self-adhering (peel and stick) underlayment provides the highest level of protection, synthetic through-fastened underlayment provides a mid-level water barrier, and asphalt roofing felt provides the minimum performance required by code (when applicable).
- Gulf Coast Supply highly recommends use of full length panels that run from ridge to eave in order to eliminate end laps (another common source of leaks).
- Exposed fastener panels (panels fastened directly through the panel) will have hundreds of holes where the fasteners are installed. The use of properly installed roofing screws with sealing washers should effectively seal these penetrations. A hidden fastener system (sometimes referred to as a standing seam roof) can virtually eliminate the risk of water intrusion at the fastener.
- Metal on metal connections are typically not watertight unless a sealant (butyl tape or caulk) is applied between the metal pieces. Therefore, it is critical that sealant be used when watertight connections are required. Some examples of metal on metal connections are panels attached to trim, trim attached to trim, and panels attached to panels.

## Wind Performance:

- The wind load which a roof experiences is based on location and dimensions of the building. Discontinuities, or areas where the roof changes direction/slope, will be exposed to higher pressures than the field of the roof. Typically roof pressures are described in three zones: zone 3 consists of corners, zone 2 includes edges (ridges, eaves, & gables), and zone 1 represents the field.
- In most cases, exposed fastener roof systems fail when the fasteners pull out from the decking. Therefore, ensuring proper installation of fasteners is critical to achieve the desired wind performance. Gulf Coast Supply provides load tables which indicate the required fastener spacing for each roof zone in different wind speeds.
- Roofs are typically designed primarily for “uplift” loads—the effect of a strong wind will essentially pull the roof upwards. Therefore, it is important to think of wind performance as a continuous “load path.” When the wind pulls upward on a roof, that force is transmitted by fasteners to the roof deck, which transfers the force by fasteners to the rafters/roof structure, which further transmits to the walls, and on to the foundation. The weakest link along the load path will cause the system to fail, even if all other components perform satisfactorily. A metal roof panel may be able to resist hurricane force winds, but if the fasteners have been overtightened and stripped out the plywood decking, the system may not perform as desired. Structural assessment and design can be a complicated endeavor, and the services of a qualified entity may be helpful/necessary.



## Oil Canning:

- Oil canning is a visible waviness in the flat areas of a roofing panel. It is an intrinsic aspect of cold formed, light gauge metal panels but is typically an aesthetic issue only. **Oil canning is not a defect and is not a reason for rejection.**
- The risk of oil canning can be reduced by selecting heavier gauge metals, specifying striations (large, flat areas are most prone to oil canning), ensuring a completely flat/square/level deck (deck imperfections will reflect through the panels), properly driving fasteners (over driving creates stresses in the panel), and ensuring proper handling and storage during construction (twisting/bending panels will introduce internal stresses).

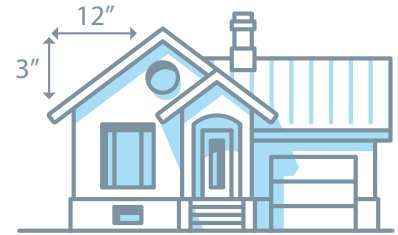
## Dissimilar Metals & Galvanic Corrosion

Dissimilar metals in contact are at risk for galvanic corrosion. To avoid this, a roof system must be properly designed and specified to ensure that dissimilar metals are not in contact with roof panels or located upstream of roof panels. Copper and lead present a particularly high risk of galvanic corrosion, and materials containing copper and/or lead must not be installed in contact or upstream<sup>2</sup> of metal roof panels. Damage due to galvanic corrosion is NOT covered by warranties. Note that most treated lumber contains copper-based substances—metal roof panels installed in contact or downstream from treated lumber are at increased risk of galvanic corrosion and rust-staining.

<sup>2</sup> Since virtually all metals will leach some particles into rainwater, any case of dissimilar metal installed such that rain runoff will travel from the dissimilar metal before contacting a metal roof panel is considered “upstream,” and presents an increased risk of galvanic corrosion and rust staining.

## Roof Slope/Pitch

All Gulf Coast Supply roofing panels can be installed on slopes of 3:12 and greater (3" of vertical rise/drop for every 12" of horizontal run). For low slope installation below 3:12, please contact Gulf Coast Supply. Most panels can be installed to 1:12 slope if the side laps are sealed, and even lower slopes may be permitted on a case-by-case basis.

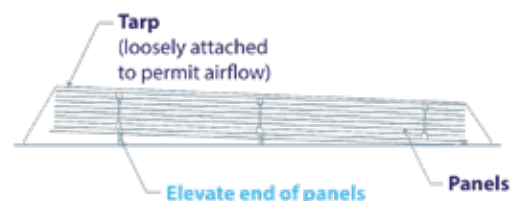


Determining Roof Pitch/Slope

# Installation

## Storage and Handling

Metal roofing panels are designed to shed water, not to hold water for an extended period of time. Thus, it is important to store panels dry—position a stack of panels away from standing water, elevate one end to allow water drainage, and cover loosely with a tarp as shown in the image. Storing panels under cover or indoors is recommended. Panels must NOT be stored in vicinity of: saltwater, corrosive chemicals, pressure treated lumber, fertilizer, or other chemicals. When handling panels, be sure to support the panel to avoid damage from bending of the panel. In general, no more than 1/3 of the length of a panel should be unsupported.



## Preparing the Roof Deck

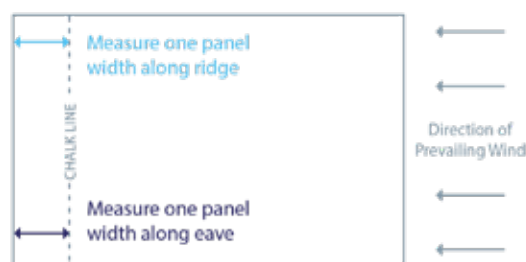
In most cases, the rafters or roof trusses will be covered with a sheathing material (plywood, OSB, etc.) which is then covered with underlayment. The design and construction of the roof structure and decking is outside the scope of this document. However, it is important to note that a poorly prepared roof deck will likely result in a poorly installed metal roof. The roof panels will generally match the shape of the roof deck—if there are ridges in the underlayment, uneven decking or other high areas, these imperfections will likely show through the metal panels.

## Order of Installation

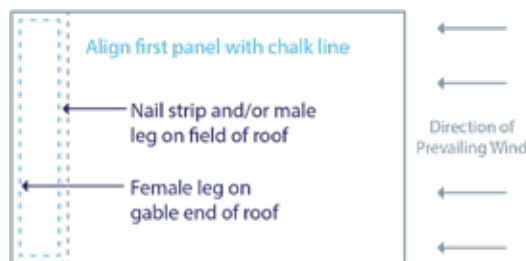
Typically, eave drip, valley trim, and transition trim are installed with the underlayment during dry-in. Metal panels are installed next. Finally, ridge/hip caps, gable trim, and end/side wall trim are installed last. (Note that not all trims will be required in all cases.)

## Installing Metal Panels

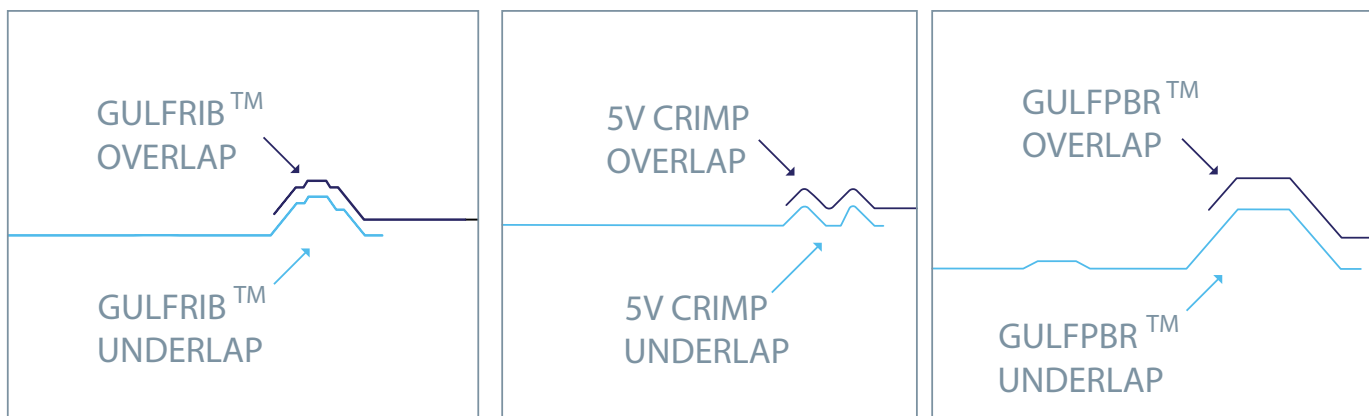
Start at the gable end opposite the prevailing rain-bearing wind. (If there is not a prevailing wind direction, start at either gable end.) Install the first panel with the overlap side along the gable. It is common to measure one panel width along the ridge and the eave, and to chalk a line between these points. (See images) Aligning the panel edge with this line will help set the first panel. **It is extremely important to set the first panel square; any deviation will ripple across all of the remaining panels.**



GulfRib™, 5V Crimp, and GulfPBR™ panels have a specific underlap side and an overlap side. The underlap side must be installed towards the field of the roof and the overlap edge of the next panel installed above the underlap edge of the previous panel. This places the bearing edge of the underlap on the decking or purlins, and ensures that the anti-siphon channel performs properly. Please refer to the schematics below to identify the over and underlap edges. Note that Gulf Wave™ does not have a specific underlap or overlap side.







## Fastening Metal Panels

Fastener withdrawal or fastener pullout is the most likely failure mode for an exposed fastener roof system. Furthermore, fasteners are a high-risk area for leaks. Therefore, **correct installation of fasteners is critical to ensure performance of the roof.** Overtightening can strip out the plywood decking (or similar) and create a depression in the panel, while under-tightening will not provide a watertight seal (refer to image). Ensure that fasteners are driven straight and that the washer is compressed slightly without creating a depression in the panel.

Use drill/drivers, screw guns or similar tools with maximum **RPM of 2,500**. Depth-sensing nose pieces are recommended to ensure consistent tightening of fasteners. **Impact drivers are not recommended** as they may overdrive or damage the fastener.



Install the number and spacing of fasteners as required by the load tables contained in the product approvals and this document.

**Remove metal shavings/fragments that are produced at each screw hole and cut edge. Failure to brush off or otherwise remove all of these metal shavings will result in rusting.**

## Field Cutting Metal Panels

Tin snips or electric nibbler/shear tools are recommended for field cutting panels. Cutting a metal panel with any device will create small slivers of metal that must be removed from the panel to avoid rusting or damage to the panel. **The use of circular saws or other abrasive cutting tools is not recommended** as these tools will create significant heat which can burn the panel coating and may produce tiny, hot metal particles which can become embedded in the panel finish. Both of these conditions are likely to result in premature rust and corrosion of the panels.

## Care and Maintenance

Gulf Coast Supply recommends that a metal roof be assessed annually to check for any damage or deterioration. This can be done from the ground in most cases (binoculars may be helpful). Consider visually assessing the following items:

- Look for water stains both outside and inside the building (if possible) that may indicate a leak.
- Check for missing, loose, or deteriorated fasteners. Thermal expansion and contraction of the metal, foot traffic, and wind-induced movement may back fasteners out or otherwise compromise the fastener performance. Overtightened/over torqued fasteners are especially susceptible to back out over time.

Tighten or replace fasteners as needed.

- c. Assess condition of any visible sealant. Metal roof longevity studies indicate that sealants are often the first component to fail. Replace cracked or peeling sealant.

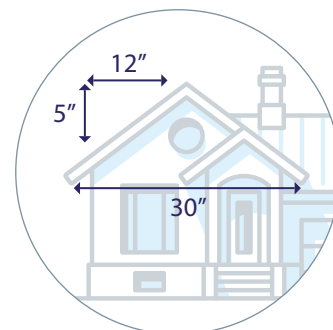
Remove loose debris and clean the roof as needed. Mild biodegradable cleaners, household ammonia, or household bleach may be used when necessary (dilute ½ cup of 5% bleach in 1 gallon of water). Consult the warranty information or contact the manufacturer for more information on your specific system.

# Estimating Materials

## Panel Length

Panel lengths can be determined by measuring the distance from ridge to eave, or estimated via the following method:

Divide the building width in half and multiply by the appropriate slope factor shown. Add 1"-2" as desired for overhang at the eave, and take off ½" to 2" gap at the ridge (if desired). For example, a 30' wide building at a 5/12 slope would be: 30' divided by 2 is 15', times 1.083 is 16'-3" (round to nearest inch). Add 2" for eave overhang and subtract 1" for a gap at the ridge for a final panel length of 16'-4".



## Number of Panels

Each panel has a specified "coverage." The actual panel width will be greater than the coverage, however part of each panel will be overlapped by the adjacent panels, so the net exposed width is the coverage. To determine how many panels will be required, divide the eave or ridge length by the coverage. Round up to the nearest whole number. For example, a 30'-6" ridge length with GulfRib™ panels (36" coverage) would need: 30'-6" divided by 36" for 10.17 panels, which is rounded up to 11 panels. It is often a good idea to order one or several extra panels.

Roof Slope	Slope Factor
1/12	1.003
2/12	1.014
3/12	1.031
4/12	1.054
5/12	1.083
6/12	1.118
8/12	1.202
10/12	1.302
12/12	1.414

## Number of Fasteners

The number of fasteners depends on the panel selected, the fastener pattern in use, and the fastener spacing. The table below can be used to determine the number of fasteners by multiplying the square feet or linear feet by the factor shown. For example, consider a 525-square foot roof with the GulfRib™ panel using one fastener per rib, at 24" on center (o.c.). This is pattern A for GulfRib™, and will require 525 square feet times 0.67 fasteners for 351.75 fasteners, which will be rounded up to 352. Most fasteners are sold in bags of 250, and it is a good idea to order 10-15% extra fasteners just in case.

Panel Type	Fastener Pattern	Spacing (o.c.)	Fasteners per sq. ft.	Fasteners per lin. ft.
GulfRib™ Pattern A	9"-9"-9" (1 fastener per rib)	24"	0.67	2
GulfRib™ Pattern B	6.5"-2.5"-6.5" (2 fasteners per rib)	12"	2.67	8
GulfRib™ Pattern A1	9"-9"-9" (1 fastener per rib)	24"	0.67	2
GulfRib™ Pattern B1	9"-9"-9" (1 fastener per rib)	12"	1.33	4
GulfRib™ Pattern C1	9"-9"-9" (1 fastener per rib)	6"	2.67	8
GulfRib™ Pattern A4	9"-9"-9" (1 fastener per rib)	48"	0.33	1
GulfRib™ Pattern B4	6.5"-2.5"-6.5" (2 fasteners per rib)	48"	0.67	2
GulfRib™ Pattern B2	6.5"-2.5"-6.5" (2 fasteners per rib)	24"	1.33	4
5V Crimp Pattern A	12"-12" (1 fastener per rib)	16"	0.75	1.5
5V Crimp Pattern B	12"-12" (1 fastener per rib)	12"	1.00	2
5V Crimp Pattern C	12"-12" (1 fastener per rib)	6"	2.00	4
5V Crimp Pattern A1	9.5"-2.5"-9.5" (2 fasteners per rib)	16"	1.13	2.25
GulfPBR™ Pattern A	12"-12" (1 fastener per rib)	24"	0.50	1.5
GulfPBR™ Pattern B	7"-5"-7" (2 fasteners per rib)	12"	2.00	6
GulfPBR™ Pattern A2	12"-12" (1 fastener per rib)	24"	0.50	1.5
GulfPBR™ Pattern A3	12"-12" (1 fastener per rib)	36"	0.33	1
GulfPBR™ Pattern A4	12"-12" (1 fastener per rib)	48"	0.25	0.75
GulfPBR™ Pattern A5	12"-12" (1 fastener per rib)	60"	0.20	0.6
GulfWave™ Pattern A	8"-8"-8"-5.33" (every 3rd valley)	24"	0.83	2

For rough, rule-of-thumb numbers, the below table can be used for estimates:

Panel Type	Fasteners per sq. ft.	Fasteners per lin. ft.
GulfRib™	0.9	2.7
5V Crimp	1	1.8
GulfPBR™	0.67	2
GulfWave™	0.85	2

## Number of Trim Pieces

Most trims are sold in 10' lengths. To calculate the number trim pieces required, measure each ridge, valley, eave, gable, etc., and divide the measurement by 10'. See the trim details later in this manual for more information on trims. Note that most trims require a minimum overlap of 4".

## QuickQuote™ Service

Gulf Coast Supply is pleased to offer free of charge a QuickQuote™ service which can create a detailed estimate of the panel and trim requirements for any roof requirements. This estimate can be created from satellite imagery (if available), blueprints/drawings, or even a simple sketch with dimensions. Contact Gulf Coast Supply for more details about this service.

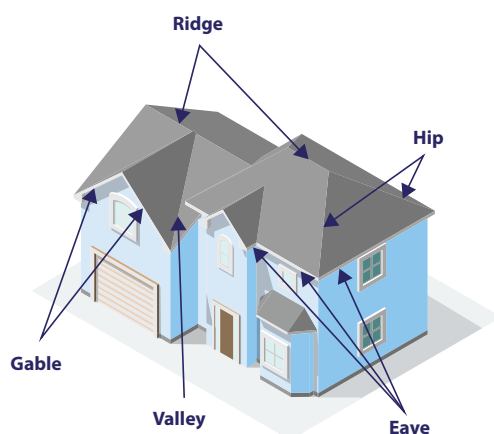
# Trim Details

Metal trim (referred to interchangeably as trim or flashing) is a critical component to provide a watertight roofing system and is required by code in specific areas. Flashing/trim consists primarily of specifically formed metal pieces to provide watertight details around corners, edges, penetrations, and other areas of the roof which are likely to leak. Some building codes may require more stringent or different standards than those contained herein—the more stringent requirement always takes precedence. **Consult the applicable building code for each project to ensure code compliance.** Gulf Coast Supply maintains a number of Florida Product Approvals (FPAs) that indicate code compliance with the Florida Building Code (FBC)<sup>3</sup> and the High Velocity Hurricane Zone (HVHZ, defined as Miami-Dade and Broward counties)<sup>4</sup>. These products must be installed per the requirements of the FPA and this detail manual.

Because intended uses of a structure and the design thereof will vary widely, it is not possible to prescribe a single standard that is suitable in every situation. Therefore, the owner, designer, and installer must develop and agree on the appropriate details and specifications to employ. For example, consider an unoccupied, 100 square-foot shed that is not located in a hurricane prone region. A much lower quality roofing system may be acceptable and appropriate for this use. Conversely, a large multiple story, multiple family residence on the beach in south Florida will have a much greater requirement for watertightness, structural performance, and resistance to wind driven rain.

The details and commentary in the following pages are intended to provide a baseline, minimum standard that is acceptable for a low-end application (e.g. the shed described above). It is ultimately the owner's responsibility (often delegated via contract to a designer and/or installer) to determine and select the details and specifications that are appropriate for each project. **As the requirements of each project will vary, Gulf Coast does not warrant the fitness or suitability of any details or design for any specific project<sup>5</sup>.** Gulf Coast Supply may provide advice on design and details; however this is strictly limited to a manufacturer's recommendation, and does not guarantee code compliance or fitness for use with a specific project. The services of a design professional should be employed if this is required.

## Common Trim Locations



<sup>3</sup> Refer to Appendix B for FBC excerpts.

<sup>4</sup> Note that the HVHZ has certain specific standards which are mandated by the FBC. These standards are summarized in Appendix C, but the FBC should be consulted as required to ensure compliance.

<sup>5</sup> The one notable exception is the weathertightness warranty program, which may warrant the weathertight performance of a roofing system under specific circumstances.



## Eaves

The bottom edge of the roof, or the eave, is protected with eave drip to provide a continuous metal surface for water to runoff from the roof to the ground. Fascia trim is recommended below the eave drip to fully cover the structural member. Except in unique cases, eave drip is installed before the panels.



- 4" overlap (minimum). Sealant (caulk or butyl tape) to seal laps is recommended, but not required.
- Fasten into roof deck with low profile fastener (or other fastener) to match panel fastener spacing along eave.
- Fastening of exposed face is not required for faces less than 4". If desired, fasten through the exposed face using fasteners with sealing washers.
- Closures may be omitted if owner, designer, and installer agree. However, the resulting assembly will NOT be protected from wind driven rain. Insects and other foreign matter may also access these openings.
- If closures are installed, drive panel fasteners through the closures or just above the closures.

## Ridges

The top of the roof, or the ridge, is made watertight with a ridge cap. There are a variety of styles, sizes, and method of attachment, but the concept is the same. Butyl tape (or sealant) and foam closures are recommended to provide watertightness and protect against wind driven rain. Ventilated closures are available for most panels and should be used if ventilation is desired.



- 4" overlap (minimum). Sealant (caulk or butyl) to seal the laps is recommended, but not required.
- Drive fasteners with sealing washers through both sides of the ridge cap and into the roof deck. Use fasteners which are long enough to reach the roof deck or structure below the panel and match the fastener spacing used for the panel at the ridge. It is typically best to fasten through the panel rib to avoid deforming the ridge cap.
- Closures may be omitted if owner, designer, and installer agree. However, the resulting assembly will NOT be protected from wind driven rain. Insects and other foreign matter may also access these openings.
- If closures are installed, drive ridge cap fasteners through the closures or just above the closures.
- Box off the end of the ridge cap and use sealant and rivets as needed to secure.
- Vented closures are available for most panel types and may be used in place of traditional closures.

## Hips

Hips are similar to ridges, in that it is a high point where panels meet. Where hips differ is that a hip is sloped while a ridge typically maintains a constant elevation. Hips are made watertight with ridge cap as described and shown above, with the following additional notes:

- Vented closures are not recommended for hips unless the ventilation design prescribes it. Ventilation design typically recommends that exhaust points be located at the same elevation.
- Hip closure tape (e.g. "Peel and Seal") may be used in place of other closure methods.
- Install from eave to ridge (bottom to top) so that runoff does not feed into an overlap.

## Gables

The open sides of a roof, or gable ends, are protected with gable trim. There is a variety of styles, sizes, and methods of attachments, but two primary designs. An eave drip (or similar) can be installed underneath the panels, or a gable rake (or similar) can be installed over the panels. In either case, the use of butyl tape or sealant is recommended to ensure a watertight seal between the roof panel and the trim. Fascia is recommended to fully protect the structural member.



- 4" overlap (minimum). Sealant (caulk or butyl) to seal the laps is recommended, but not required.
- Install from eave to ridge (bottom to top) so that runoff does not feed into an overlap.
- Fasten into the panel/roof deck and into the exposed face on the gable side with the same panel fastener spacing used along the gable. Use fasteners with sealing washers.
- Box off the end of the gable and use sealant and rivets as needed to secure.
- If an eave drip trim is used underneath the panel vice the gable rake trim over the panel, the fastener in the exposed face on the gable is optional. Follow the eave requirements described previously.

## Valleys

Valleys are low points where two slopes meet. Valleys are high risk areas for leaks, and must be carefully flashed and installed. Valley trim is installed before the panels so that the panels can overlap and provide an uninterrupted drainage plane.



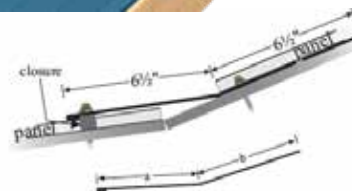
- 12" overlap (minimum). Sealant (caulk or butyl tape) to seal the laps is required.
- Expanding foam and sealant (caulk or butyl) is required to seal the exposed ribs.
- Install from eave to ridge (bottom to top) so that runoff does not feed into an overlap.
- The valley should be designed to keep the depth of water from the design rain storm from flooding the ribs.

## Transitions

Some roof designs will include roof sections at different slopes. Where these slope changes occur, install a transition trim. Working from bottom to top, install the lower panels followed by the transition trim. The transition trim will overlap the lower panels and underlap the upper panels to provide a continuous drainage path. Use of butyl tape (or sealant) and foam closures is recommended to provide a watertight connection and to protect against wind driven rain. The upper panels are installed over the transition trim to complete the uninterrupted drainage plane.



A gambrel style roof may change slopes several times, with steeper slopes on the lower sections of the roof. Install gambrel flashing in the same manner as a typical transition trim.



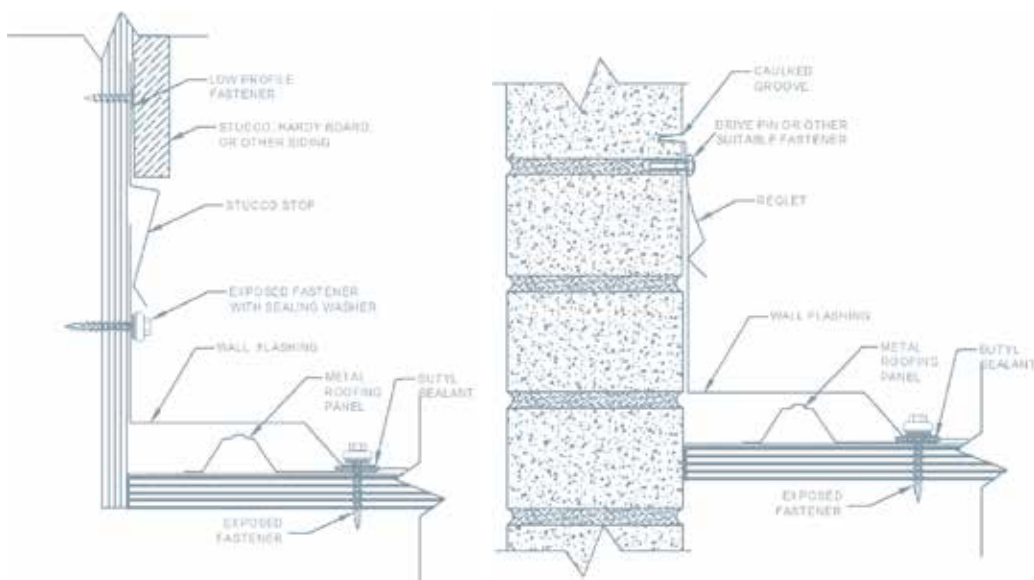
- 4" overlap (minimum). Sealant (caulk or butyl tape) to seal the laps is recommended but not required.
- Closures may be omitted if owner, designer, and installer agree. However, the resulting assembly will NOT be protected from wind driven rain.
- If closures are installed, drive fasteners through the closures.
- Use fasteners with sealing washers on both sides of the transition flashing and matching the panel fastener spacing.
- Install from eave to ridge (bottom to top) so that runoff does not feed into an overlap.

## Walls

Where the peak of a roof section meets a wall instead of a ridge, an end wall trim is used. As with most trims, many different styles, sizes, and methods can be employed. The use of butyl tape (or sealant) and foam closures is recommended to provide a watertight system and to protect against wind driven rain.

Similar to the end wall trim, when the side of a roof section meets a wall instead of a hip or a gable, a side wall trim is used. Side wall trim is installed similarly to the end wall.

- 4" overlap (minimum). Sealant (caulk or butyl tape) to seal the laps is recommended but not required.
- Closures/butyl may be omitted if owner, designer, and installer agree. However, the resulting assembly will NOT be protected from wind driven rain.
- If closures/butyl are installed, drive fasteners through the closures/butyl.
- Use fasteners with sealing washers for attachment through panels.
- If fasteners attaching the wall trim to the wall are exposed, use fasteners with sealing washers and match the panel fastening pattern along the wall. If the fasteners will be covered by siding, low profile fasteners may be used.
- Install from eave to ridge (bottom to top) so that runoff does not feed into an overlap.
- Box off the end of the side wall or endwall trim and use sealant and rivets as needed to secure.
- There are a number of wall flashing options—two additional methods are shown below.



## Roof Penetrations

Since penetrations are literally holes in the roof, and since holes in the roof cause leaks, it is of critical importance that all penetrations be properly flashed and sealed. Pipe boots are recommended for pipes (e.g. vent stacks), and should be installed as shown. Install pipe boots with a continuous bead of sealant and fasteners at least every 1" as needed to ensure a complete seal. Skylights and chimneys are installed with a combination of end wall and side wall trims as shown. Large penetrations (greater than 30" in width) typically require a structure called a cricket to divert water around the penetration.



- Use sidewall flashing on the sides, endwall on the downhill side, and typically a chimney flashing on the uphill side. Construct from the downhill side working up so that all laps provide a continuous drainage path.
- Use closures and butyl (or similar sealant) to ensure watertight connections between all metal components.



1  
Choose pipe opening and trim



2  
Slide over pipe



3  
Form to roof profile



4  
Apply sealant



5  
Fasten to complete

## Panel Laps

Gulf Coast recommends using full length panels, with a single panel running from ridge to eave. When this is not possible, the ends must be lapped a minimum of 12" and sealed completely with sealant or butyl tape.



# Load Tables

Gulf Coast Supply maintains load tables for each product in various installation conditions. These load tables indicate the fastening requirements for the roof zones and wind speeds shown. Because building design and site considerations impact the wind load and response characteristics, these tables only consider a generic “typical” installation. These tables ONLY APPLY when the indicated requirements are met. Refer to each load table for the specific requirements.

If unique considerations exist beyond the scope of this load table, the services of a design professional may be required. Subject to additional site-specific design fees, Gulf Coast Supply & Manufacturing is able to complete most engineering services required or to refer a third-party design engineer.

## How to use the load tables:

If the intended installation meets the requirements listed, the tables provide a prescriptive design basis for selecting the appropriate fastener pattern and fastener spacing. Follow these steps to properly apply the load tables:

1. Determine wind speeds. Check with the local building department to determine if the municipality has adopted a wind speed requirement. Some municipalities permit the use of [windspeed.atcouncil.org](http://windspeed.atcouncil.org). If a wind speed is not prescribed, there are tables in ASCE 7 and the Florida Building Code which can be used to determine the design wind speed (see next few pages). Furthermore, some project specifications may stipulate a different requirement. Be sure to check all applicable sources.
2. Select the page for the appropriate panel profile.
3. Find the material (e.g. 24ga/26ga/29ga steel) and the substrate (e.g. plywood, 1x4 purlins, OSB, steel deck, or steel/wood framing) being considered.
4. Find the wind speed column for the selected material and substrate; note the fastener pattern for each zone.
5. Use the roof layout images to determine the location and extent of zones 1, 2, and 3.
6. Reference the fastener pattern images to determine the fastening details. Install the roofing panels in each zone with the required fastener pattern and spacing.

## Notes:

- Fastener spacings shown are the maximum allowable spacings. Use of reduced spacing (i.e. installing more fasteners) is acceptable and meets the intent of these load tables.
- Material thicknesses are minimum values. Use of thicker material (e.g. using 26ga instead of 29ga or using 0.040 when the table lists 0.032) is acceptable and meets the intent of these load tables.
- Fasteners listed are minimum diameter fasteners. Larger diameter fasteners are acceptable and meet the intent of these load tables.
- A dashed line indicates that the panel and substrate selected is NOT suitable for installation in that wind zone.
- For exposure D locations, please refer to Appendix C.

## Methodology:

- Uplift requirements are calculated using method 1 in ASCE 7-10.
- Design uplifts are calculated from uplift requirements using ASD load combinations. No downward loads are considered as counteracting the design uplift.
- Panel rated uplift capacities are reduced by factors of safety as required by FBC.
- The de-rated panel capacities are compared to the ASD design uplifts calculated.



## Panel Uplift Ratings

Each panel has been tested to TAS 125, UL580/UL1897, and/or ASTM E1592 in the various fastener patterns and substrates shown in the table. These ultimate uplift values are reduced by a factor of safety of 2.0 or as required by the Florida Building Code.

For projects where the wind uplift calculations have been completed for a specific project, compare the ASD/allowable design uplift pressures to the panel capacity uplifts shown. (Note that the rated panel uplifts are reduced by a factor of safety of 2.0 or as required by FBC—therefore these panel capacity values may be compared to the ASD/allowable design uplift pressures.)

Refer to Appendix A for 1x4 attachment requirements.

GulfRib™		
Fastener Pattern	Panel and Substrate	Uplift Capacity (psf)
A24	26ga on plywood/wood plank	71.75
B12	26ga on plywood/wood plank	159.25
A24	26ga on 1x4 on plywood/wood plank	109.25
B12	26ga on 1x4 on plywood/wood plank	164.75
A24	29ga on plywood/wood plank	56
B12	29ga on plywood/wood plank	101
C24	29ga on OSB	22.66
C12	29ga on OSB	53.33
C6	29ga on OSB	116
A24	29ga on 1x4 on plywood/wood plank	76.75
B12	29ga on 1x4 on plywood/wood plank	123.5
A24	29ga on 1x4 on OSB	101
A48	29ga on 22ga steel framing or 1x4 purlins	30
B24	29ga on 22ga steel framing or 1x4 purlins	100
B48	29ga on 22ga steel framing or 1x4 purlins	64.87

5VCrimp		
Fastener Pattern	Panel and Substrate	Uplift Capacity (psf)
A16	26ga on plywood/wood plank	94.25
B16	26ga on plywood/wood plank	131
A12	26ga on plywood/wood plank	108.5
A6	26ga on plywood/wood plank	156.5
A16	26ga on 1x4 on plywood/wood plank	149.25

GulfPBR™		
Fastener Pattern	Panel and Substrate	Uplift Capacity (psf)
A24	24ga on 16ga steel framing	150
A36	24ga on 16ga steel framing	120
A48	24ga on 16ga steel framing	90
A60	24ga on 16ga steel framing	60
A60	26ga on 16ga steel framing	40.00
C24	26ga on plywood/wood plank	60.00
D12	26ga on plywood/wood plank	154.75
C24	26 ga on 1x4 on plywood/wood plank	100.50
D12	26ga on 1x4 on plywood/wood plank	151.75

GulfWave™		
Fastener Pattern	Panel and Substrate	Uplift Capacity (psf)
A24	26ga on 15/32" plywood/wood plankwood	78.5

# Wind Speed Map

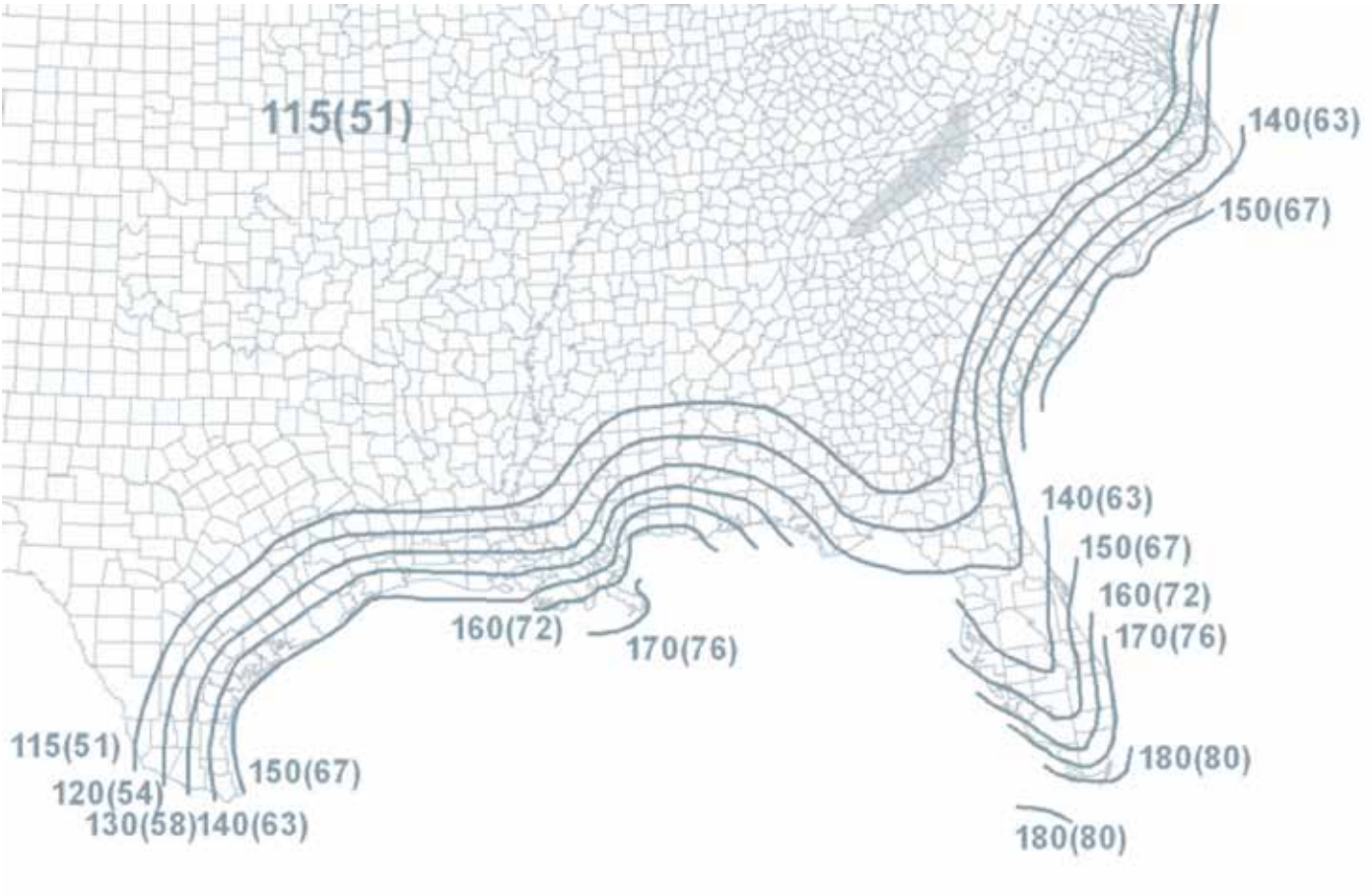
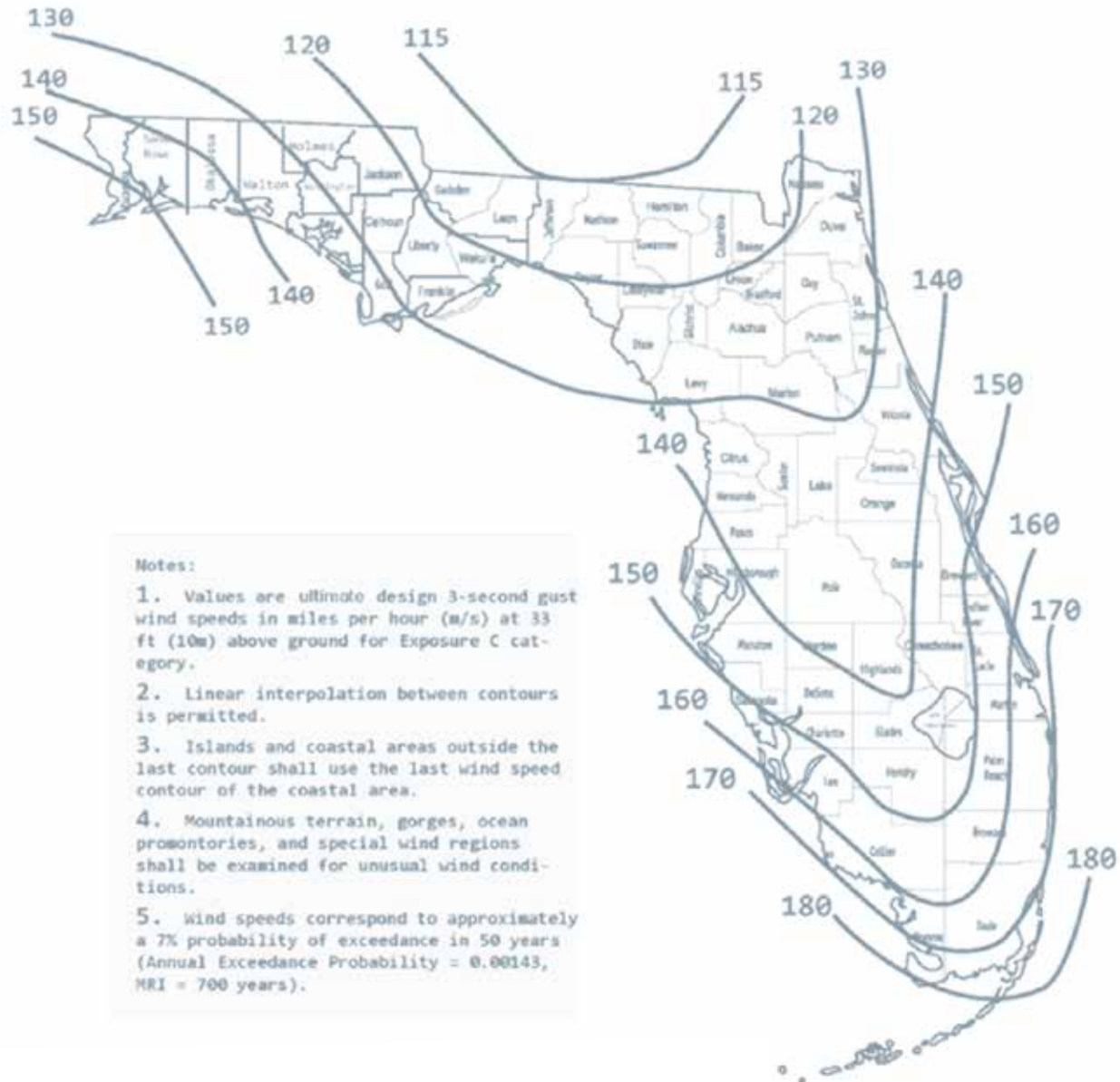


Figure 26.5-1A Basic Wind Speeds for Occupancy Category II Buildings and Other Structures (excerpt)  
From ASCE 7-10. Refer to ASCE 7-10 for full map and further details.

## Section 1609 Wind Loads



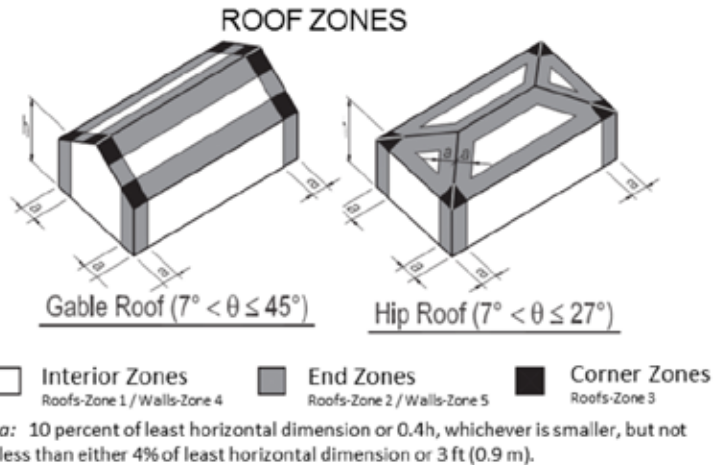
\*Note that this figure only applies for buildings classified as risk category II – this includes residential and most retail/office construction. Refer to FBC Table 1.5-1 for more information.

Figure 1609A Ultimate Design Wind Speeds,  $V_{ULT}$  for risk category II buildings and other structures

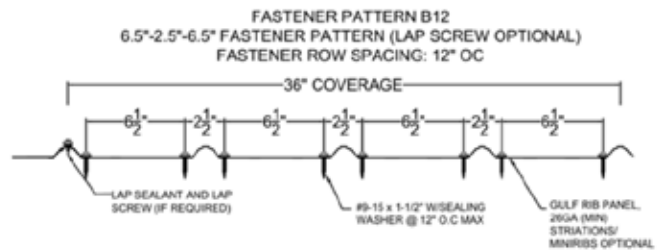
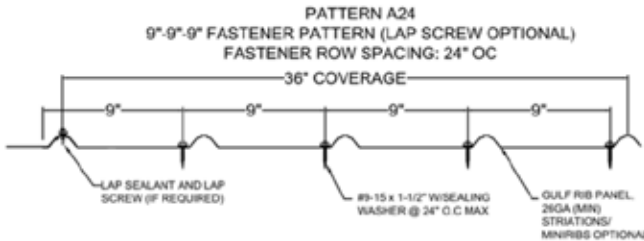
## 26GA (MIN) GULFRIB

### REQUIREMENTS TO USE THESE LOAD TABLES

- Site is located in **Exposure B**
- Structure has a **mean roof height of 30' or less**
- Roof is either a **gable roof with slope between 1.5:12 and 12:12**, or a **hip roof with slope between 1.5:12 and 6:12**
- Structure is a low rise, regular shaped building, per ASCE 7-10
- Site and structure are free of characteristics which would require further analysis (e.g. wind channeling/buffeting, across wind loading, vortex shedding, or instability due to flutter or galloping).



### FASTENER PATTERNS



### LOAD TABLES

26ga GulfRib on 15/32" (min) Plywood or Wood Plank									
Wind:	120	130	140	150	160	170	180	200	
Zone 1	A24	A24	A24	A24	A24	A24	A24	A24	A24
Zone 2	A24	A24	A24	A24	A24	A24	A24	A24	A24
Zone 3	A24	A24	A24	A24	A24	B12	B12	B12	B12

26ga GulfRib on 1x4 (nominal, min) Purlins on 15/32" (min) Plywood or Wood Plank									
Wind:	120	130	140	150	160	170	180	200	
Zone 1	A24	A24	A24	A24	A24	A24	A24	A24	A24
Zone 2	A24	A24	A24	A24	A24	A24	A24	A24	A24
Zone 3	A24	A24	A24	A24	A24	A24	A24	A24	A24

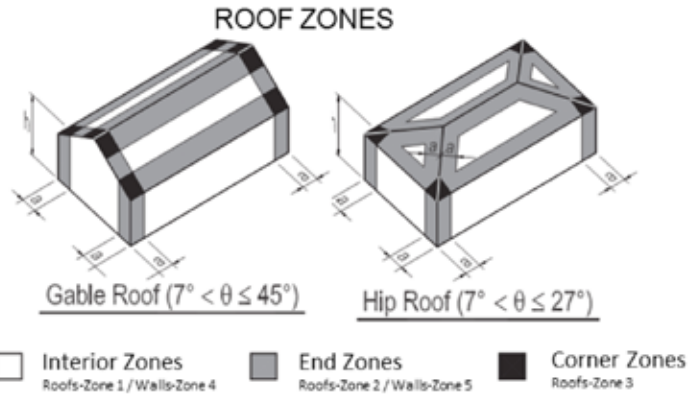
INSTALLATION IN MIAMI-DADE OR BROWARD COUNTY MUST MEET SPECIFIC HVHZ REQUIREMENTS. CONSULT THE FBC AND THE HVHZ SECTION OF THIS MANUAL.



## 29GA (MIN) GULFRIB

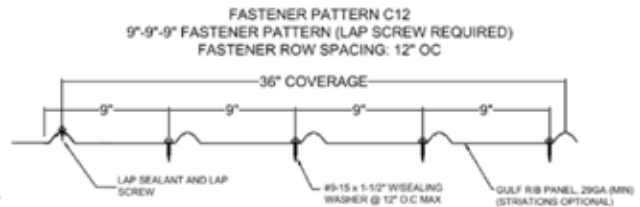
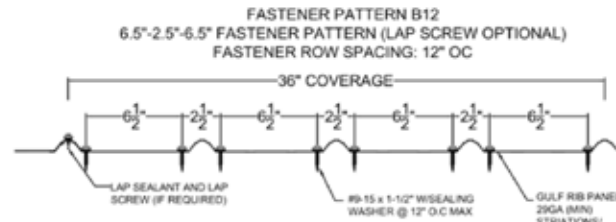
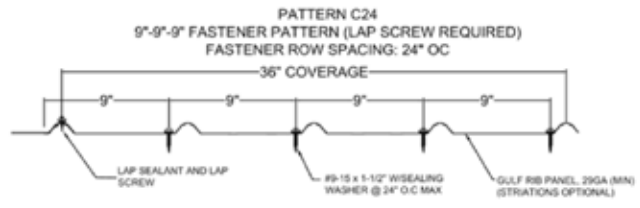
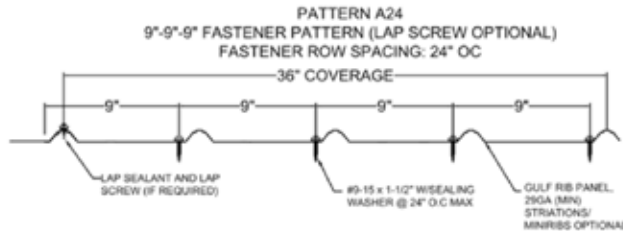
### REQUIREMENTS TO USE THESE LOAD TABLES

- Site is located in **Exposure B**
- Structure has a **mean roof height of 30' or less**
- Roof is either a **gable roof with slope between 1.5:12 and 12:12**, or a **hip roof with slope between 1.5:12 and 6:12**
- Structure is a low rise, regular shaped building, per ASCE 7-10
- Site and structure are free of characteristics which would require further analysis (e.g. wind channeling/buffeting, across wind loading, vortex shedding, or instability due to flutter or galloping).



a: 10 percent of least horizontal dimension or 0.4h, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m).

### FASTENER PATTERNS

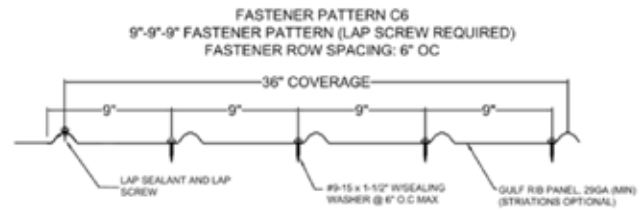


### LOAD TABLES

29ga GulfrRib on 15/32" (min) Plywood or Wood Plank (min #9 screw) (NOT APPROVED FOR HVHZ)									
Wind:	120	130	140	150	160	170	180	200	
Zone 1	A24	A24	A24	A24	A24	A24	A24	A24	A24
Zone 2	A24	A24	A24	A24	A24	A24	B12	B12	B12
Zone 3	A24	A24	A24	B12	B12	B12	B12	---	---

29ga GulfrRib on 7/16" (min) OSB (min #12 screw) (NOT APPROVED FOR HVHZ)									
Wind:	120	130	140	150	160	170	180	200	
Zone 1	C24	C24	C24	C12	C12	C12	C12	C12	C12
Zone 2	C12	C12	C12	C12	C12	C12	C12	C12	C6
Zone 3	C12	C12	C12	C6	C6	C6	C6	C6	C6

29ga GulfrRib on 1x4 Purlins on ply on 15/32" (min) Plywood or Wood Plank (min #9 screw) (NOT APPROVED FOR HVHZ)									
Wind:	120	130	140	150	160	170	180	200	
Zone 1	A24	A24	A24	A24	A24	A24	A24	A24	A24
Zone 2	A24	A24	A24	A24	A24	A24	A24	A24	A24
Zone 3	A24	A24	A24	A24	A24	A24	B12	B12	B12



29ga GulfrRib on 1x4 Purlins on 7/16" (min) OSB (min #9 screw) (NOT APPROVED FOR HVHZ)									
Wind:	120	130	140	150	160	170	180	200	
Zone 1	A24	A24	A24	A24	A24	A24	A24	A24	A24
Zone 2	A24	A24	A24	A24	A24	A24	A24	A24	A24
Zone 3	A24	A24	A24	A24	A24	A24	A24	---	---

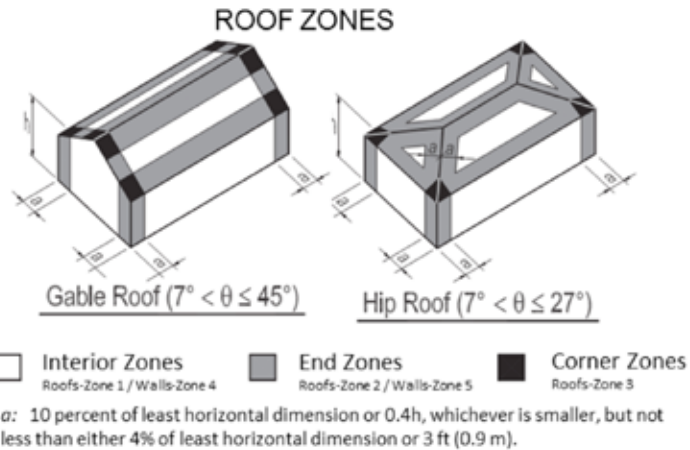
INSTALLATION IN MIAMI-DADE OR BROWARD COUNTY MUST MEET SPECIFIC HVHZ REQUIREMENTS. CONSULT THE FBC AND THE HVHZ SECTION OF THIS MANUAL.



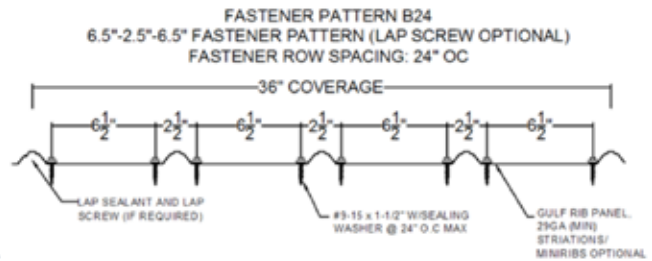
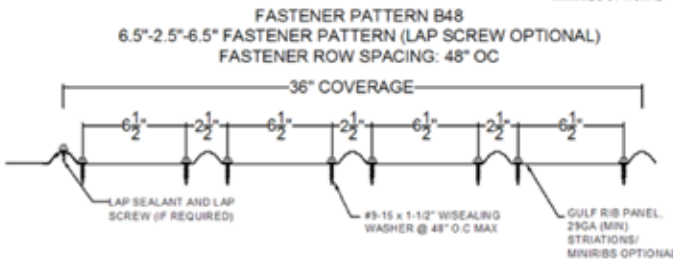
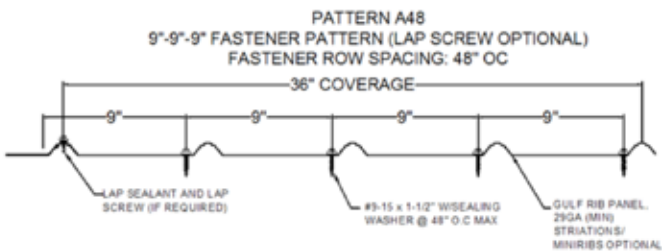
## 29GA (MIN) GULFRIB STRUCTURAL (OPEN FRAMING)

### REQUIREMENTS TO USE THESE LOAD TABLES

- Site is located in **Exposure B**
- Structure has a **mean roof height of 30' or less**
- Roof is either a **gable roof with slope between 1.5:12 and 12:12**, or a **hip roof with slope between 1.5:12 and 6:12**
- Structure is a low rise, regular shaped building, per ASCE 7-10
- Site and structure are free of characteristics which would require further analysis (e.g. wind channeling/buffeting, across wind loading, vortex shedding, or instability due to flutter or galloping).



### FASTENER PATTERNS



### LOAD TABLES

29ga (min) GulfRib on 22ga (min) Steel Purlins/Hat Channels (NOT APPROVED FOR HVHZ)								
Wind:	120	130	140	150	160	170	180	200
Zone 1	A48	A48	A48	A48	A48	B48	B48	B48
Zone 2	A48	A48	B48	B48	B48	B48	B48	B24
Zone 3	B48	B48	B48	B48	B24	B24	B24	---

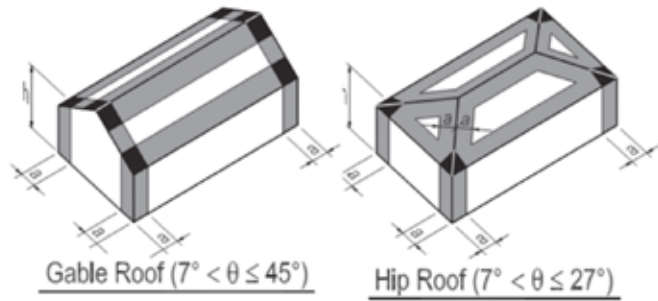
INSTALLATION IN MIAMI-DADE OR BROWARD COUNTY MUST MEET SPECIFIC HVHZ REQUIREMENTS. CONSULT THE FBC AND THE HVHZ SECTION OF THIS MANUAL.

## 26GA 5VCRIMP

### REQUIREMENTS TO USE THESE LOAD TABLES

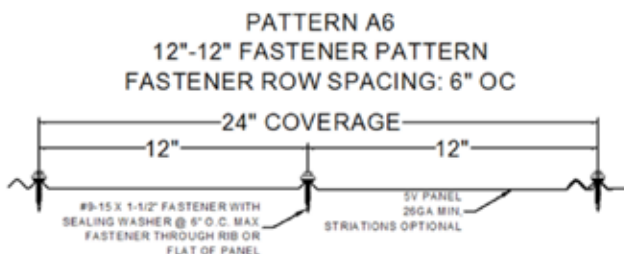
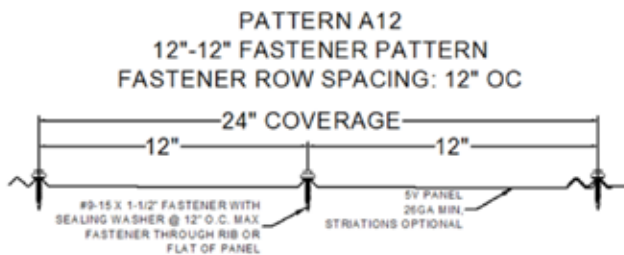
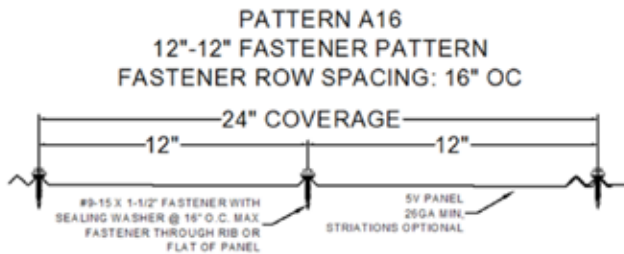
- Site is located in **Exposure B**
- Structure has a **mean roof height of 30' or less**
- Roof is either a **gable roof with slope between 1.5:12 and 12:12**, or a **hip roof with slope between 1.5:12 and 6:12**
- Structure is a low rise, regular shaped building, per ASCE 7-10
- Site and structure are free of characteristics which would require further analysis (e.g. wind channeling/buffeting, across wind loading, vortex shedding, or instability due to flutter or galloping).

### ROOF ZONES



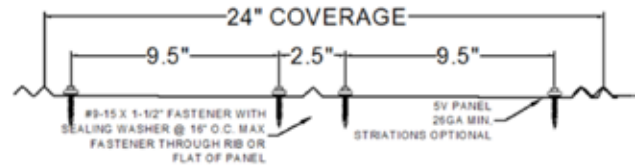
- ☐ Interior Zones  
Roofs-Zone 1 / Walls-Zone 4
 ☐ End Zones  
Roofs-Zone 2 / Walls-Zone 5
 ☐ Corner Zones  
Roofs-Zone 3
- a: 10 percent of least horizontal dimension or 0.4h, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m).

### FASTENER PATTERNS



### PATTERN B16

9.5"-2.5"-9.5" FASTENER PATTERN  
FASTENER ROW SPACING: 16" OC



### LOAD TABLES

26ga 5VCrimp on 15/32" (min) Plywood or Wood Plank (NOT APPROVED FOR HVHZ)								
Wind:	120	130	140	150	160	170	180	200
Zone 1	A16	A16	A16	A16	A16	A16	A16	A16
Zone 2	A16	A16	A16	A16	A16	A16	A16	A16
Zone 3	A16	A16	A16	A16	A16	A16	A16	B16

26ga 5VCrimp on 15/32" (min) Plywood or Wood Plank								
Wind:	120	130	140	150	160	170	180	200
Zone 1	A16	A16	A16	A16	A16	A16	A16	A16
Zone 2	A16	A16	A16	A16	A16	A16	A16	A16
Zone 3	A16	A16	A16	A16	A16	A16	A16	A16

26ga 5VCrimp on 15/32" (min) Plywood or Wood Plank								
Wind:	120	130	140	150	160	170	180	200
Zone 1	A12	A12	A12	A12	A12	A12	A12	A12
Zone 2	A12	A12	A12	A12	A12	A12	A12	A12
Zone 3	A12	A12	A12	A12	A12	A12	A12	A12

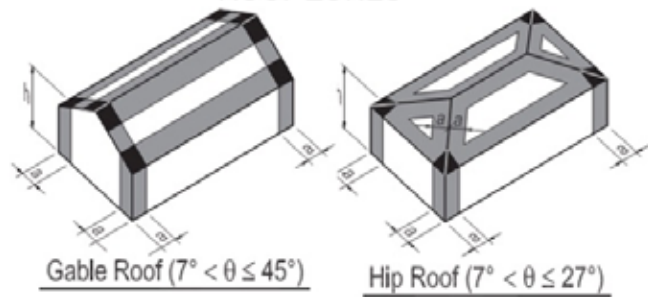
INSTALLATION IN MIAMI-DADE OR BROWARD COUNTY MUST MEET SPECIFIC HVHZ REQUIREMENTS. CONSULT THE FBC AND THE HVHZ SECTION OF THIS MANUAL.

## 26GA (MIN) GULFPBR

### REQUIREMENTS TO USE THESE LOAD TABLES

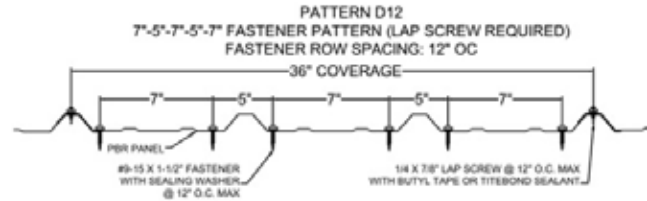
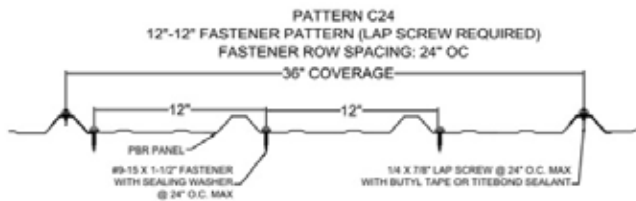
- Site is located in **Exposure B**
- Structure has a mean roof height of 30' or less
- Roof is either a gable roof with slope between 1.5:12 and 12:12, or a hip roof with slope between 1.5:12 and 6:12
- Structure is a low rise, regular shaped building, per ASCE 7-10
- Site and structure are free of characteristics which would require further analysis (e.g. wind channeling/buffeting, across wind loading, vortex shedding, or instability due to flutter or galloping).

### ROOF ZONES



- Interior Zones  
 Roofs-Zone 1 / Walls-Zone 4
- End Zones  
 Roofs-Zone 2 / Walls-Zone 5
- Corner Zones  
 Roofs-Zone 3
- $a$ : 10 percent of least horizontal dimension or 0.4h, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m).

### FASTENER PATTERNS



### LOAD TABLES

26ga GulfPBR on 15/32" (min) Plywood or Wood Planking (min #9 screw)									
Wind:	120	130	140	150	160	170	180	200	
Zone 1	C24	C24	C24	C24	C24	C24	C24	C24	C24
Zone 2	C24	C24	C24	C24	C24	C24	C24	C24	D12
Zone 3	C24	C24	C24	C24	D12	D12	D12	D12	D12

26ga GulfPBR on 1x4" (nom, min) SYP on 15/32" (min) Plywood or Wood Planking (min #9 screw)									
Wind:	120	130	140	150	160	170	180	200	
Zone 1	C24	C24	C24	C24	C24	C24	C24	C24	C24
Zone 2	C24	C24	C24	C24	C24	C24	C24	C24	C24
Zone 3	C24	C24	C24	C24	C24	C24	C24	C24	D12

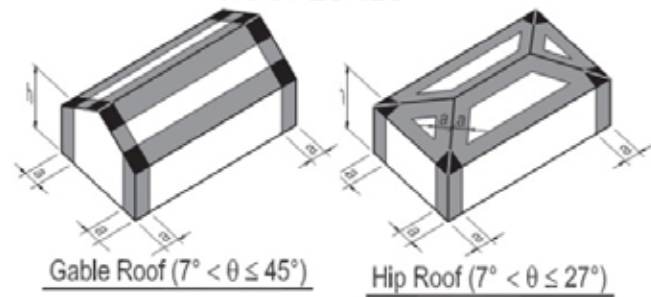
INSTALLATION IN MIAMI-DADE OR BROWARD COUNTY MUST MEET SPECIFIC HVHZ REQUIREMENTS. CONSULT THE HVHZ SECTION OF THIS MANUAL FOR MORE DETAILS.

## 26GA (MIN) GULFPBR STRUCTURAL (OPEN FRAMING)

### REQUIREMENTS TO USE THESE LOAD TABLES

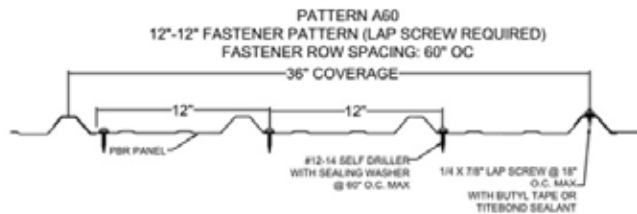
- Site is located in **Exposure B**
- Structure has a mean roof height of 30' or less
- Roof is either a gable roof with slope between 1.5:12 and 12:12, or a hip roof with slope between 1.5:12 and 6:12
- Structure is a low rise, regular shaped building, per ASCE 7-10
- Site and structure are free of characteristics which would require further analysis (e.g. wind channeling/buffeting, across wind loading, vortex shedding, or instability due to flutter or galloping).

### ROOF ZONES



- Interior Zones  
 Roofs-Zone 1 / Walls-Zone 4
- End Zones  
 Roofs-Zone 2 / Walls-Zone 5
- Corner Zones  
 Roofs-Zone 3
- $a$ : 10 percent of least horizontal dimension or 0.4h, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m).

### FASTENER PATTERNS



### LOAD TABLES

26ga GulFPBR on 16ga (min) Steel Framing (min #12 screw) (NOT APPROVED FOR HVHZ)								
Wind:	120	130	140	150	160	170	180	200
Zone 1	A60	A60	A60	A60	A60	A60	A60	---
Zone 2	A60	A60	A60	A60	---	---	---	---
Zone 3	A60	---	---	---	---	---	---	---

INSTALLATION IN MIAMI-DADE OR BROWARD COUNTY MUST MEET SPECIFIC HVHZ REQUIREMENTS. CONSULT THE HVHZ SECTION OF THIS MANUAL FOR MORE DETAILS.

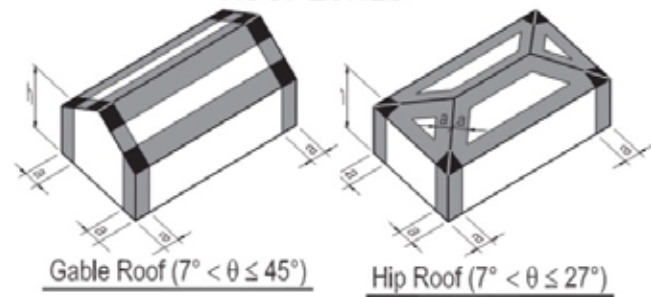


## 24GA (MIN) GULFPBR STRUCTURAL (OPEN FRAMING)

### REQUIREMENTS TO USE THESE LOAD TABLES

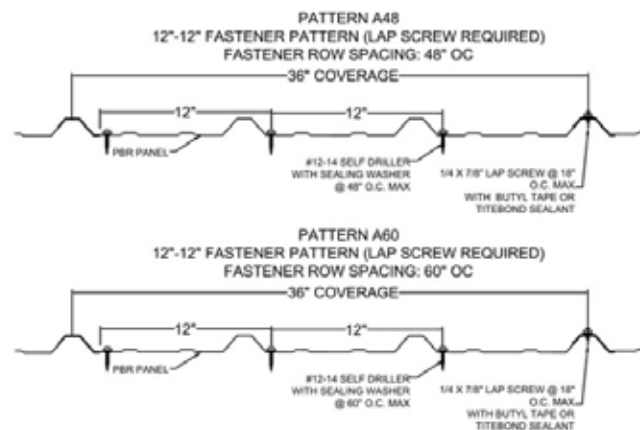
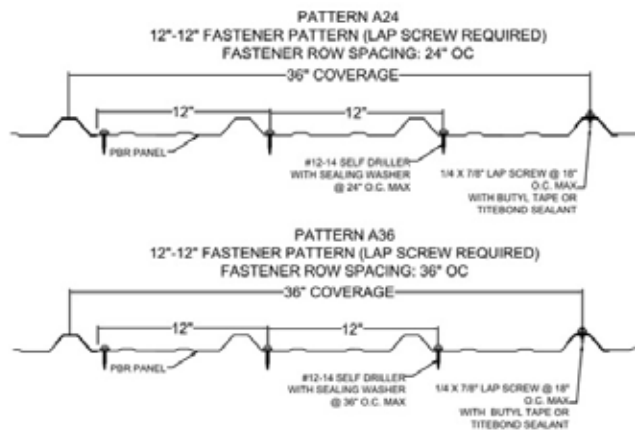
- Site is located in **Exposure B**
- Structure has a **mean roof height of 30' or less**
- Roof is either a **gable roof with slope between 1.5:12 and 12:12**, or a **hip roof with slope between 1.5:12 and 6:12**
- Structure is a low rise, regular shaped building, per ASCE 7-10
- Site and structure are free of characteristics which would require further analysis (e.g. wind channeling/buffeting, across wind loading, vortex shedding, or instability due to flutter or galloping).

### ROOF ZONES



- Interior Zones  
 Roofs-Zone 1 / Walls-Zone 4
- End Zones  
 Roofs-Zone 2 / Walls-Zone 5
- Corner Zones  
 Roofs-Zone 3
- a: 10 percent of least horizontal dimension or 0.4h, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m).

### FASTENER PATTERNS



### LOAD TABLES

24ga GulfPBR on 16ga (min) Steel Framing (min #12 screw)								
Wind:	120	130	140	150	160	170	180	200
Zone 1	A60	A60	A60	A60	A60	A60	A60	A60
Zone 2	A60	A60	A60	A60	A60	A60	A60	A48
Zone 3	A60	A60	A60	A60	A48	A48	A48	A36

INSTALLATION IN MIAMI-DADE OR BROWARD COUNTY MUST MEET SPECIFIC HVHZ REQUIREMENTS. CONSULT THE HVHZ SECTION OF THIS MANUAL FOR MORE DETAILS.

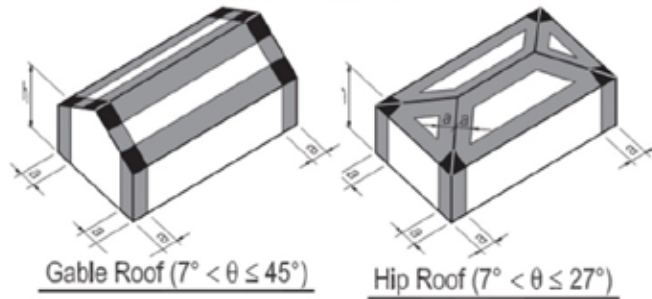


## 26GA (MIN) GULFWAVE

### REQUIREMENTS TO USE THESE LOAD TABLES

- Site is located in **Exposure B**
- Structure has a **mean roof height of 30' or less**
- Roof is either a **gable roof with slope between 1.5:12 and 12:12**, or a **hip roof with slope between 1.5:12 and 6:12**
- Structure is a low rise, regular shaped building, per ASCE 7-10
- Site and structure are free of characteristics which would require further analysis (e.g. wind channeling/buffeting, across wind loading, vortex shedding, or instability due to flutter or galloping).

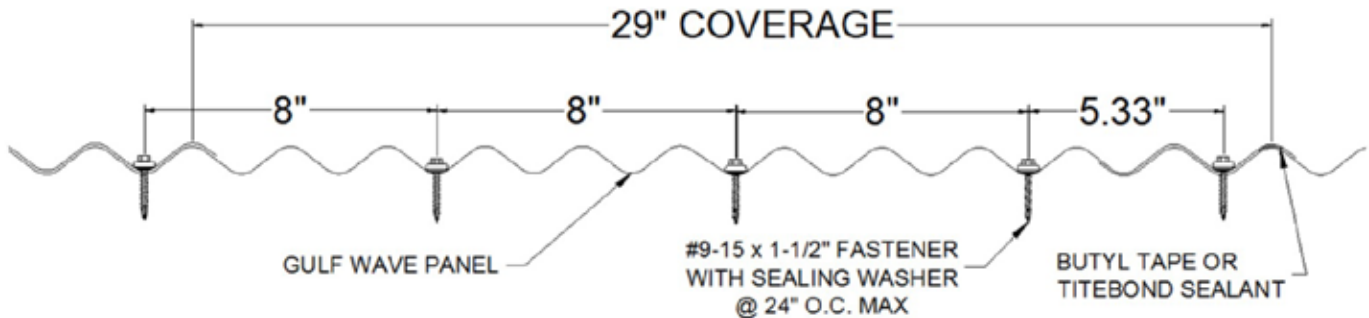
### ROOF ZONES



- ☐ Interior Zones  
 Roofs-Zone 1 / Walls-Zone 4
- ☐ End Zones  
 Roofs-Zone 2 / Walls-Zone 5
- ☐ Corner Zones  
 Roofs-Zone 3
- $a$ : 10 percent of least horizontal dimension or 0.4h, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m).

### FASTENER PATTERNS

#### PATTERN A24 8"-8"-8"-5.33" FASTENER PATTERN FASTENER ROW SPACING: 24" OC



### LOAD TABLES

26ga GulfWave on 15/32" (min) Plywood or Wood Planking (NOT APPROVED FOR HVHZ)								
Wind:	120	130	140	150	160	170	180	200
Zone 1	A24	A24	A24	A24	A24	A24	A24	A24
Zone 2	A24	A24	A24	A24	A24	A24	A24	A24
Zone 3	A24	A24	A24	A24	A24	A24	---	---

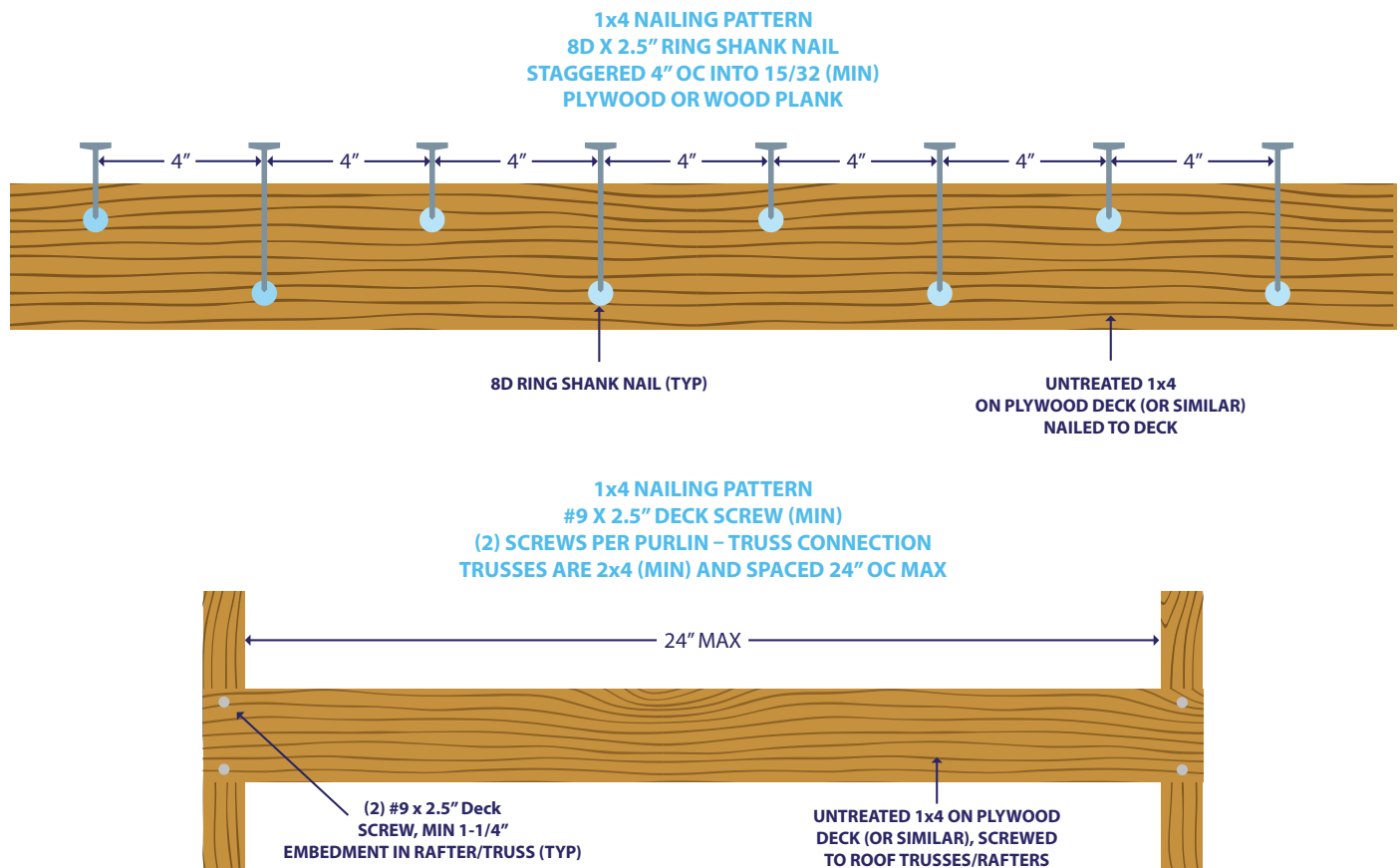
# Appendix A: Reroofing and 1X4 Purlin Nailing

All exposed fastener systems are approved for installation over an existing single layer of shingles, provided that the following requirements are met:

- Five-fold criteria of FBC 1511.3 or FBC Residential R908.3 must be satisfied.
- Fastener penetration into roof deck and/or purlins is unchanged (use longer fasteners as required).
- Product must be installed in accordance with manufacturer's recommendation, all applicable building codes, and the conditions of the applicable FPA.
- Installation shall be over 1x4 battens (or similar), or over any code-approved underlayment. Metal panels shall NOT be installed in direct contact with existing shingles.

1X4's may either be nailed to the roof deck or screwed directly into the roof truss or rafter as noted below. Attachment shall be as prescribed below. The truss/rafter connection is designed to meet exception 1 in FBC 1511.3, and transmits the roof load directly to the buildings structural system without relying on the existing roof or roof covering for support.

Note that for 1x4 purlins on OSB decking, the 1x4 must be fastened directly to the roof truss or rafter. In all other cases, 1x4 purlins shall be fastened to the deck.



# Appendix B: Building Code Excerpts

The following excerpts are from the 2017 Florida Building Code (FBC), which is publically available here: <https://codes.iccsafe.org/public/collections/FL>. The FBC is based on the International Building Code (IBC), and the section numbering is identical in most cases. Typically the FBC is more restrictive, so the excerpts below are from the FBC. Building codes for other states are available here: <https://codes.iccsafe.org/public/>

*These excerpts are provided as a courtesy reference only; always consult the local building department and a complete copy of the applicable building codes.*

## FBC 2303.1.5 Wood Structural Panels

**Wood structural panels**, when used structurally (including those used for siding, **roof and wall sheathing**, subflooring, diaphragms and built-up members), **shall conform to the requirements for their type in DOC PS 1, DOC PS 2 or ANSI/APA PRP 210. Each panel or member shall be identified** for grade, bond classification, and Performance Category **by the trademarks of an approved testing and grading agency.**

## FBC 1503.2.1 Flashing Locations

**Flashing shall be installed at wall and roof intersections, at gutters, wherever there is a change in roof slope or direction and around roof openings.** Where flashing is of metal, the metal shall be corrosion resistant with a thickness of not less than that provided in Table 1503.2.

**Exception:** This requirement does not apply to hip and ridge junctions.

## FBC 1503.6 Crickets and Saddles

**A cricket or saddle shall be installed on the ridge side of any chimney or penetration greater than 30 inches (762 mm) wide as measured perpendicular to the slope.** Cricket or saddle coverings shall be sheet metal or of the same material as the roof covering.

Material	Minimum Thickness (Inches)	Gage	Weight (lbs per sq ft)
Copper			1 (16 oz)
Aluminum	0.024		
Stainless Steel		28	
Galvanized Steel	0.0179	26 (zinc coated G90)	
Aluminum Zinc Coated Steel	0.0179	26 (AZ50 Alum Zinc)	
Zinc Alloy	0.027		
Lead			2.5 (40 oz)
Painted Terne			1.25 (20 oz)

## FBC 1506.2.1 Compatibility of Materials

Roofs and roof coverings shall be of materials that are compatible with each other and with the building or structure to which the materials are applied.

## FBC 1507.1.1 Underlayment

Unless otherwise noted, underlayment for asphalt shingles, **metal roof panels**, metal roof shingles, mineral surfaced roll roofing, slate shingles, wood shingles, and wood shakes 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 shall be applied and attached in accordance with Table 1507.1.1.**

**Exception:** A reinforced synthetic underlayment that is approved as an alternative to underlayment complying with ASTM D226 Type II and having a minimum tear strength per ASTM D1970 or ASTM D4533 of 20 pounds (9.1 kg) shall be permitted. This underlayment shall be installed and attached in accordance with the underlayment attachment methods of Table 1507.1.1 for the applicable roof covering and slope, except metal cap nails shall be required where the ultimate design wind speed, Vult, equals or exceeds 150 mph.

**TABLE 1507.1.1  
UNDERLAYMENT TABLE**

Roof Covering Section	Roof Slope 2:12 and Less Than 4:12 Underlayment	Underlayment Attachment <sup>a</sup>	Roof Slope 4:12 and Greater Underlayment	Underlayment Attachment <sup>a</sup>
<b>Metal roof panels</b> 1507.4	ASTM D226 Type I or II ASTM D4869 Type II, III or IV ASTM D6757	1	ASTM D226 Type II ASTM D4869 Type IV ASTM D6757	2
	ASTM D1970	3	ASTM D1970	3

<sup>a</sup> Underlayment Attachment

- 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.
- 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.
- 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 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, 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.

## **FBC 1507.4.2 Deck Slope**

Minimum slopes for metal roof panels shall comply with the following:

- The minimum slope for lapped, nonsoldered seam metal roofs without applied lap sealant shall be three units vertical in 12 units horizontal (25-percent slope).
- The minimum slope for lapped, nonsoldered seam metal roofs with applied lap sealant shall be one-half unit vertical in 12 units horizontal (4-percent slope). Lap sealants shall be applied in accordance with the approved

manufacturer's installation instructions.

3. The minimum slope for standing seam of roof systems shall be one-quarter unit vertical in 12 units horizontal (2-percent slope).

#### **FBC 1507.4.4 Attachment**

Metal roof panels shall be secured to the supports in accordance with the approved manufacturer's fasteners. In the absence of manufacturer recommendations, the following fasteners shall be used:

### **SECTION 1511 EXISTING ROOFING**

#### **Fbc 1511.3 Recovering Versus Replacement**

New roof coverings shall not be installed without first removing all existing layers of roof coverings down to the roof deck where any of the following conditions occur:

1. Where the existing roof or roof covering is water soaked or has deteriorated to the point that the existing roof or roof covering is not adequate as a base for additional roofing.
2. Where the existing roof covering is wood shake, slate, clay, cement or asbestos-cement tile.
3. Where the existing roof has two or more applications of any type of roof covering.
4. When blisters exist in any roofing, unless blisters are cut or scraped open and remaining Materials secured down before applying additional roofing.
5. Where the existing roof is to be used for attachment for a new roof system and compliance with the securement provisions of Section 1504.1 cannot be met.

#### **Exceptions:**

1. **Complete and separate roofing systems, such as standing-seam metal roof systems, that are designed to transmit the roof loads directly to the building's structural system and that do not rely on existing roofs and roof coverings for support, shall not require the removal of existing roof coverings.**
2. Reserved.
3. The application of a new protective coating over an existing spray polyurethane foam roofing system shall be permitted without tear-off of existing roof coverings.
4. Where the existing roof assembly includes an ice barrier membrane that is adhered to the roof deck, the existing ice barrier membrane shall be permitted to remain in place and covered with an additional layer of ice barrier membrane in accordance with Section 1507.



# APPENDIX C: HIGH VELOCITY HURRICANE ZONE EXCERPTS FROM THE FLORIDA BUILDING CODE

The following excerpts are from the 2017 Florida Building Code (FBC), which is publically available here: <https://codes.iccsafe.org/public/collections/FL>.

*These excerpts are provided as a courtesy reference only; always consult the local building department and a complete copy of the applicable building codes.*

## Key Requirements:

- Underlayment shall be installed, and shall have an approved HVHZ product approval or Miami-Dade Notice of Acceptance (NOA). (Per requirements of TAS 100 testing.)
- Roof deck shall meet the requirements of PS1, PS2, or ANSI/APA PRP 210. (FBC 2303.1.4)
- Maximum on center fastener spacing perpendicular to rib shall be 12" in the field and 8" at the ends of a panel. Maximum on center fastener spacing parallel to rib shall be 12". These spacing supersede the values listed in the load tables. (FBC 2222.4.2, 2222.5.1)
- Fastening shall be sufficient to provide resistance for lateral movement as required by rational analysis. Note that in most cases the roofing deck should be designed to provide all necessary lateral resistance; diaphragm design is excluded from Gulf Coast product approvals.
- Edge metal and flashing shall be installed in accordance with RAS 111. (FBC 1514.4.2)
- Minimum slope: 2:12. (FBC 1515.2.2)

## FBC 2222.4.2 Structural Sheets

Positive attachment of sheets shall be provided to resist uplift forces. Attachment shall be as set forth in Section 2222.3.1 and as required by rational analysis, and/or tests, but not less frequently than the following maximum spacing:

1. One fastener shall be placed near the corner of each sheet or at overlapping corners of sheets.
2. Along each supporting member, the spacing of fasteners shall not exceed 8-inches (203 mm) on centers at ends of sheets or 12-inches (305 mm) on center.
3. The spacing of edge fasteners between panels, and between panels and supporting members, parallel to the direction of span, where continuous interlock is not otherwise provided shall be not more than 12-inches (305 mm) on center.
4. Fastening shall be by bolting, welding, or other approved fastening device that provides a resistance to lateral movement as required by rational analysis or by test, but not less than 400 pounds per lineal foot (5838 N/m).

## FBC 1514.2 Flashings

All roof flashing and terminations shall be designed and installed to resist the windload requirements of Chapter 16 (High-Velocity Hurricane Zone) of this code, and shall be in compliance with the provisions set forth in RAS 111.

### Fbc 1514.2.1 Locations

Where flashing is of metal, the metal shall conform with the provisions of RAS 111.

### 1514.2.3 Metal Flashings and Terminations

Metal flashing and terminations shall be of the material and thickness described in Section 1517.6 and RAS 111 of this code, and shall be designed and installed in accordance with RAS 111.

### FBC 1514.2.4 Metal Counterflashing

Metal counterflashing shall be of the material and thickness described in Section 1517.6 and RAS 111 of this code, and shall be installed in accordance with RAS 111.

#### FBC 1514.2.4.1

Metal counterflashing shall be built into walls, set in reglets or applied as stucco type and shall be turned down over base flashing not less than 3 inches (76 mm).

#### FBC 1514.2.4.2

Metal counterflashing shall be side lapped a minimum of 4 inches (102 mm).

#### FBC 1514.2.4.3

Metal counterflashing, where set in reglets or surface-mounted, shall be waterproofed, in accordance with applicable application standards.

#### FBC 1514.2.4.4

Where metal counterflashing is used as the means of sealing (such as a vented system) it shall be set in an approved sealant, sealed with an approved adhesive on the top flange and all joints shall be sealed with an approved sealant and lapped a minimum of 4 inches (102 mm).

### Fbc 1514.2.5 Roof Penetration Flashing

#### FBC 1514.2.5.1

All pipes shall be flashed with approved lead sleeve-type, pitch pans or other approved methods detailed in the roofing system assembly product approval. Lead flashing shall not be less than 2.5 pounds per square foot (12.2 kg/m<sup>2</sup>). Flanges shall be a minimum of 4 inches (102 mm).

#### FBC 1514.2.5.2

Other roof penetrations shall be suitably flashed with curbs, collars, pitch pans, in compliance with RAS 111 or an approved method, in compliance with the roofing system assembly product approval.

#### FBC 1514.2.5.3

No roof penetration shall be located in roof valleys.

### FBC 1515.2.2 Minimum slope

All roofing assemblies must be installed in compliance with the slope requirements specified in the product control approval, in compliance with Table 1515.2

System Type	Slope
Fibrous Cement Shingles	4:12
Metal Panels	
Architectural	2:12
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 ½:12
Wood	
Shakes	4:12
Shingles	3 ½:12

## FBC 1515.2.5 Ridge Vents

Ridge vents shall have a product approval, and shall be tested for wind driven rain in accordance with TAS 110 and Section 1523.

## FBC 1517.5 Fasteners

### FBC 1517.5.1

Nails shall be minimum 12 gage, annular ring shank nails having not less than 20 rings per inch, heads not less than  $\frac{3}{8}$  inch (9.5 mm) in diameter; and lengths sufficient to penetrate through the thickness of plywood panel or wood plank decking not less than  $\frac{3}{16}$  inch (4.8 mm), or to penetrate into a 1 inch (25 mm) or greater thickness of lumber not less than 1 inch (25 mm). Nails or wood screws shall be hot dipped electro- or mechanically galvanized to a thickness sufficient to resist corrosion in compliance with TAS 114, Appendix E, Section 2 (ASTM G 85). All nails shall be listed by a certification agency. All nail cartons or carton labels shall be labeled to note compliance with the corrosion-resistance requirements. No roofing material shall be fully or partially adhered directly to a nailable deck, unless otherwise noted in the roof assembly product approval.

### FBC 1517.5.2

Such fasteners shall be applied through "tin caps" no less than  $1\frac{1}{8}$  inches (41 mm) and not more than 2 inches (51 mm) in diameter and of not less than 32 gage (0.010 inch) sheet metal. "Cap nails" or prefabricated fasteners with integral heads complying with this section shall be an acceptable substitute. All "tin caps," "cap nails" or prefabricated fasteners with integral heads shall be tested for corrosion resistance in compliance with TAS 114, Appendix E, Section 2 (ASTM G 85), and shall be product control listed. All cartons or carton labels of "tin caps," "cap nails" or prefabricated fasteners with integral heads shall be labeled to note compliance with the corrosion-resistance requirements.

## FBC 1517.6 Metal Roofing Accessories

All metal accessories for roofs shall be not less than 26 gage G-90 galvanized or stainless steel, 16 ounce copper, 0.025-inch (0.6 mm) thick aluminum, lead sheet with a minimum 2.5 pounds per square foot (12.2 kg/m<sup>2</sup>) or equivalent noncorrosive metal alloys or composite materials manufactured for use as roof termination. All composite and nonmetallic flashing materials shall have a product approval.

### FBC 1517.6.1

Metal accessories may be of a manufactured, shop-fabricated or field-fabricated type, providing the materials and fasteners are in compliance with the minimum requirements of this code and shall be sized, designed and installed in compliance with methods set forth in RAS 111.

### FBC 1517.6.2

Gravel stop or drip edge profiles shall be as follows.

#### FBC 1517.6.2.1

**The vertical face shall be a minimum of  $1\frac{1}{2}$  inches (38 mm) and shall extend down not less than  $\frac{1}{2}$  inch (12.7 mm) below the sheathing** or other member immediately contiguous thereto. In all cases, the **deck flange shall be not less than 2 inches (51 mm) in width**. Gravel stop or drip edge shall be sized, designed and installed in compliance with RAS 111.

#### FBC 1517.6.2.2

**Gravel stop or drip edge shall be designed so that the bottom (the kick of the metal) of the drip edge shall have a minimum of  $\frac{1}{2}$ -inch (12.7 mm) clearance from the structure.**

## **FBC 1518.2 Underlayments**

Underlayment shall be as defined in Section 1513. Underlayment shall be installed in compliance with the roofing component product approval and shall be in compliance with the following minimum requirements.

### **FBC 1518.2.1**

Underlayment shall be attached to a nailable deck in a grid pattern of 12 inches (305 mm) between the overlaps, with 6-inch (152 mm) spacing at the overlaps.

### **FBC 1518.2.2**

Where the architectural appearance of the underside is to be preserved, the underlayment shall be secured in accordance with Section 1519.5.2.

### **FBC 1518.2.3**

Tin caps and nails or cap nails shall be as defined in Section 1517.5.2.

### **FBC 1518.2.4**

Underlayment nails shall be as defined in Section 1517.5.1.

### **FBC 1518.3**

If the underlayment is a self-adhering membrane, the membrane shall be applied over a mechanically attached anchor sheet, attached in compliance with Section 1518.2.1.

### **FBC 1518.4**

All underlayment applications for prepared roof coverings shall be applied in compliance with the manufacturer roofing assembly product approval, and shall be not less than one of the following: (1) A double layer of an ASTM D 226 Type I, with a 19-inch (483 mm) headlap; or (2) A single layer of an ASTM D 226, Type II with a 4-inch (102 mm) headlap; or (3) A single layer of an ASTM D 2626 coated base sheet with a 4-inch (102 mm) headlap, and (4) All endlaps shall be a minimum of 6 inches (152 mm).

## **FBC 1518.9 Metal Panels/Shingles**

### **FBC 1518.9.2**

The entire application method of all metal panel/shingle systems shall be detailed in the product approval and RAS 133, as applicable.

### **FBC 1518.9.4**

**Metal panel/shingle systems shall not extend more than 1 inch (25 mm) beyond the roof eave.**

### **FBC 1518.9.5**

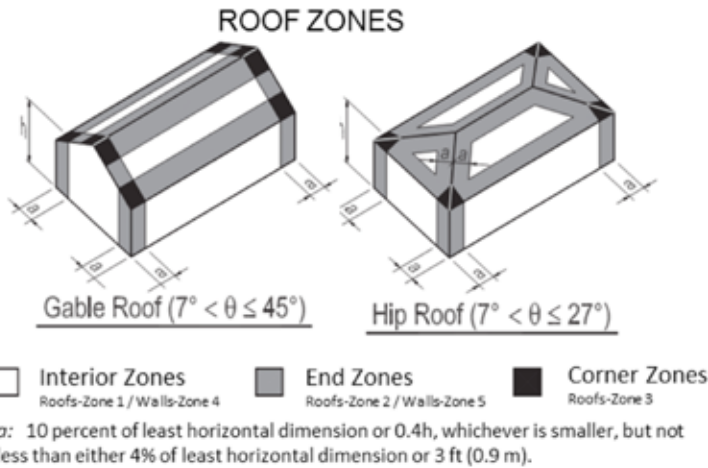
All intersections shall be flashed in metal as provided in Section 1517.6, RAS 111 and the roof assembly product approval.

# Appendix D: Load Tables for Exposure D

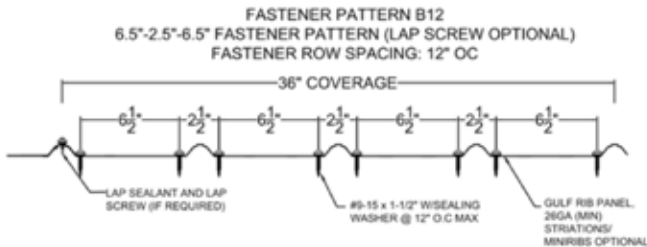
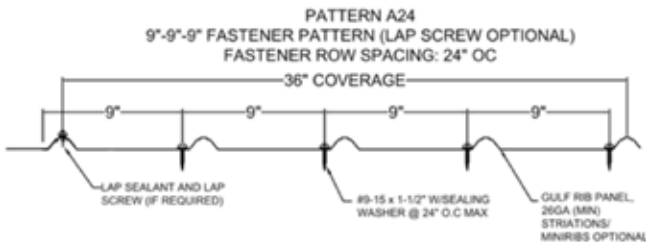
## 26GA (MIN) GULFRIB

### REQUIREMENTS TO USE THESE LOAD TABLES

- a.) Site is located in **Any Exposure**
- b.) Structure has a **mean roof height of 30' or less**
- c.) Roof is either a **gable roof with slope between 0:12 and 12:12**, or a **hip roof with slope between 0:12 and 6:12**
- d.) Structure is a **low rise, regular shaped building**, per ASCE 7-10
- e.) Site and structure are free of characteristics which would require further analysis (e.g. wind channeling/buffeting, across wind loading, vortex shedding, or instability due to flutter or galloping).



### FASTENER PATTERNS



### LOAD TABLES

26ga GulfRib on 15/32" (min) Plywood or Wood Plank (min #9 screw)								
Wind:	120	130	140	150	160	170	180	200
Zone 1	A24	A24	A24	A24	A24	A24	A24	A24
Zone 2	A24	A24	A24	A24	B12	B12	B12	B12
Zone 3	A24	B12	B12	B12	B12	B12	B12	---

26ga GulfRib on 1x4 (nominal, min) Purlins on 15/32" (min) Plywood or Wood Plank (min #9 screw)								
Wind:	120	130	140	150	160	170	180	200
Zone 1	A24	A24	A24	A24	A24	A24	A24	A24
Zone 2	A24	A24	A24	A24	A24	A24	A24	B12
Zone 3	A24	A24	A24	A24	B12	B12	B12	---

INSTALLATION IN MIAMI-DADE OR BROWARD COUNTY MUST MEET SPECIFIC HVHZ REQUIREMENTS. CONSULT THE FBC AND THE HVHZ SECTION OF THIS MANUAL.

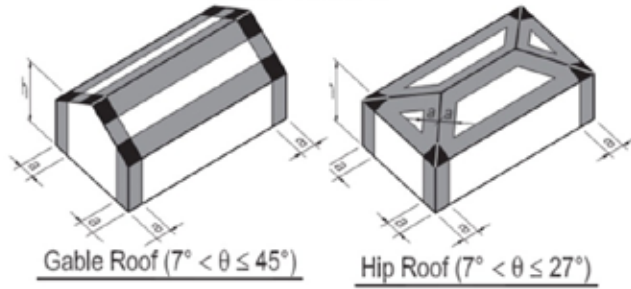


## 29GA (MIN) GULFRIB

### REQUIREMENTS TO USE THESE LOAD TABLES

- Site is located in **Any Exposure**
- Structure has a **mean roof height of 30' or less**
- Roof is either a **gable roof with slope between 0:12 and 12:12**, or a **hip roof with slope between 0:12 and 6:12**
- Structure is a low rise, regular shaped building, per ASCE 7-10
- Site and structure are free of characteristics which would require further analysis (e.g. wind channeling/buffeting, across wind loading, vortex shedding, or instability due to flutter or galloping).

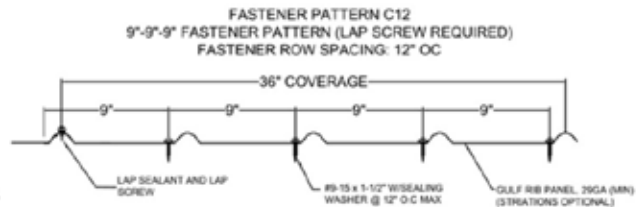
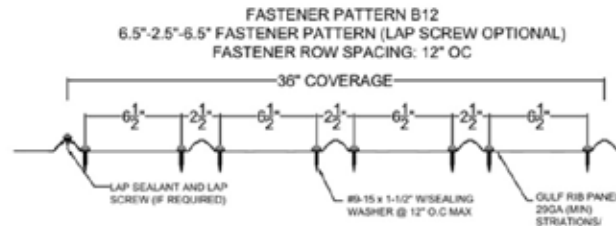
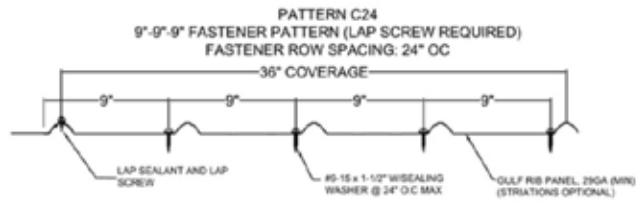
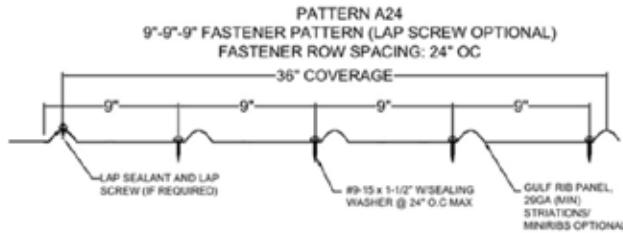
### ROOF ZONES



- Interior Zones  
Roofs-Zone 1 / Walls-Zone 4
- End Zones  
Roofs-Zone 2 / Walls-Zone 5
- Corner Zones  
Roofs-Zone 3

a: 10 percent of least horizontal dimension or 0.4h, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m).

### FASTENER PATTERNS



### LOAD TABLES

**29ga GulfRib on 15/32" (min) Plywood or Wood Plank (min #9 screw) (NOT APPROVED FOR HVHZ)**

Wind:	120	130	140	150	160	170	180	200
Zone 1	A24	A24	A24	A24	A24	A24	B12	B12
Zone 2	A24	A24	B12	B12	B12	B12	B12	---
Zone 3	B12	B12	B12	---	---	---	---	---

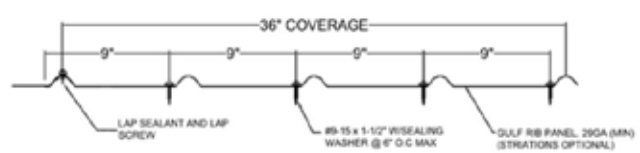
**29ga GulfRib on 7/16" (min) OSB (min #12 screw) (NOT APPROVED FOR HVHZ)**

Wind:	120	130	140	150	160	170	180	200
Zone 1	C12	C12	C12	C12	C12	C12	C6	C6
Zone 2	C12	C12	C6	C6	C6	C6	C6	---
Zone 3	C6	C6	C6	C6	C6	---	---	---

**29ga GulfRib on 1x4 Purlins on 15/32" (min) Plywood or Wood Plank (min #9 screw) (NOT APPROVED FOR HVHZ)**

Wind:	120	130	140	150	160	170	180	200
Zone 1	A24	A24	A24	A24	A24	A24	A24	A24
Zone 2	A24	A24	A24	A24	B12	B12	B12	B12
Zone 3	A24	A24	B12	B12	B12	---	---	---

**FASTENER PATTERN C6**  
9"-9"-9" FASTENER PATTERN (LAP SCREW REQUIRED)  
FASTENER ROW SPACING: 6" OC



**29ga GulfRib on 1x4 Purlins on 7/16" (min) OSB (min #9 screw) (NOT APPROVED FOR HVHZ)**

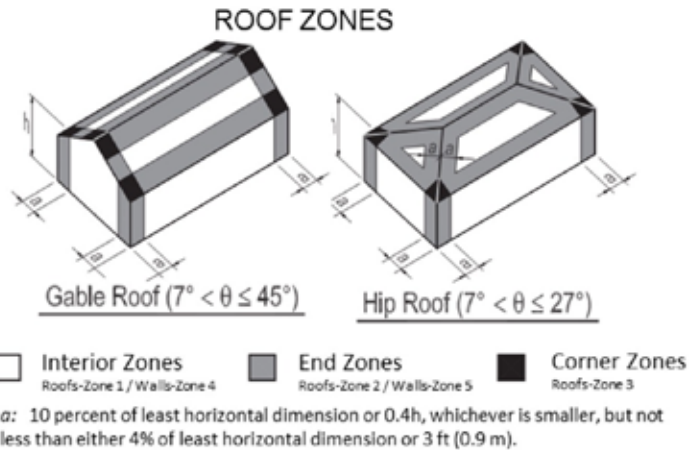
Wind:	120	130	140	150	160	170	180	200
Zone 1	A24	A24	A24	A24	A24	A24	A24	A24
Zone 2	A24	A24	A24	A24	A24	A24	A24	---
Zone 3	A24	A24	A24	---	---	---	---	---

INSTALLATION IN MIAMI-DADE OR BROWARD COUNTY MUST MEET SPECIFIC HVHZ REQUIREMENTS. CONSULT THE FBC AND THE HVHZ SECTION OF THIS MANUAL.

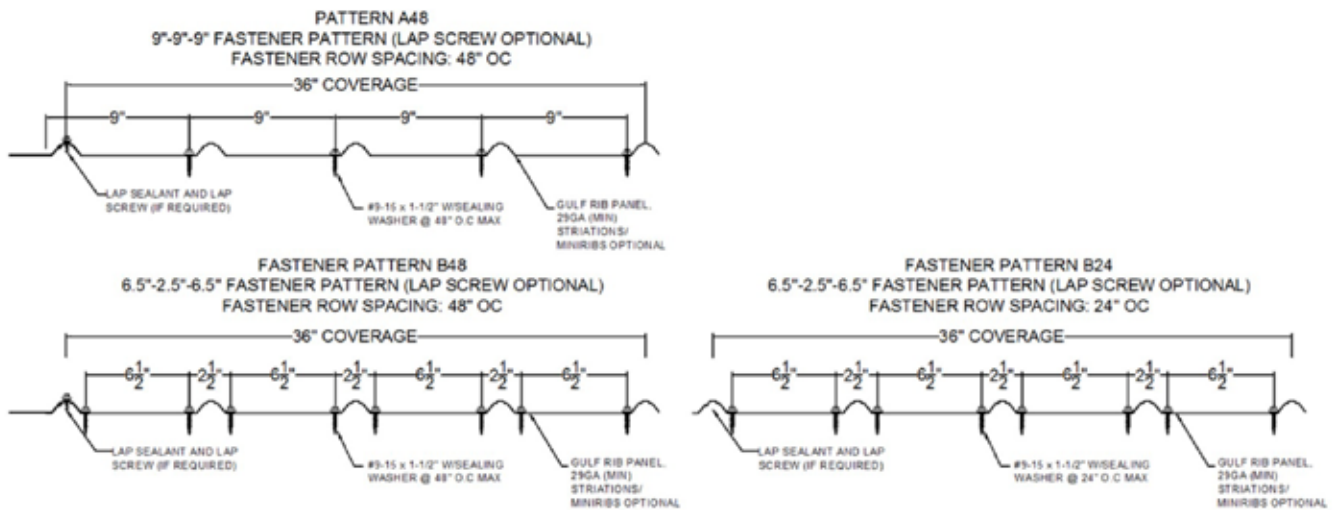
## 29GA (MIN) GULFRIB STRUCTURAL (OPEN FRAMING)

### REQUIREMENTS TO USE THESE LOAD TABLES

- Site is located in **Any Exposure**
- Structure has a **mean roof height of 30' or less**
- Roof is either a **gable roof with slope between 0:12 and 12:12**, or a **hip roof with slope between 0:12 and 6:12**
- Structure is a low rise, regular shaped building, per ASCE 7-10
- Site and structure are free of characteristics which would require further analysis (e.g. wind channeling/buffeting, across wind loading, vortex shedding, or instability due to flutter or galloping).



### FASTENER PATTERNS



### LOAD TABLES

29ga (min) GulfRib on 22ga (min) Steel Purlins/Hat Channels (NOT APPROVED FOR HVHZ)								
Wind:	120	130	140	150	160	170	180	200
Zone 1	A48	B48	B48	B48	B48	B48	B48	B24
Zone 2	B48	B48	B48	B24	B24	B24	B24	---
Zone 3	B24	B24	B24	---	---	---	---	---

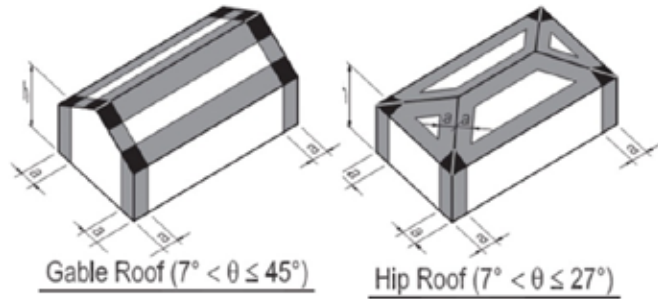
INSTALLATION IN MIAMI-DADE OR BROWARD COUNTY MUST MEET SPECIFIC HVHZ REQUIREMENTS. CONSULT THE FBC AND THE HVHZ SECTION OF THIS MANUAL.

## 26GA 5VCRIMP

### REQUIREMENTS TO USE THESE LOAD TABLES

- Site is located in **Any Exposure**
- Structure has a **mean roof height of 30' or less**
- Roof is either a **gable roof with slope between 0:12 and 12:12**, or a **hip roof with slope between 0:12 and 6:12**
- Structure is a **low rise, regular shaped building**, per ASCE 7-10
- Site and structure are free of characteristics which would require further analysis (e.g. wind channeling/buffeting, across wind loading, vortex shedding, or instability due to flutter or galloping).

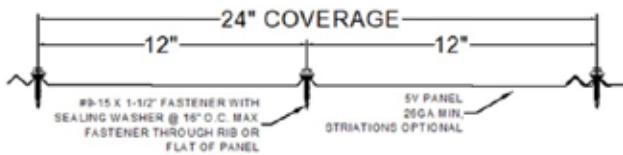
### ROOF ZONES



- ☐ Interior Zones  
 Roofs-Zone 1 / Walls-Zone 4
- ☐ End Zones  
 Roofs-Zone 2 / Walls-Zone 5
- ☐ Corner Zones  
 Roofs-Zone 3
- a: 10 percent of least horizontal dimension or 0.4h, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m).

### FASTENER PATTERNS

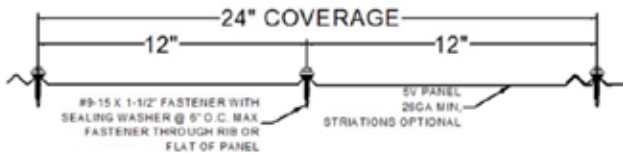
**PATTERN A16**  
12"-12" FASTENER PATTERN  
FASTENER ROW SPACING: 16" OC



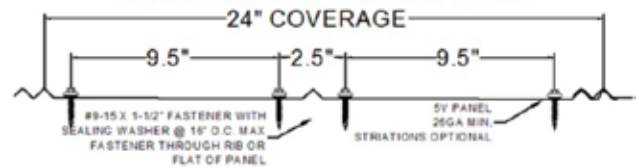
**PATTERN A12**  
12"-12" FASTENER PATTERN  
FASTENER ROW SPACING: 12" OC



**PATTERN A6**  
12"-12" FASTENER PATTERN  
FASTENER ROW SPACING: 6" OC



**PATTERN B16**  
9.5"-2.5"-9.5" FASTENER PATTERN  
FASTENER ROW SPACING: 16" OC



### LOAD TABLES

**26ga 5VCrimp on 15/32" (min) Plywood or Wood Plank (min #9 screw)**

Wind:	120	130	140	150	160	170	180	200
Zone 1	A12	A12	A12	A12	A12	A12	A12	A12
Zone 2	A12	A12	A12	A12	A12	A12	A12	A6
Zone 3	A12	A12	A12	A12	A6	A6	A6	---

**26ga 5VCrimp on 15/32" (min) Plywood or Wood Plank (min #9 screw) (NOT APPROVED FOR HVHZ)**

Wind:	120	130	140	150	160	170	180	200
Zone 1	A16	A16	A16	A16	A16	A16	A16	A16
Zone 2	A16	A16	A16	A16	A16	A16	B16	B16
Zone 3	A16	A16	A16	B16	B16	---	---	---

**26ga 5VCrimp on 1x4 (nominal, min) on 15/32" (min) Plywood or Wood Plank (min #9 screw)**

Wind:	120	130	140	150	160	170	180	200
Zone 1	A16	A16	A16	A16	A16	A16	A16	A16
Zone 2	A16	A16	A16	A16	A16	A16	A16	A16
Zone 3	A16	A16	A16	A16	A16	A16	A16	---

INSTALLATION IN MIAMI-DADE OR BROWARD COUNTY MUST MEET SPECIFIC HVHZ REQUIREMENTS. CONSULT THE FBC AND THE HVHZ SECTION OF THIS MANUAL.

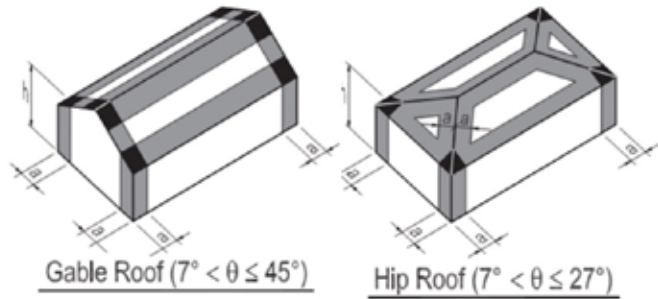


## 032 ALUMINUM 5VCRIMP

### REQUIREMENTS TO USE THESE LOAD TABLES

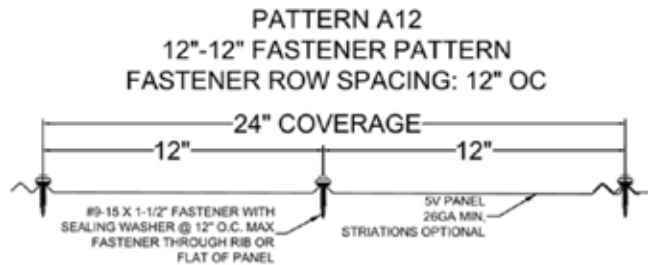
- Site is located in **Any Exposure**
- Structure has a **mean roof height of 30' or less**
- Roof is either a **gable roof with slope between 0:12 and 12:12**, or a **hip roof with slope between 0:12 and 6:12**
- Structure is a low rise, regular shaped building, per ASCE 7-10
- Site and structure are free of characteristics which would require further analysis (e.g. wind channeling/buffeting, across wind loading, vortex shedding, or instability due to flutter or galloping).

### ROOF ZONES



- ☐ Interior Zones  
Roofs-Zone 1 / Walls-Zone 4
 ☐ End Zones  
Roofs-Zone 2 / Walls-Zone 5
 ☐ Corner Zones  
Roofs-Zone 3
- $a$ : 10 percent of least horizontal dimension or  $0.4h$ , whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m).

### FASTENER PATTERNS



### LOAD TABLES

0.032 5VCrimp on 15/32" (min) Plywood or Wood Plank								
Wind:	120	130	140	150	160	170	180	200
Zone 1	A12	A12	A12	A12	A12	A12	A12	A12
Zone 2	A12	A12	A12	A12	A12	A12	A12	---
Zone 3	A12	A12	A12	A12	---	---	---	---

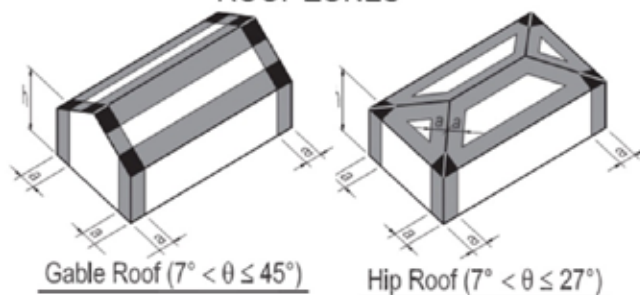
INSTALLATION IN MIAMI-DADE OR BROWARD COUNTY MUST MEET SPECIFIC HVHZ REQUIREMENTS. CONSULT THE FBC AND THE HVHZ SECTION OF THIS MANUAL.

## 26GA (MIN) GULFPBR

### REQUIREMENTS TO USE THESE LOAD TABLES

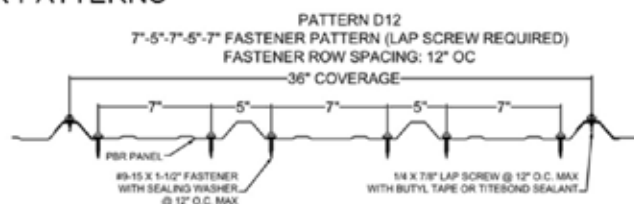
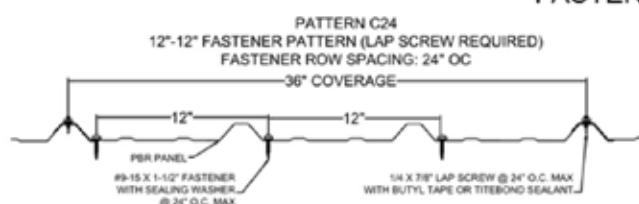
- Site is located in **Any Exposure**
- Structure has a **mean roof height of 30' or less**
- Roof is either a **gable roof with slope between 0:12 and 12:12**, or a **hip roof with slope between 0:12 and 6:12**
- Structure is a low rise, regular shaped building, per ASCE 7-10
- Site and structure are free of characteristics which would require further analysis (e.g. wind channeling/buffeting, across wind loading, vortex shedding, or instability due to flutter or galloping).

### ROOF ZONES



- ☐ Interior Zones  
Roofs-Zone 1 / Walls-Zone 4
 ☐ End Zones  
Roofs-Zone 2 / Walls-Zone 5
 ☐ Corner Zones  
Roofs-Zone 3
- a: 10 percent of least horizontal dimension or 0.4h, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m).

### FASTENER PATTERNS



### LOAD TABLES

26ga GulfPBR on 15/32" (min) Plywood or Wood Planking (min #9 screw)								
Wind:	120	130	140	150	160	170	180	200
Zone 1	C24	C24	C24	C24	C24	C24	C24	D12
Zone 2	C24	C24	C24	D12	D12	D12	D12	D12
Zone 3	D12	D12	D12	D12	D12	D12	D12	---

26ga GulfPBR on 1x4" (nom, min) SYP on 15/32" (min) Plywood or Wood Planking (min #9 screw)								
Wind:	120	130	140	150	160	170	180	200
Zone 1	C24	C24	C24	C24	C24	C24	C24	C24
Zone 2	C24	C24	C24	C24	C24	C24	C24	D12
Zone 3	C24	C24	C24	D12	D12	D12	D12	---

INSTALLATION IN MIAMI-DADE OR BROWARD COUNTY MUST MEET SPECIFIC HVHZ REQUIREMENTS. CONSULT THE HVHZ SECTION OF THIS MANUAL FOR MORE DETAILS.

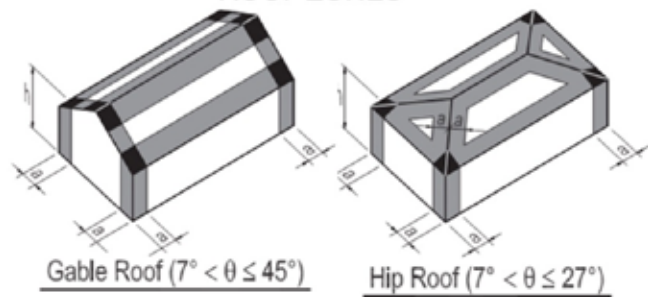


## 26GA (MIN) GULFPBR STRUCTURAL (OPEN FRAMING)

### REQUIREMENTS TO USE THESE LOAD TABLES

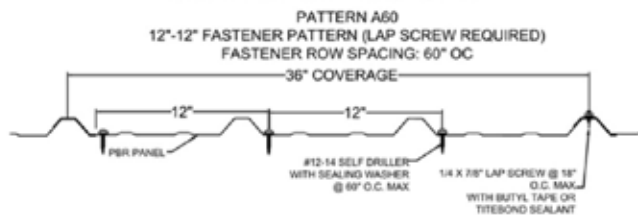
- Site is located in **Any Exposure**
- Structure has a **mean roof height of 30' or less**
- Roof is either a **gable roof with slope between 0:12 and 12:12**, or a **hip roof with slope between 0:12 and 6:12**
- Structure is a low rise, regular shaped building, per ASCE 7-10
- Site and structure are free of characteristics which would require further analysis (e.g. wind channeling/buffeting, across wind loading, vortex shedding, or instability due to flutter or galloping).

### ROOF ZONES



- ☐ Interior Zones  
Roofs-Zone 1 / Walls-Zone 4
 ☐ End Zones  
Roofs-Zone 2 / Walls-Zone 5
 ☐ Corner Zones  
Roofs-Zone 3
- $a$ : 10 percent of least horizontal dimension or  $0.4h$ , whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m).

### FASTENER PATTERNS



### LOAD TABLES

26ga Gulfpbr on 16ga (min) Steel Framing (min #12 screw) (NOT APPROVED FOR HVHZ)								
Wind:	120	130	140	150	160	170	180	200
Zone 1	A60	A60	A60	---	---	---	---	---
Zone 2	---	---	---	---	---	---	---	---
Zone 3	---	---	---	---	---	---	---	---

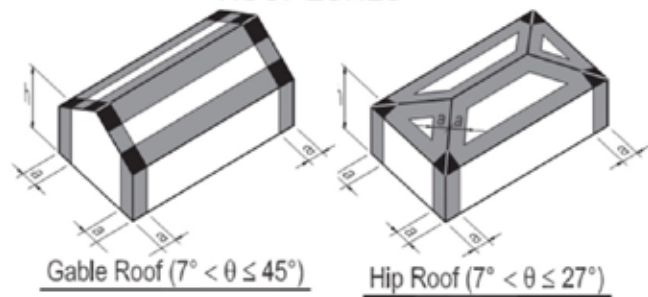
INSTALLATION IN MIAMI-DADE OR BROWARD COUNTY MUST MEET SPECIFIC HVHZ REQUIREMENTS. CONSULT THE HVHZ SECTION OF THIS MANUAL FOR MORE DETAILS.

## 24GA (MIN) GULFPBR STRUCTURAL (OPEN FRAMING)

### REQUIREMENTS TO USE THESE LOAD TABLES

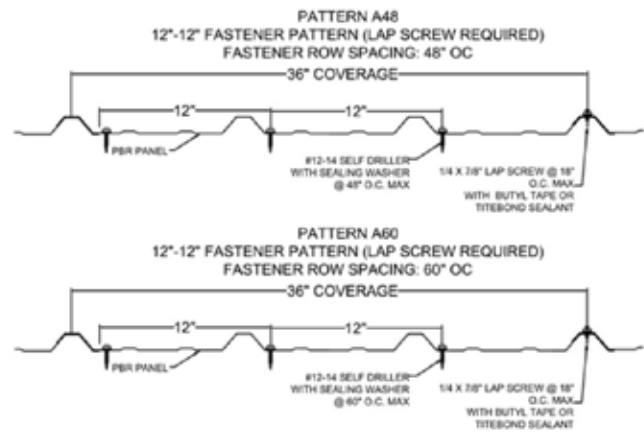
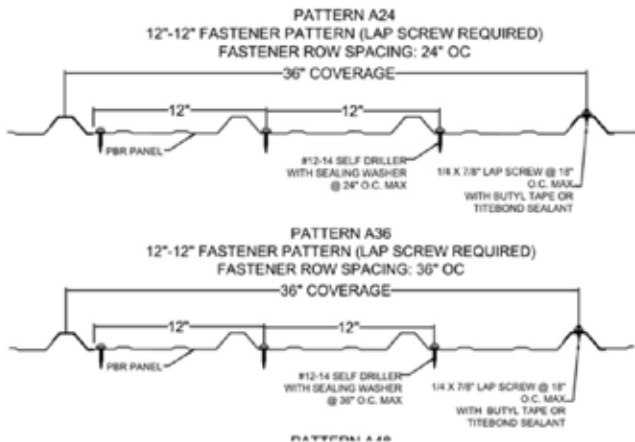
- Site is located in **Any Exposure**
- Structure has a **mean roof height of 30' or less**
- Roof is either a **gable roof with slope between 0:12 and 12:12**, or a **hip roof with slope between 0:12 and 6:12**
- Structure is a low rise, regular shaped building, per ASCE 7-10
- Site and structure are free of characteristics which would require further analysis (e.g. wind channeling/buffeting, across wind loading, vortex shedding, or instability due to flutter or galloping).

### ROOF ZONES



- Interior Zones  
 Roofs-Zone 1 / Walls-Zone 4
- End Zones  
 Roofs-Zone 2 / Walls-Zone 5
- Corner Zones  
 Roofs-Zone 3
- a: 10 percent of least horizontal dimension or 0.4h, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m).

### FASTENER PATTERNS



### LOAD TABLES

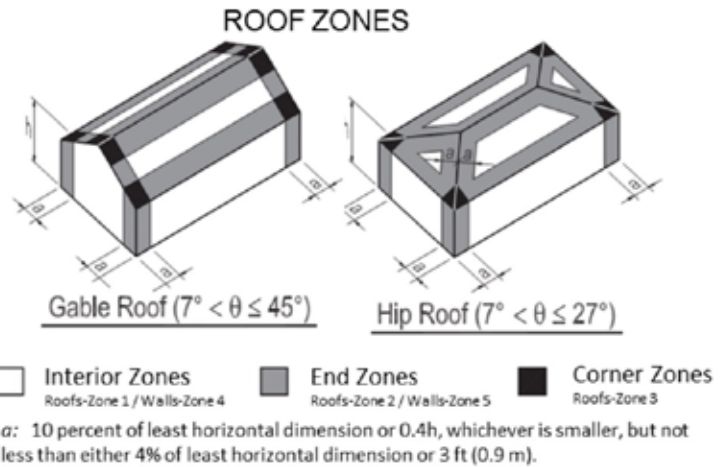
24ga Gulfpbr on 16ga (min) Steel Framing (min #12 screw)								
Wind:	120	130	140	150	160	170	180	200
Zone 1	A60	A60	A60	A60	A60	A60	A60	A48
Zone 2	A60	A60	A60	A48	A48	A48	A36	A24
Zone 3	A48	A48	A48	A36	A36	A24	A24	---

INSTALLATION IN MIAMI-DADE OR BROWARD COUNTY MUST MEET SPECIFIC HVHZ REQUIREMENTS. CONSULT THE HVHZ SECTION OF THIS MANUAL FOR MORE DETAILS.

## 26GA (MIN) GULFWAVE

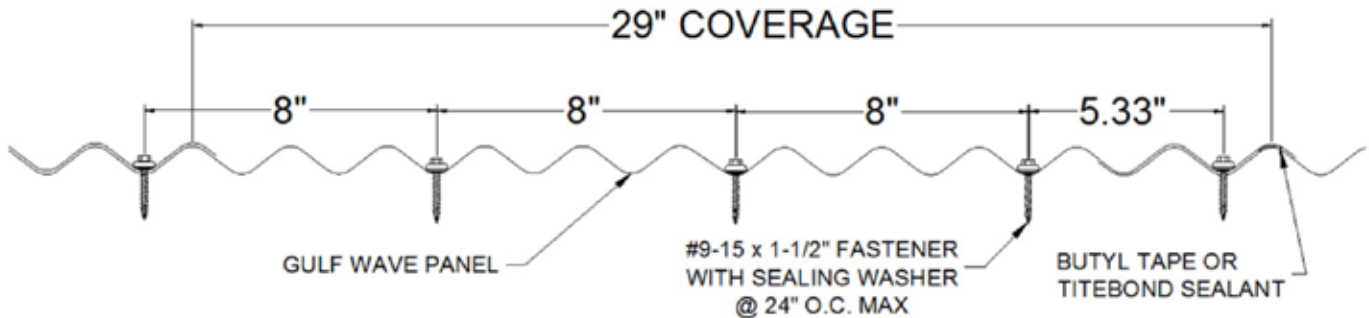
### REQUIREMENTS TO USE THESE LOAD TABLES

- a.) Site is located in **Any Exposure**
- b.) Structure has a **mean roof height of 30' or less**
- c.) Roof is either a **gable roof with slope between 0:12 and 12:12**, or a **hip roof with slope between 0:12 and 6:12**
- d.) Structure is a low rise, regular shaped building, per ASCE 7-10
- e.) Site and structure are free of characteristics which would require further analysis (e.g. wind channeling/buffeting, across wind loading, vortex shedding, or instability due to flutter or galloping).



### FASTENER PATTERNS

#### PATTERN A24 8"-8"-8"-5.33" FASTENER PATTERN FASTENER ROW SPACING: 24" OC



### LOAD TABLES

26ga GulfWave on 15/32" (min) Plywood or Wood Planking (min #9 screw) (NOT APPROVED FOR HVHZ)								
Wind:	120	130	140	150	160	170	180	200
Zone 1	A24	A24	A24	A24	A24	A24	A24	A24
Zone 2	A24	A24	A24	A24	A24	---	---	---
Zone 3	A24	A24	---	---	---	---	---	---

# Appendix E: Revision Log

**1 June 2017:** First publication.

**5 Sept 2017:** Restructred wind load tables, replaced trim detail graphics, other minor changes.

**8 March 2018:** Updated code references to FBC 2017, minor changes throughout.

