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FLORIDA BUILDING CODE 2020 7th EDITION ROOFING UNDERLAYMENT CODE CHANGES

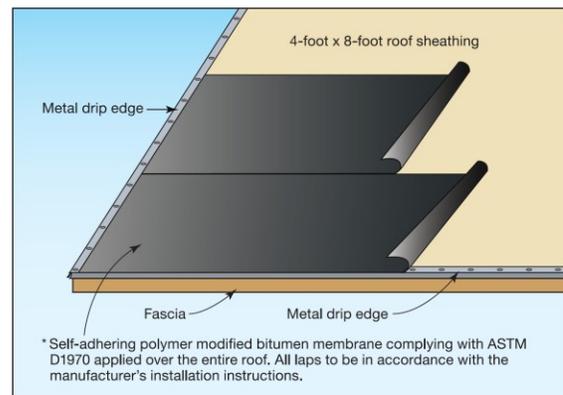
The key differences from the 6th Edition (2017) FBCB and FBCR are:

- where felt underlayment is used, it must be 30# or equivalent (ASTM D 226 Type II, ASTM D4869 Types III or IV)
- installation techniques such as number of plies, lapping, and fastener spacing has been strengthened

There are essentially **three** options for creating a sealed roof deck that vary a bit depending on the type of roof covering. A summary of the three options is as follows:

- Option #1 –** a self-adhering polymer-modified bitumen underlayment complying with ASTM D1970 applied over the entire roof.
- Option #2 –** a minimum 4-inch wide strip of self-adhering polymer-modified bitumen complying with ASTM D1970 or a minimum 3 ¾ - inch wide strip of self-adhering flexible flashing tape complying with AAMA 711, applied over all joints in the roof decking. A felt underlayment complying with ASTM D226 Type II, ASTM D4869 Type III or IV, or ASTM D6757, or a synthetic underlayment meeting the performance requirements specified, is required to be applied over the strips/tape over the entire roof. (See Table 1507.1.1.1 of the FBCB or Table R905.1.1.1 of the FBCR for fastener type and spacing).
- Option #3 –** two layers of felt underlayment comply ASTM D226 Type II or ASTM D4869 Type III or IV, or two layers of a synthetic underlayment meeting the performance requirements specified, lapped and fastened as specified.

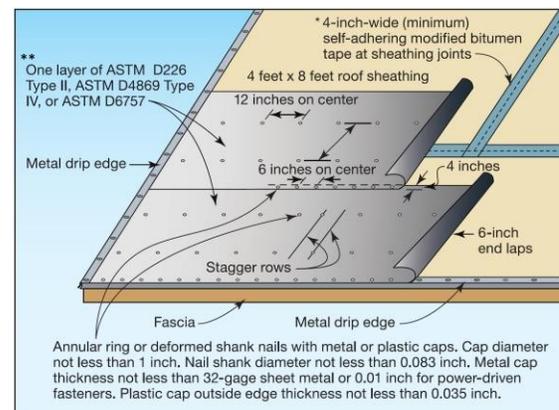
SOURCE: Building A Safer Florida, Inc. <https://floridabuilding.org>



Source: FEMA Hurricane Michael in Florida
Perimeter: A. Williams ?

Sealed Roof Deck Option #1

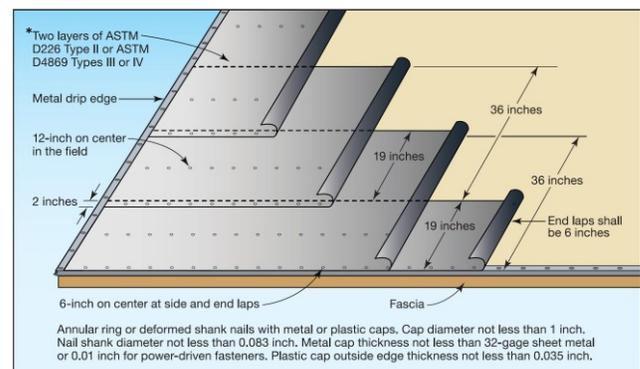
- * 3 ¾ inch AAMA 711 flashing tape is also permitted.
- ** Synthetic underlayment meeting the performance requirements specified is also permitted.



Source: FEMA Hurricane Michael in Florida
Perimeter: A. Williams ?

Sealed Roof Deck Option #2

- * Synthetic underlayment meeting the performance requirements specified is also permitted.



Source: FEMA Hurricane Michael in Florida
Perimeter: A. Williams ?

Sealed Roof Deck Option #3

For asphalt, metal, mineral surfaced, slate and slate-type roof coverings, Options 1, 2, or 3 are permitted. ***For concrete and clay roof tile***, underlayment is required to be in accordance with the FRSA/TRI *Florida High Wind Concrete and Clay Roof Tile Installation*

Manual, Sixth Edition. For wood shakes and shingles, Options 2 and 3 are permitted. It's worth noting that these requirements do not apply to the High-Velocity Hurricane Zones (HVHZ). For additional details see Section 1507.1.1 of the 7th Edition (2020) FBCB and Section R905.1.1 of the 7th Edition (2020) FBCR.

A new exception to Section 1507.1.1.1 in the FBCB permits an existing self-adhered membrane to remain on the roof provided that, if required, re-nailing of the roof deck in accordance with Section 706.7.1 of the FBCB can be confirmed or verified. An approved underlayment for the applicable roof coverings is required to be applied over the existing self-adhered membrane.

Wind Loads on Roofs (ASCE 7-16)

BASF Wind Loads – Impacts from ASCE 7-16 Fact Sheet

The BASF Wind Loads – Impacts from ASCE 7-16 Fact Sheet provides an overview of the significant changes to wind loads in ASCE 7-16 and the 7th Edition (2020) FBC. The BASF Wind Loads – Impacts from ASCE 7-16 Fact Sheet can be downloaded at www.floridabuilding.org.

Roof component and cladding loads for buildings with mean roof heights of 60 feet or less have been revised significantly from ASCE 7-10. The changes mostly result in significant increases in design wind pressures on roofs compared to ASCE 7-10. Due to changes to roof wind loads, the FRSA/TRI Florida High Wind Concrete and

Clay Roof Tile Installation Manual has been updated to comply with ASCE 7-16.

Additionally, the prescriptive fastening requirements for wood structural panel roof sheathing in Section R803.2 of the FBCR have been updated to comply with ASCE 7-16.

Two new tables have been added. Table R803.2.2 specifies the minimum sheathing thickness for framing spaced 24 inches on center based on exposure category and wind speed. An excerpt of Table R803.2.2 is shown in the next column.

While ring shank nails are still required, the nail size depends on the sheathing thickness. Where the sheathing thickness is 15/32 inches and less, roof sheathing is required to be fastened with ASTM F1667 RSRS-01 (2 3/8" × 0.113") nails. Where the

sheathing thickness is greater than 15/32 inches, roof sheathing is required to be fastened with ASTM F1667 RSRS-03 (2 1/2" × 0.131") nails or ASTM F1667 RSRS-04 (3" × 0.120") nails. The RSRS designation indicates the fastener is a ring shank roof sheathing nail.

Excerpt of Table R803.2.2 7th Edition (2020) FBCR

Table R803.2.2
Minimum Roof Sheathing Thickness

Roof Sheathing Thickness			
Rafter/Truss Spacing 24 in. o.c.	Wind Speed		
	140 mph	150 mph	160 mph
Minimum Sheathing Thickness, inches (Panel Span Rating) Exposure B	7/16 (24/16)	15/32 (32/16)	19/32 (40/20)
Minimum Sheathing Thickness, inches (Panel Span Rating) Exposure C	19/32 (40/20)	19/32 (40/20)	19/32 (40/20)
Minimum Sheathing Thickness, inches (Panel Span Rating) Exposure D	19/32 (40/20)	19/32 (40/20)	19/32 (40/20)

Table R803.2.3.1 specifies the maximum fastener spacing based on framing specific gravity, exposure category, and wind speed. An excerpt of Table R803.2.3.1 is shown below.

Excerpt of Table R803.2.3.1 7th Edition (2020) FBCR

Table R803.2.3.1
Roof Sheathing Attachment^{a,b}

Roof Sheathing Attachment						
Rafter/Truss Spacing 24 in. o.c.	Wind Speed					
	140 mph		150 mph		160 mph	
	E	F	E	F	E	F
Exposure B						
Rafter/Truss SG = 0.42	6	6	6	6	4	4
Rafter/Truss SG = 0.49	6	6	6	6	6	6
Exposure C						
Rafter/Truss SG = 0.42	4	4	4	4	4	4
Rafter/Truss SG = 0.49	6	6	6	6	6	6
Exposure D						
Rafter/Truss SG = 0.42	4	4	4	4	3	3
Rafter/Truss SG = 0.49	6	6	4	4	4	4

Roof Mitigation (FBCEB and FBCR)

The Florida Building Code, Existing Building (FBCEB) has historically required a certain level of mitigation on roof assemblies when existing roofs are removed and replaced. This is primarily because the best time to perform mitigation on roof assemblies is when the roof covering is removed. Sections 706.7 and 706.8 in the FBCEB (Sections R908.7 and R908.8 in the FBCR) required that where roof covering is removed and replaced on a site-built single-family dwelling permitted prior to the implementation of the FBC, the following mitigation measures to be completed:

- Adding supplement ring shank fasteners to attach the roof decking where the existing deck has insufficient fasteners such as staples or 6d nails or where the spacing of fasteners is lacking (see Table 706.7.1).
- Applying a secondary water barrier (similar to the sealed roof deck that will now be required outside the HVHZ).
- Install roof to wall connections in some circumstances.

The 7th Edition (2020) FBCEB has expanded the required mitigation techniques to apply to all buildings with wood roof decks not just site-built single-family buildings. Buildings such as apartments, office buildings, and modular buildings with wood roof decks will now be required to comply with mitigation provisions of 706.6 and 706.7 of the FBCEB.

Section 706.7 7th Edition (2020) FBCEB

706.7 Mitigation. When a roof covering on an existing structure with a sawn lumber, wood plank, or wood structural panel roof deck is removed and replaced, the following procedures shall be permitted to be performed by the roofing contractor:

- (a) Roof-decking attachment shall be as required by Section 706.7.1.
- (b) A secondary water barrier shall be provided as required by Section 706.7.2.

Exception: Structures permitted subject to the Florida Building Code are not required to comply with this section.

In the 6th Edition (2017) FBCEB, where roofing materials are removed from more than 50 percent of the roof diaphragm, Section 707.3.2 required an evaluation of the roof diaphragm, its connection to roof framing, and roof-to-wall connections. Where they were not capable of resisting 75% of current wind loads, they were required to be replaced or strengthened. The applicability of this section has been reduced significantly in the 7th Edition (2020). The evaluation and potential strengthening required now only apply where structural deck is removed from more than 30 percent of the structural roof diaphragm.

Section 707.3.2 7th Edition (2020) FBCEB

707.3.2 Roof diaphragms resisting wind loads in high-wind regions. Where the structural roof deck is removed from more than 30 percent of the structural diaphragm or section of a building located where the ultimate design wind speed, V_{ult} , is greater than 115 mph, as defined in Section 1609 (the HVHZ shall comply with Section 1620) of the *Florida Building Code, Building, roof diaphragms, connections of the roof diaphragm to roof framing members, and roof-to-wall connections shall be evaluated for the wind loads specified in the Florida Building Code, Building, including wind uplift*. If the diaphragms and connections in their current condition are not capable of resisting at least 75 percent of those wind loads, they shall be replaced or strengthened in accordance with the loads specified in the *Florida Building Code, Building*.