



Home

Roofs

[Home](#) > [Roofs](#) > [What To Do When Re-Roofing](#)

[PDF Version](#) [Questions](#)

Openings

What To Do When Re-Roofing

Features & Equip.

Leaks

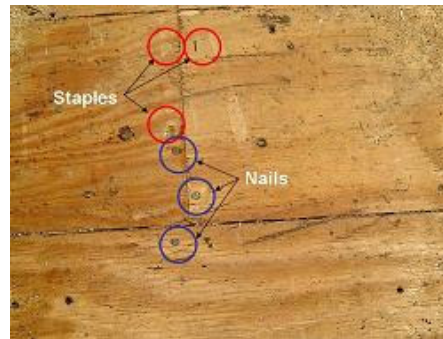
Structural

Survey & Decisions

Building codes generally allow homeowners to install a second layer of asphalt shingles over an existing layer of old shingles. However, for a more secure roof during hurricanes and other high winds or in high hail areas, it is strongly recommended that you remove the old shingles before installing the new ones. Besides giving you more confidence that the shingles will seal properly (wind rated shingles have only been tested as applied over a flat roof deck; not over the bumpy surface of an existing layer of shingles) and that you will have a more wind resistant roof covering, it gives you the opportunity to take several additional steps (replacing damaged or decayed sheathing, re-nailing your roof sheathing to increase its resistance to being lifted off in a hurricane, adding secondary water protection as outlined below, and applying a high quality underlayment) to make your house safer; all at relatively little extra cost.

The basic steps required to achieve a safer, more wind resistant roof deck are:

1. Remove the old shingles and underlying building paper to expose the roof deck.
2. Inspect the roof deck to determine if parts of it are rotted, delaminated, warped or structurally unsound. If so, replace these sections with similar materials of the same thickness.
3. Check the nailing of the roof deck to the rafters or trusses that support the deck. **For wood plank decks**, the existing nailing has generally proven to be adequate (If at least two nails were installed every time one of the planks crossed a rafter or truss) so you should not need to re-nail the deck. **For wood panel sheathing** (plywood or Oriented Strand Board, OSB) nail sizes and nail spacing commonly used, particularly along trusses and rafters in the middle of the panels have been inadequate to provide the needed resistance to uplift in hurricanes. Staples have been found by both engineering testing and hurricane experience to not hold roof sheathing down very well, regardless of how close together they may be.



**Nails and staples as seen from top of roof sheathing.
The plywood was probably initially nailed in place in the
corners and edges and then staples were added.**

(click image for larger version)

4. Check every single sheet of plywood or OSB. Sometimes during construction sheathing does not get completely nailed down as intended. Sometimes the carpenters forgot to nail down the sheathing completely because they got distracted or were in too big of a hurry. And, sometimes the sheathing does not get nailed down adequately because the building code standards for the nailing were less stringent at the time the sheathing was applied. In high wind situations, poorly attached sheathing that will come off first, and it only takes one failure to have a catastrophe. Bear in mind that that nails don't cost much and if the roofer uses a pneumatic gun, the cost of adding nails is simply not great and is certainly small in relation to the benefit. In Florida, the existing building code (FEBC) requires that roof sheathing be fastened to today's standards before replacement shingles are applied.

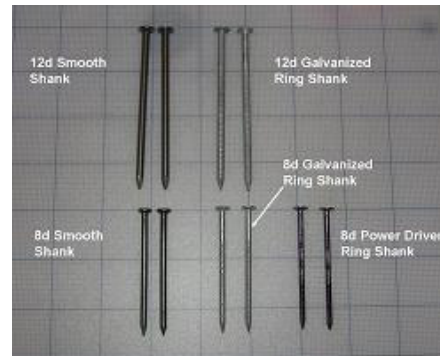


**Missing panels from the middle of roof
indicates poor nailing of sheathing.**

(click image for larger version)

5. The ideal situation would be to find that you already have 8d (2-3/8" or longer) ring shank nails spaced no farther apart than 6" along the 4' edges of the sheathing as well as along the rafters or trusses in the center portion of the sheathing. Ring shank nails have rings around the shank that make the nails harder to pull out than the more typical smooth shank nails with which you are probably familiar. Unfortunately, it is unlikely that you will find this ideal situation unless

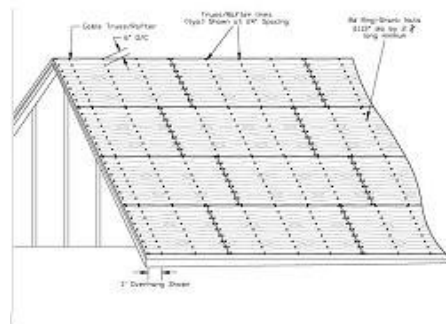
your house was recently built to high wind standards. Building code minimum nailing patterns for most of the hurricane prone areas are 8d (2-1/2" long) smooth shank nails spaced every 6" along all roof framing members. This should be the minimum you accept. However, we strongly recommend the following nailing patterns to upgrade roof sheathing connections:



Comparison of smooth shank and ring-shank nails

(click image for larger version)

- Make sure that you have 8d smooth or ring shank nails spaced a maximum of 6" along all 4' edges of the roof sheathing
- If the design wind speed for your area is less than 120 mph add 8d ring-shank nails at 6" spacing along all the intermediate roof structure members within 4' of the edges and ridges of the roof. Add 8d ring shank nails so that the maximum spacing between existing and added nails is 6" along intermediate roof framing members in all areas inside the 4' perimeter.
- If your design wind speed is greater than 120 mph, add 8d ring-shank nails at 6" spacing along all the intermediate framing members across the whole roof.
- If you find staples, no matter what the spacing, you should add 8d ring-shank nails at 6" spacing along all framing members (along the edges of the sheathing and along intermediate framing members).
- If you find 6d (2" long and smaller diameter than 8d), no matter what the spacing, you should add 8d ring-shank nails at 6" spacing along all framing members (along the edges of the sheathing and along intermediate framing members).



What you would like to have holding your roof sheathing down when a hurricane strikes

(click image for larger version)

Additional guidance on roof deck sheathing attachment, that is written more from the perspective of building a new home, can be found in the FEMA coastal construction manual and their recovery fact sheets (see [FEMA_hgcc_fact18_Roof_Sheathing_Installation.pdf](#)). This fact sheet also addresses the issues of gable overhang vulnerability and the need for blocking along the edges of sheathing at ridge vents. In retrofit applications, any desired blocking should be added before the roofer gets ready to re-roof. While you should be able to get the roofer to re-nail the decking, including adding nails along the edge of the ridge vent, it is extremely unlikely that the roofer would be willing to install the blocking. The addition of blocking along the edges of the ridge vent is most important for roofs with large gable ends (more than about 8-feet tall) in locations where the design wind speeds are greater than about 130 mph.

[Back to main roofing page](#)

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