

When to Add Sheathing to a Roof

INTRODUCTION

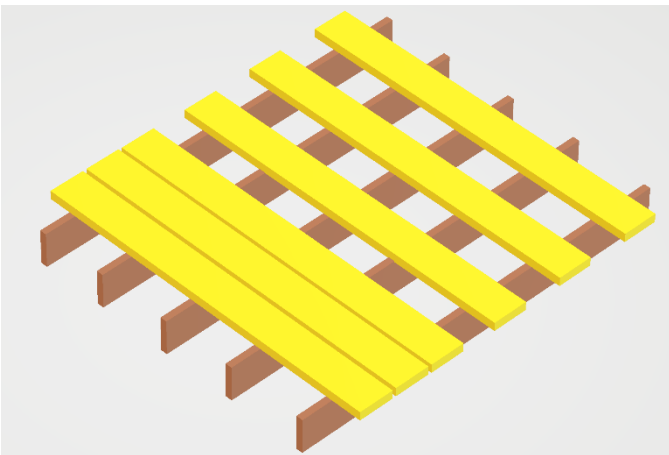
Let's assume a roof has been approved to be replaced for some reason by the insurance company. The shingles have been identified as being damaged by a covered loss of some sort, whether it be wind, hail, a tree, or vandalism. The train has left the station. We cannot go back on that. The roof shingles are going to be replaced.

The house was built when the city was forming back in the 1900's. There was no such thing as plywood. Wide 1-inch boards were used to form a roof deck.

Do we need to place sheathing on top of an old roof that has deck boards? What are the facts that need to be considered?

1. DEFINITIONS

Space Decking – Space Decking is the technique of installing boards on a roof with an intent to have large spaces in between the boards. This technique is used with cedar shakes and tile roofs. Space decking is not to be confused with solid board decking that has minor gaps in between the boards. The image below shows space decking on a roof with solid board decking at the eave.



Sheathing – For the purpose of this paper, sheathing is the layer of structural material that is fastened on top of the roof structural members. It is normally 8x4 sheets of plywood or Oriented strand board (OSB) that is manufactured according to APA standards. OSB or Plywood require 1/8 gaps.

Solidly Sheathed Decks – For the purpose of this paper, Solidly Sheathed Decks are roof decks that have little to no gaps between the materials other than what is required for temperature and moisture expansion.

2. Common Sense & Reasoning

We are not robots. Let's use our brains. What are the reasons for placing roof sheathing on an old roof that has boards. The following are reason given, but have no thought in them:

1. The contractor said we have to.
2. It is the right thing to do.
3. It is code.
4. The manufacturer's installation directions say we must.
5. We did it on the last re-roofing project.

While any of the above statements might all be true, they really don't give us a good reason as to why we should consider upgrading the substate of the roof deck.

Let's not lose sight of the reason behind the things that we do. The building code is written with the intent to help contractors and owners build quality buildings that will last for them and the people that come after them. There is a reason "why" behind every code entry.

3. A Reasonable Answer

Shingles needed to be held in place by nails or staples. Fasteners are required to be installed at precise locations on the shingles to have them function properly. Large deck boards with large gaps are not good for two reasons:

1. The nails might be driven into the space between the deck boards and will be ineffective.
2. Old wide boards are easily split by nails.

So, a reasonable answer for why sheathing should be added to an old roof would be:

Answer 1: We feel the shingles will not be fastened to the roof adequately without a new sheathing because of gaps and splitting. With the addition of new sheathing, we know we are getting a good nailing surface that will hold a nail in place.



4. What Does the Code Specify

The first thing to note with reroofing is that all of Chapter 9 applies according to Section R908 Reroofing.

R908.1 General

Materials and methods of application used for re-covering or replacing an existing roof covering shall comply with the requirements of Chapter 9.

R905.2.1 Sheathing requirements.

Asphalt shingles shall be fastened to solidly sheathed decks or 1-inch thick nominal wood boards.

1-inch BOARDS are ok

R903.2 Flashing.

Flashings shall be installed in a manner that prevents moisture from entering the wall and roof through joints in copings, through moisture permeable materials and at intersections with parapet walls and other penetrations through the roof plane.

Flashing must be present

R903.2.1 Locations.

Flashings shall be installed at wall and roof intersections, wherever there is a change in roof slope or direction and around roof openings. A kick-out flashing shall be installed to divert the water away from where the eave of a sloped roof intersects a vertical sidewall.

Flashing is required at 3 locations

R903.2.1.1 Existing buildings and structures.

Kickout flashings shall be required in accordance with Section R903.2.1 when re-siding or simultaneously re-siding and re-roofing existing buildings and structures.

Exception: Kick-out flashings are not required when only re-roofing existing buildings and structures.

Kick-out flashing is not a deal breaker if it is not present.

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. Unless otherwise specified in this section, roof coverings shall be installed to resist the component and cladding loads specified in Table R301.2(2), adjusted for height and exposure in accordance with Table R301.2(3).

We must follow manufacturer's installation instructions

5. Manufacturer's Installation Requirements

The manufacturers of asphalt shingles are in agreement with regard to gaps between boards. Basically, the position of the major asphalt shingle manufacturer's is as follows:

- A. If spacing between the deck boards is greater than 1/8" and less than or equal to 1/4", the manufacturer requires installing a double layer of underlayment or a single layer of ice and water deck protector.
- B. If the spacing between the deck boards is greater than 1/4", the manufacturer requires installing a layer of 3/8" minimum thickness APA-labeled exterior grade plywood or OSB over the deck boards.

6. Siding and Flashing Concerns

Everything is fine if the roof increases in height by 3/8 inch. Right?

The answer is: Maybe. Siding can become a problem on a reroofing project if the step flashing is compromised. The details of intersecting components needs to be considered when adding sheathing to a roof.



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