

Florida Building Code, 6th Edition SHINGLE ROOFING

This bulletin addresses the current Building Code roofing and re-roofing requirements for shingle roofing systems. The information found in this bulletin is a summary (and not necessarily all inclusive) of the roofing and re-roofing requirements found in the Florida Building Code – Existing Building edition Chapter 7, Section 706 and the Florida Building Code – Building edition Chapter 15, Section 1507.2 and the Florida Building Code – Residential Chapter 9.

Applicability

Section 411.1, section 502.2 and section 601.1 of The Florida Building Code – Existing Building edition state *Repairs...shall comply with the provisions of Chapter 6. Reroofing shall comply with the provisions of Section 706.* The criteria for re-roofing is established in Chapter 7, Section 706. Section 706.1 states that when new roofing materials are installed, they are to be installed in accordance the new construction requirements. This does not necessarily mean that the entire roof must meet new construction requirements, only those portions required to be replaced.

706.1 General. Materials and methods of application used for recovering or replacing an existing roof covering shall comply with the requirements of Chapter 15 of the Florida Building Code, Building or Chapter 9 of the Florida Building Code, Residential. Roof repairs to existing roofs and roof coverings shall comply with the provisions of this code.

The installation requirements for new asphalt shingle roofing systems is found within the Florida Building Code – Building edition Chapter 15, Section 1507.2 and its subsequent sections as well as chapter 9 of the Florida Building Code - Residential.

25% Replacement Rule

Florida Building Code – Existing Building Chapter 7 Section 706.1.1: *Not more than 25 percent of the total roof area or roof section of any existing building or structure shall be repaired, replaced or recovered in any 12 month period unless the entire roofing system or roof section conforms to requirements of this code.*

The definition of a ROOF SECTION is found in the Florida Building Code – Existing Building edition’s Chapter 2 Section 202 DEFINITIONS:

ROOF SECTION. A separating or division of a roof area by existing expansion joints, parapet walls, flashing (excluding valley), difference of elevation (excluding hips and ridges), roof type or legal description; not including the roof area required for a proper tie-off with an existing system.

This means that both sides of a sloped roof are one section but changes in roofing material or changes in elevation are different roof sections.

Please note that the section below applies to roof replacements. Roof repairs (not an entire roof replacement) does not require re-nailing of the entire roof deck however you would be required to re-nail any decking that is to be exposed and does not meet current requirements!!

Roofing Materials: Deck Re-nailing

FBC – Existing Building Section 706.7 establishes the requirement that the roof decking is to be re-nailed. NOTE: Structures that already comply are exempt from this requirement, (i.e. permitted under the 2004 code or newer).

706.7 When a roof covering on an existing site-built single family residential structure is removed and replaced, the following procedures shall be permitted to be performed by the roofing contractor:

(a) Roof-decking attachment shall be as required by Section 706.7.1.

(b) A secondary water barrier shall be provided as required by Section 706.7.2.

Exception: Single family residential structures permitted subject to the Florida Building Code are not required to comply with this section.

FBC – Existing Building Section 706.7.1 establishes the various re-nailing requirements.

706.7.1 Roof decking attachment for site-built single-family residential structures.

For site-built single family residential structures the fastening shall be in accordance with Section 706.7.1.1 or 706.7.1.2 as appropriate for the existing construction. 8d nails shall be a minimum of 0.113 inch in diameter and shall be a minimum of 2-1/4 inch long to qualify for the provisions of this section for existing nails regardless of head shape or head diameter.

706.7.1.1 Roof decking consisting of sawn lumber or wood planks up to 12 inches wide and secured with at least two nails (minimum size 8d) to each roof framing member it crosses shall be deemed to be sufficiently connected. Sawn lumber or wood plank decking secured with smaller fasteners than 8d nails or with fewer than two nails (minimum size 8d) to each framing member it crosses shall be deemed sufficiently connected if fasteners are added such that two clipped head, round head, or ring shank nails (minimum size 8d) are in place on each framing member it crosses. 706.7.1.2 For roof decking consisting of wood structural panels, fasteners and spacing required

in columns 3 and 4 of Table 706.7.1.2 are deemed to comply with the requirements of Section 707.3, Florida Building Code, Existing Building for the indicated design wind speed range. Wood structural panel connections retrofitted with a two part urethane based closed cell adhesive sprayed onto the joint between the sheathing and framing members are deemed to comply with the requirements of Section 707.3, Florida Building Code, Existing Building, provided testing using the manufacturer's recommended application on panels connected with 6d smooth shank nails at no more than a 6-inch edge and 12-inch field spacing demonstrate an uplift resistance of a minimum of 200 psf.

Supplemental fasteners as required by Table 706.7.1.2 shall be 8d ring shank nails with round heads and the following minimum dimensions:

1. 0.113-inch nominal shank diameter.
2. Ring diameter a minimum of 0.010 inch over shank diameter.
3. 16 to 20 rings per inch.
4. A minimum 0.280-inch full round head diameter.
5. Ring shank to extend a minimum of 1 1/2 inches from the tip of the nail.
6. Minimum 2 3/8-inch nail length.

**TABLE 706.7.1.2
SUPPLEMENT FASTENERS AT PANEL EDGES AND INTERMEDIATE FRAMING**

EXISTING FASTENERS	EXISTING SPACING	V_{wind}^c 110 MPH OR LESS SUPPLEMENTAL FASTENER SPACING SHALL BE NO GREATER THAN	V_{wind}^c GREATER THAN 110 MPH SUPPLEMENTAL FASTENER SPACING SHALL BE NO GREATER THAN
Staples or 6d	Any	6" o.c. ^b	6" o.c. ^b
8d clipped head, round head, smooth or ring shank	6" o.c. or less	None necessary	None necessary
8d clipped head, round head, smooth or ring shank	Greater than 6" o.c.	6" o.c. ^a	6" o.c. ^a

For SI: 1 inch = 25.4 mm.

a. Maximum spacing determined based on existing fasteners and supplemental fasteners.

b. Maximum spacing determined based on supplemental fasteners only.

c. V_{wind}^c shall be determined in accordance with Section 1609.3.1 of the Florida Building Code, Building or Section R301.2.1.3 of the Florida Building Code, Residential.

Secondary Water Barrier

FBC – Existing Building Section 708.7 establishes the requirement that a secondary water barrier system be installed. NOTE: Structures that already comply are exempt from this requirement, (i.e. permitted under the 2007 code or newer).

FBC – Existing Building Section 706.7.2 establishes the various methods of installing a system that complies with the secondary water barrier system requirement.

706.7.2 Roof secondary water barrier for site-built single family residential structures. A secondary water barrier shall be installed using one of the following methods when roof covering is removed and replaced:

2. Outside the High-Velocity Hurricane Zone:

a) Underlayment shall comply with Section R905.1.1 of the Florida Building Code, Residential.

Exceptions:

1. Roof slopes < 2:12 having a continuous roof system shall be deemed to comply with Section 706.7.2 requirements for a secondary water barrier.

2. Clay and concrete tile roof systems installed as required by the Florida Building Code are deemed to comply with the requirements of Section 706.7.2 for Secondary Water Barriers.

R905.1.1 Underlayment. Unless otherwise noted underlayment for asphalt shingles, metal roof shingles, mineral-surfaced roll roofing, slate and slate-type shingles, wood shingles, wood shakes and metal roof panels shall 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 R905.1.1. Underlayment shall be applied and attached in accordance with Table R905.1.1.

Exception: A reinforced synthetic underlayment that is approved as an alternate to underlayment complying with ASTM D226 Type II and having a minimum tear strength in accordance with ASTM D 1970 or ASTM D4533 of 20 pounds shall be permitted. This underlayment shall be installed and attached in accordance with the underlayment attachment methods of Table R905.1.1 for the applicable roof covering and slope, except metal cap nails shall be required where the ultimate design wind speed, V_{ult} equals or exceeds 150 mph.

**TABLE R905.1.1
UNDERLAYMENT TABLE**

Roof Covering Section	Roof Slope 2:12 and Less Than 4:12 Underlayment	Underlayment Attachment ^a	Roof Slope 4:12 and Greater Underlayment	Underlayment Attachment ^a
Asphalt shingles R905.2	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
Concrete and Clay Tile R905.3	See Section R905.3.3			
Metal roof shingles R905.4	ASTM D226 Type I or II ASTM D4869 Type II, III or IV ASTM D6757	1	ASTM D226 Type II ASTM D4869 Type IV	2
	ASTM D1970	3	ASTM D1970	3
Mineral-surfaced roll roofing R905.5	ASTM D226 Type I or II ASTM D4869 Type II, III or IV ASTM D6757	1	ASTM D226 Type II ASTM D4869 Type IV	2
	ASTM D1970	3	ASTM D1970	3
Slate and slate-type shingles R905.6	ASTM D226 Type I or II ASTM D4869 Type II, III or IV ASTM D6757	1	ASTM D226 Type II ASTM D4869 Type IV	2
	ASTM D1970	3	ASTM D1970	3
Wood shingles R905.7	ASTM D226 Type I or II ASTM D4869 Type II, III or IV	1	ASTM D226 Type II ASTM D4869 Type IV	2
Wood shakes R905.8		Limited to roof slopes 4:12 and Greater	ASTM D226 Type II ASTM D4869 Type IV	2
Metal roof panels R905.10	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
Photovoltaic Shingles R905.17	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

1. Roof slopes from two units vertical in 12 units horizontal (17-percent slope), and less than four units vertical in 12 units horizontal (33-percent slope). Apply a 19-inch (483 mm) strip of underlayment felt parallel to and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply 36-inch-wide (914 mm) sheets of underlayment, overlapping successive sheets 19 inches (483 mm), end laps shall be 6 inches and shall be offset by 6 feet. The underlayment shall be attached to a nailable deck with corrosion-resistant fasteners with one row centered in the field of the sheet with a maximum fastener spacing of 12 inches (305 mm) o.c., and one row at the end and side laps fastened 6 inches (152 mm) o.c. Underlayment shall be attached using metal or plastic cap nails with a nominal cap diameter of not less than 1 inch. Metal caps shall have a thickness of not less than 32-gage sheet metal. Power-driven metal caps shall have a minimum thickness of 0.010 inch. Minimum thickness of the outside edge of plastic caps shall be 0.035 inch. The cap nail shank shall be not less than 0.083 inch for ring shank cap nails and 0.091 inch for smooth shank cap nails. Cap nail shank shall have a length sufficient to penetrate through the roof sheathing or not less than 3/4 inch into the roof sheathing.

2. Roof slopes of four units vertical in 12 units horizontal (33-percent slope) or greater. Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 4 inches (51 mm), end laps shall be 6 inches and shall be offset by 6 feet. The underlayment shall be attached to a nailable deck with two staggered rows in the field of the sheet with a maximum fastener spacing of 12 inches (305 mm) o.c., and one row at the end and side laps fastened 6 inches (152 mm) o.c. Underlayment shall be attached using metal or plastic cap nails with a nominal cap diameter of not less than 1 inch. Metal caps shall have a thickness of not less than 32-gage sheet metal. Power-driven metal caps shall have a minimum thickness of 0.010 inch. Minimum thickness of the outside edge of plastic caps shall be 0.035 inch. The cap nail shank shall be not less than 0.083 inch for ring shank cap nails and 0.091 inch for smooth shank cap nails. Cap nail shank shall have a length sufficient to penetrate through the roof sheathing or not less than 3/4 inch into the roof sheathing.

3. Roof slopes from two units vertical in 12 units horizontal (17-percent slope) and greater. The entire roof deck shall be covered with an approved self-adhering polymer modified bitumen underlayment complying with ASTM D 1970 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 R905.1.1 for the applicable roof covering shall be applied over the entire roof over the 4-inch-wide (102 mm) membrane strips.

Drip Edge

Provide drip edge at eaves and gables of shingle roofs. Drip edge at eaves shall be permitted to be installed either over or under the underlayment. **If installed over the underlayment, there shall be a minimum 4 inch (51 mm) width of roof cement installed over the drip edge flange.**

Base and counter flashing

Base and counter flashing shall be installed as follows:

1. In accordance with manufacturer's installation instructions, or
2. A continuous metal minimum 4-inch by 4-inch "L" flashing shall be set in approved flashing cement and set flush to the base of the wall and over the underlayment. Both horizontal and vertical metal flanges shall be fastened 6 inches on center with approved fasteners. All laps shall be a minimum of 4 inches fully sealed in approved flashing cement. Flashing shall start at the lower portion of the roof to ensure water-shedding capabilities of all metal laps. The entire edge of the horizontal flange shall be sealed covering all nail penetrations with approved flashing cement and membrane. Shingles shall overlap the horizontal flange and shall be set in approved flashing cement.

Roofing Materials - Flashing

FBC – Existing Building Section 706.6 requires that flashing be reconstructed and installed respectively, in accordance with the manufacturer's instructions and those listed in the code.

Shingle Application

*R905.1 Roof covering application. Roof coverings shall be applied in accordance with the applicable provisions of this section **and the manufacturer's installation instructions.***

Fasteners for asphalt shingles shall be galvanized steel, stainless steel, aluminum or copper roofing nails, minimum 12 gage with a minimum 3/8-inch-diameter head, of a length to penetrate through the roofing materials and a minimum of 3/4 inch into the roof sheathing. Where the roof sheathing is less than 3/4 inch thick, the fasteners shall penetrate through the sheathing. Asphalt shingles shall have the minimum number of fasteners required by the manufacturer. The instruction below was taken directly from Tamko's instruction sheet from their Florida Product Approval:

"3) High Wind Fastening Pattern. (For High Wind Application requirements) One fastener 1 in. from each end. One fastener 8-1/2 in. from each end and one fastener 16 in. from each end for a total of six (6) fasteners per shingle."

Please verify the high wind fastening pattern instructions for the shingles that are being installed! Most, if not all, manufacturers require a minimum of six fasteners per shingle.

Please cover any exposed roofing fasteners (Final Ridge Cap, etc.) with an approved sealant.