Consumer's Guide to Code-Compliant Roofing Installations

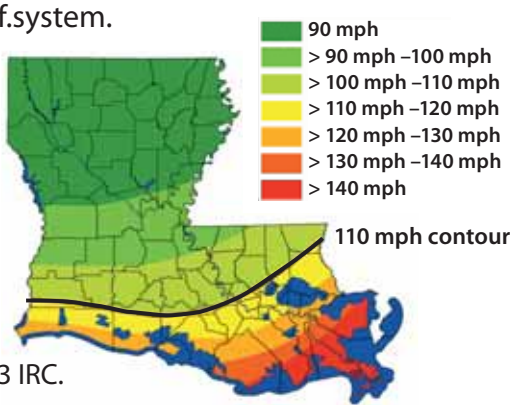
International Residential Code (IRC) 2006 | Section R905

This guide highlights and clarifies the recognized **minimum standards** in the IRC base building codes for asphalt roof installation. Manufacturer's installation instructions requirements must be followed to ensure a quality, wind resistant roof.system.

black text - IRC, 2006 Blue text - interpretation

High Wind Roof Installations

Basic Wind Speed has been determined by the American Society of Civil Engineers (ASCE) as a reference for the International Residential Code (IRC), on which the Louisiana State Uniform Construction Code is based. Basic Wind Speed in Louisiana ranges from 90 mph in the northern part of the state to 150 mph in the southeastern tip.*

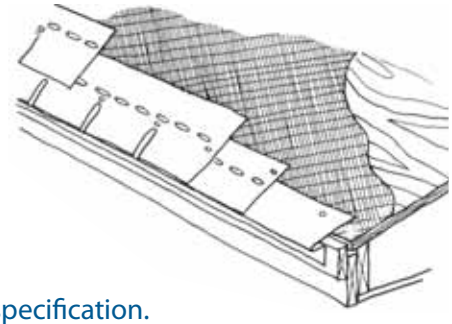


* The Louisiana residential code retained the 110 mph contour from the 2003 IRC.

Asphalt Shingles

R905.2 Asphalt Shingles

Self-seal strips or be interlocking—ASTM D-225 or D-3462



R905.2.4.1 Wind resistance of asphalt shingles.

Wind Zones greater than 110 mph:

ASTM D 3161 Class F is acceptable with special fastener methods of six nails per shingle or manufacture's specification.

Wind Zones less than 110 mph:

ASTM D 3161 normal application of four nails per shingle or manufacture's specification.

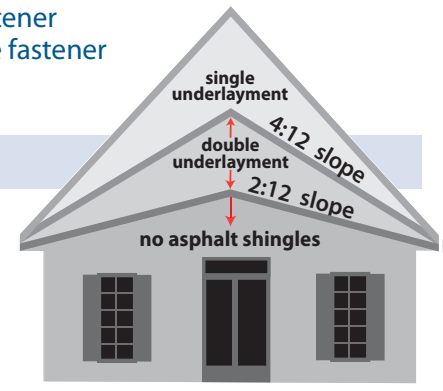
Decking

R905.2.1 Sheathing requirements

Asphalt shingles shall be fastened to solidly sheathed decks.

This section implies that shingles shall be applied over a solid, continuous-deck material. Typical deck construction consists of Wolmanized structural plywood or CDX. The thickness of the deck shall be 7/16 of an inch to 5/8 of an inch thick and fastened using 8d common nails, 10d box or power-driven nails. The IRC code further states in Section 1609.5.1 that the deck must be designed and installed in accordance with ASCE 7.

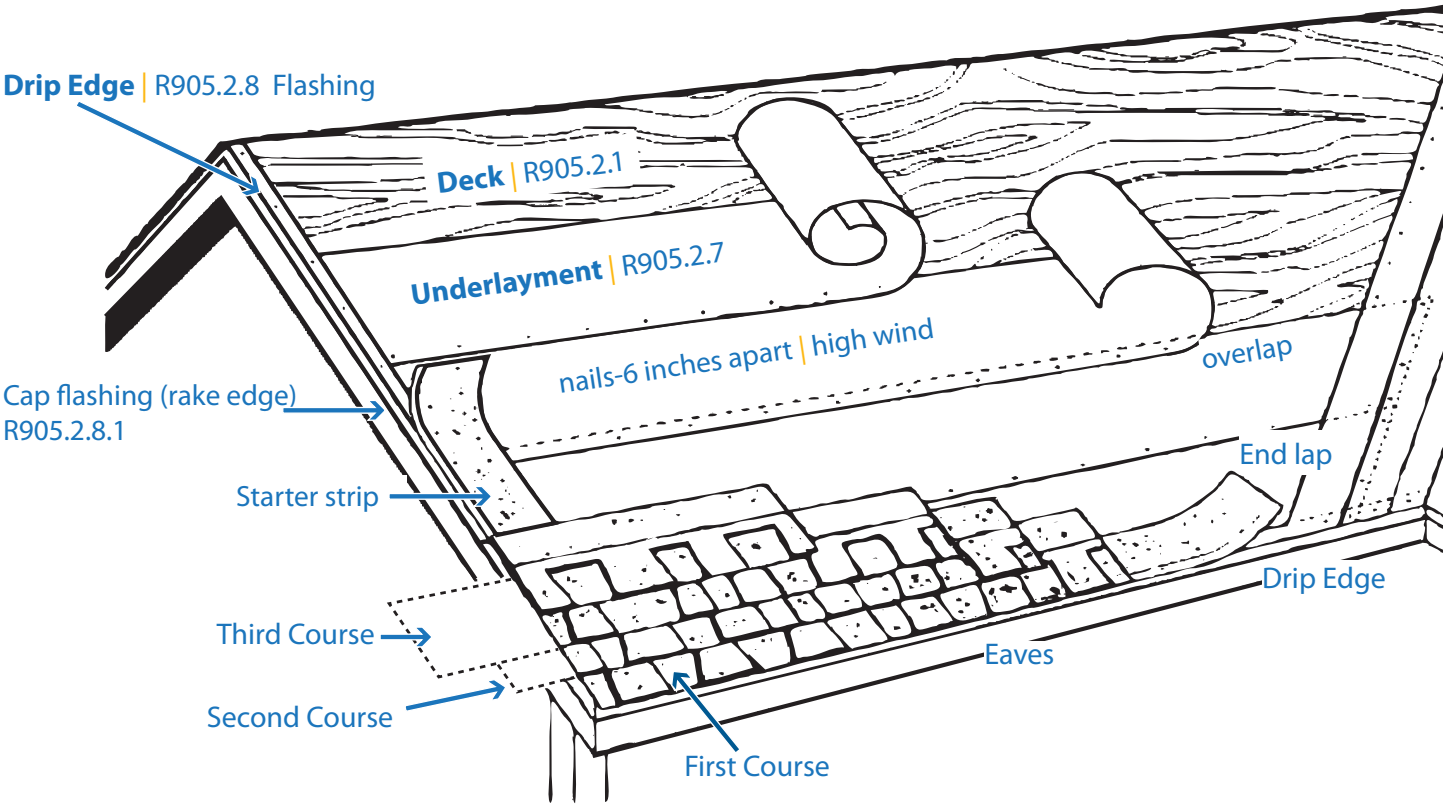
The fastening rate of deck to trusses of 16 inches on center (o.c.) or less is one fastener every 6 inches o.c. The fastening rate of deck to trusses of 24 inches o.c. or less is one fastener every 4 inches o.c.



Slope

R905.2.2 Slope

Asphalt shingles shall be used only on roof slopes of 2 units vertical in 12 units horizontal (2:12) or greater. For roof slopes from 2 units vertical in 12 units horizontal (2:12) up to 4 units vertical in 12 units horizontal (4:12), double underlayment application is required in accordance with Section R905.2.7.



General Installation

Underlayment

R905.3.3 Underlayment

Underlayment shall conform to ASTM D 226 Type I, ASTM D-4869, ASTM D-6757

Underlayment implies fiberglass felt, organic felt, modified bitumen or self-adhering modified bitumen.

R905.3.3.1 Low-slope roofs

Double underlayment

- 19 inch starter strip parallel to and starting at the eave, fastened to hold in place
- followed with a 36 inch wide sheet in succession over lapping each sheet by 19 inches

R905.3.3.2 High-slope roofs

Single underlayment

- Single layer 36 inch wide sheets to follow each other successively over lapping 2 inches

R905.3.3.3 Underlayment and high wind

High-wind areas above 110 mph

Underlayment must be applied with corrosion resistance fasteners in accordance with manufacture's installation instruction. Fasteners are applied 36 inches apart on center along the overlap.

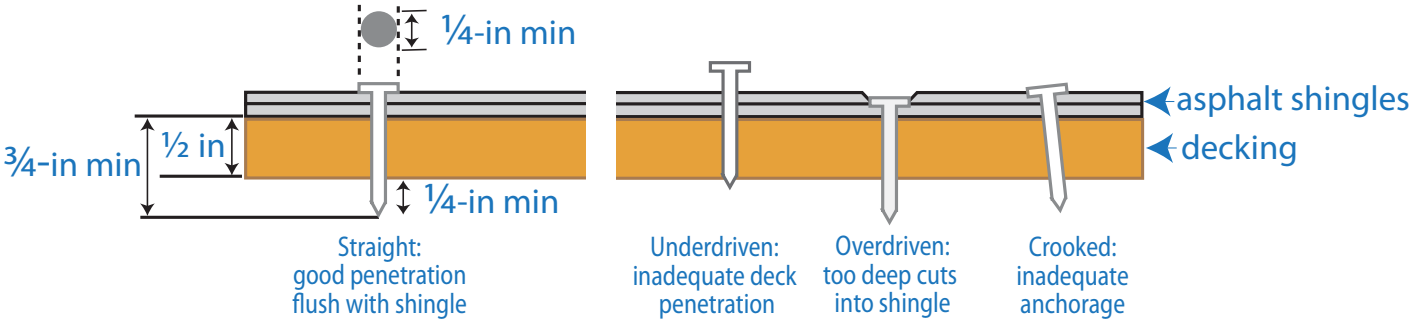
R905.2.7 Underlayment application

Underlayment end laps shall be offset by 6 feet.

Fasteners

R905.2.5 Fasteners for Asphalt Shingle

Fasteners for asphalt shingles shall be galvanized steel, stainless steel, aluminum or copper roofing nails 12 gage shank with minimum ⅜-inch diameter nail. Must penetrate the roofing a minimum of ¾-inch into the sheathing if ¾-inch or greater. Sheathing less than ¾-inch, nail must penetrate through sheathing.



Properly Driven **Improperly Driven**

Recommendation: Hot dipped galvanized nails will last longer in coastal conditions. Electroplated galvanized products have a shorter life.

R905.2.6 Attachment

Asphalt shingles shall have the minimum number for fasteners required by the manufacturer.

Not less than four fasteners per strip shingle or two fasteners per individual tab.

High wind (110 mph or higher): special methods of fastening are required — six nails per shingle.

Flashing and Drip edge

R905.2.8 Flashing:

R905.2.8.1 Base flashing (drip edge) shall be of either corrosion-resistant metal of minimum of 0.019-inch thickness or mineral surface roll weighing a minimum of 77 pounds per 100 square feet.

Cap flashing shall be corrosion-resistant metal of minimum of 0.019 inch

R905.2.8.3 Crickets, saddles. A cricket or saddle shall be installed on the ridge side of any chimney or penetration more 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.

R905.2.8.4 Sidewall flashing. Flashing against a vertical sidewall shall be by the step-flashing method.

R905.2.8.5 Other flashing. Flashing against a vertical front wall, as well as soil stack, vent pipe and chimney flashing, shall be applied according to the asphalt shingle manufacturer's printed instructions.

Recommendation: If you chose galvanized metal for your flashing, hot-dipped is a better choice.

R905.2.8.2 Valleys

Valley Linings

1. Open valley lined with metal shall be 24 inches wide and of any of the corrosion-resistant metal.

2. For open valleys, lining of two-ply mineral-surfaced roll roofing, complying with ASTMD3909 or ASTMD6380 Class M shall be permitted. Bottom layer a minimum of 18 inches wide and top layer a minimum of 36 inches wide.

3. Closed valley (covered with shingle) lining of one-ply smooth-roll roofing complying with ASTMD6380 Class S Type III, Class M Type II or ASTMD3909 and at least 36 inches wide or valley lining as described in 1 and 2 above shall be permitted. Special underlayment complying with ASTMD1970 may be used in lieu of the lining material.

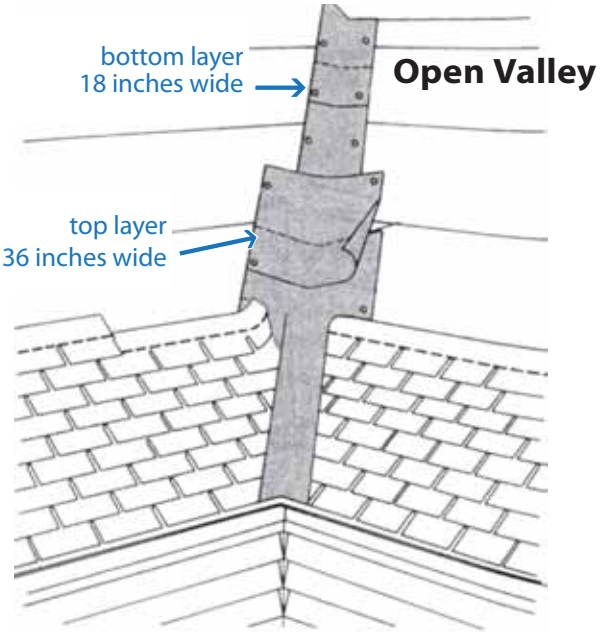


Table R905.2.8.2
Valley Lining Material

MATERIAL	MINIMUM THICKNESS	GAUGE	WEIGHT
Cold-rolled copper	0.0216 nominal	—	ASTM B 370, 16 oz. per square foot
Lead-coated copper	0.0216 nominal	—	ASTM B 101, 16 oz. per square foot
High-yield copper	0.0162 nominal	—	ASTM B 370, 12 oz. per square foot
Lead-coated high-yield copper	0.0162 nominal	—	ASTM B 101, 12 oz. per square foot
Aluminum	0.024	—	—
Stainless steel	—	28	—
Galvanized steel	0.0179	26 (zinc coated G90)	—
Zinc alloy	0.027	—	—
Lead	—	—	2½
Painted terne	—	—	20

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