



Asphalt Shingle Roof Coverings

BY BRUCE BARKER

Photo 1

ONCE AGAIN THE WORD INVITES YOU TO TRAVEL into the dark realm of subjects that are sometimes misunderstood by home inspectors. The Word hopes you will find this trip informative and maybe a little entertaining.

The Word's topic this month is "asphalt shingle roof coverings." The Word finds this topic interesting because he needs to refresh his memory since he left the land of concrete tile roofs. Roof coverings are among the most important components we inspect, so knowing what to look for is essential to a successful inspection.

What's in a Name?

One type of asphalt shingle, sometimes called an organic shingle, has a base made from felt impregnated with asphalt. Most shingles available today are fiberglass shingles that have a base made from asphalt-impregnated fiberglass. We'll refer to fiberglass shingles as shingles from this point and we'll ignore organic shingles. Much, but not all, of what follows applies to both types.

Three shingle styles are commonly available. The names and warranty periods differ between manufacturers. The three-tab strip shingle is the least expensive style and is found on many homes. It has a flat profile and usually comes with a 20-year warranty. The next step up is the dimensional shingle. This shingle has a raised profile and usually has a 25- to 30-year warranty. The most expensive shingle is the laminated shingle. It is, as the name suggests, two shingles bonded together to present a more pronounced raised profile. The warranty on these shingles is usually 35+ years.

Weight is another distinguishing feature between shingle styles. The weight per square ranges from about 200 pounds for less expensive three-tab shingles to over 400 pounds for laminated shingles. A square is 100 square feet. This weight difference can

create problems for roofs that are inadequately framed and when installing multiple layers of shingles. Look for framing issues when you see laminated shingles, especially on older homes and when there are multiple layers of shingles.

Shingle Warranties - Getting Real

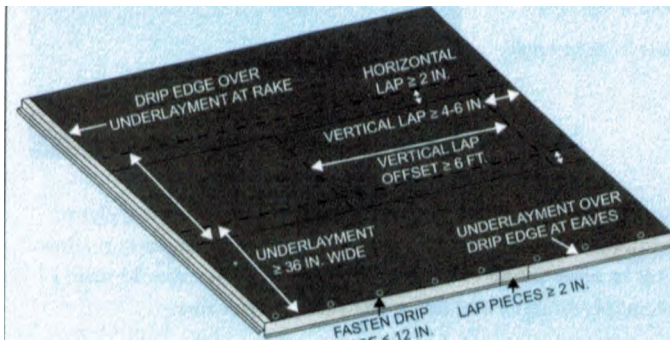
Aslinglc's warranty period is more about marketing and the shingle's price point than about how long it will really last in service. The Word's observation is that shingles usually last about 75 to 90% of the stated warranty period, assuming no physical damage from wind, trees or other causes. Shingles on the south and west side may have a shorter service life due to exposure to sunlight, while shingles on the north side may have a shorter service life due to algae and moss.

Manufacturer's warranties are for manufacturing defects. Installation defects aren't usually covered, nor is normal wear. The warranty is usually prorated over the warranty period. Labor costs may or may not be covered and usually aren't in the later years. Other costs, such as removal and disposal of the shingles, often aren't covered. Many warranties aren't transferrable to a subsequent buyer. Bottom line: Don't pay much attention to manufacturer's warranties.

Underlayment

Shingles are a water-shedding roof covering that relies, in part, on the roof slope to get the water off the roof. Shingle's self-sealing design helps make them more impervious to water infiltration compared to other water-shedding roof coverings such as tile and slate; however, shingles may not, in most cases, rely on themselves alone to keep out water. Another material, called underlayment, is usually required to complete the water-shedding **system**.

Underlayment is a secondary system to keep out water that might get under the shingles. This might happen in a heavy, wind-blown rain or as a result of ice dams. We can't see much of the underlayment during a home inspection, but we can see a little. Lift the lowest (starter) shingle course while you're on your ladder. The underlayment (usually #15 roofing paper) should extend all the way to the edge of the sheathing. If there is drip edge flashing, the underlayment should extend over the flashing at the eaves. The drip edge should be over the underlayment at the rakes. See *Figure 1*.



**Underlayment and Drip Edge Installation
Roof Slope 2 4/12 Without Ice Barrier**
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Figure

Roof Slope

Shingles are not a low-slope roof covering. Installing shingle on roof slopes less than 2:12 is prohibited by manufacturers and by the International Residential Code. Some manufacturers do not allow installation under a 2th:12. Special (double) underlayment application is required between 2:12 and 4:12. Look for slope issues on porch and patio roofs and in valleys where lower slope roofs intersect.

Valleys present a problem when considering roof slope. A valley is at a lower slope than the intersecting roofs. That's why it's easier to walk in a valley. When two lower slope roofs intersect, the valley could fall below the minimum allowed slope for shingles.

The Starter Course

Manufacturers require a starter course at the eaves that extends about 1/4 inch past the drip edge (or sheathing if no drip edge). The starter course is usually shingles with the tabs cut off just under the seal strip. The starter course secures the first shingle course. Without the starter course, wind could get under the unsealed first course and rip the shingles off like opening a zipper. Lift the first shingle course. There should be a seal strip at the starter course and the two courses should be stuck together. The starter course is often installed incorrectly. See *Photo 1*.

Fasteners

The Word likes to (very carefully) separate two courses of shingles

to check fastener installation. Granted, this is beyond the Standard of Practice. Finding improper fastener installation isn't unusual.

Fasteners should be galvanized steel or aluminum roofing nails. Some manufacturers allow staples in other than high-wind areas; however, the International Residential Code no longer allows staples (as of 2003). The Word's experience is that staples are a more problematic fastener than nails due to their lower wind resistance and their tendency to allow shingles to slip out of place.

Nails should be long enough to penetrate through the 7/8-inch OSB or 1/2-inch plywood sheathing used on most roofs in the past several decades. Look for the nail tips while doing your attic inspection. Also, check for over- and under-driven nails. The nails should be flush with the shingle surface.

Fastener location depends on the manufacturer and style of shingle. Fasteners should be about 1 inch from the sides of most shingles. Fasteners on many types of shingles should usually be located just below the seal strip. Some manufacturers leave spaces in the seal strip where fasteners should be located. Fasteners should not be located in the sealant material or above it. Improperly located fasteners reduce the wind resistance rating of the shingles. See *Photo 2*.



Photo 2

Valleys

A valley is where two descending roof planes meet. A lot of water flows into valleys, so it's important to look at the valleys both during your roof inspection and your attic inspection. Look for proper shingle application during your roof inspection. Look for evidence of leaks during your attic inspection. Shingles are installed in valleys using one of three methods: open, closed-cut and woven. Each manufacturer has a different recommended valley method for each shingle style.

Check for installation errors that are common to all valley types. The valley should extend all the way to the eaves, and a little past, to make sure that water flows away from the vulnerable termination point. The valley should not direct water toward or under



Photo 3 - top left

Photo 4 - top right

Photo 5 - bottom right



other materials such as other shingles and flashing. Look for roof penetrations such as plumbing vents near the valley. Penetrations within eighteen inches of the valley center line are problematic because they are within the valley flashing area. Penetrations within 12 inches are likely leak points during heavy rain.

The open valley is usually acceptable, but because they are more difficult to install, they are not as common as the other valleys. Some manufacturers of laminated shingles require open valleys. An open valley should have a strip of corrosion-resistant metal running down the center of the valley. The shingles are cut back from the center, exposing the metal. Two layers of mineral-surfaced roll roofing is also acceptable. Check for these common installation errors during your roof inspection. The valley should widen about $\frac{1}{8}$ inch per foot on each side from the top to the bottom. Shingles at the cut should be sealed to the valley lining with roofing cement.

The woven valley is usually acceptable except for some styles of laminated shingles. The raised profile of these shingles can allow water to enter under the shingles. A woven valley should have a reasonably straight line down the valley center line.

Estimating Age

Our SoP doesn't require us to estimate a roof's age or the age of any other component for that matter. We are required to report on components that are nearing the end of their service life and service life isn't always a function of age. So how do we determine if a roof might be near the end of its service life? Sometimes it's obvious, but many times it isn't.

One way to start is with some simple math. This method can work with homes built in the last 60-70 years or so. Knowing when the home was built and the usual service life of shingles in your area, you can get close to a roof's age by estimating which roof is on the house. For example, a forty-year-old home is probably either at the end of its second roof's life or near the beginning of its third roof's life. This assumes that the first roof was replaced after about twenty years. Your visual clues will tell you which.

Look at the shingles to determine their condition. Shingles in poor condition will show evidence of drying and cracking, loss of granules, visible strands of fiberglass (especially at the edges) and curling at the edges. Photo 3 shows cracking shingles. Photo 4 shows significant granule loss. Photo 5 shows typical hail damage.

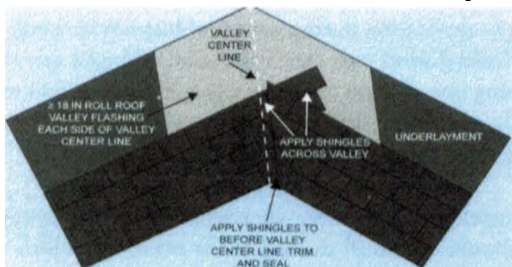
Bend a small corner of a shingle. Shingles in good condition will feel flexible. Shingles in poor condition will feel dry and may even break when bent. Temperature during the inspection will affect this technique and it won't work so well in the winter, but with experience you'll learn when and how to use it.

Look in the gutters for granules. You'll probably find a lot of granules in the gutters when shingles are in poor condition and

The closed-cut valley is usually acceptable, especially for three tab strip shingles. A closed-cut valley has shingles cut in a straight line on one side of the valley. See Figure 2. Check for these common installation errors during your roof inspection. The shingles should be cut about two inches from the valley center line on the side of the roof with the smaller roof area or with the lower slope. Shingles at the cut should be sealed with roofing cement.

A different closed-valley style may also be acceptable. This style consists of shingles installed vertically up the cut side. Little information is available about this valley style and its use may not comply with some manufacturer's recommendations. Acceptance of this valley style is local and it may be acceptable in those areas.

Figure 2



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when they have been *recently* installed. Pressure washing will also leave granules in the gutter. Pressure washing shingles is not usually recommended by shingle manufacturers precisely because it can knock lose a lot of granules, thus reducing the shingle's service life. Pressure washing shingles is, however, common in many areas and when properly done can have some benefits.

The inevitable agent question when presented with a finding that the shingles are near the end of their service life is: "Is the roof leaking?" While annoying, it's a fair question, from their perspective, which is how strong is their negotiating position? 'their position may not be strong if the roof is functioning properly now (it's not leaking now). Our perspective is providing our client with information they can use to make good decisions. Replacing a roof is a big expense that will affect their perception of the home's value, thus our perspective involves the roof's reliability (is it likely to leak in the near future?). Clients look to us for this information.

The Bottom Line

Ask a client about their concerns regarding the home they are considering and the condition of the roof covering is bound to show up in the top few. Wise inspectors, therefore, pay close attention to this important and expensive component.

Memo to Hestia (goddess of the home and hearth): The Word does not reside on Mt. Olympus (just at its base) and welcomes other viewpoints. Send your lightning bolts or emails to Bruce@DreamHomeConsultants.com. The thoughts contained herein are those of Ilte Word. They are not ASHI standards or policies. ■

Bruce Barker operates Dream Home Consultants. He has been building and inspecting homes since 1987. He is the author of "Everybody's Building Code" and currently serves as

chair of the ASH/ Standards Committee. To read more of Barker's articles, go to www.dreamhomeconsultants.com.

TEST YOUR KNOWLEDGE

Look closely at these photos. Can you spot what's incorrect?

The answers can be found on page 35. Think really hard before turning the pages!

Photos for Future Reporter Issues:

E-mail arlenez@ashi.org with an explanation of what is incorrect in the photo, your name, company, city and state.

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