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WIND DAMAGE OR IMPROPER SHINGLE INSTALLATION

THE IMPORTANCE OF CORRECT FASTENER PLACEMENT

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Have you ever inspected a shingled roof and wondered why the shingles have slipped out of place? Was it the result of wind forces, or could the placement of the nail or staple fasteners have had anything to do with it?

Let's consider one of today's most common asphalt roofing shingles—the laminated shingle (aka the dimensional or architectural shingle). There are two basic components of a laminated shingle—the upper and lower laminate.

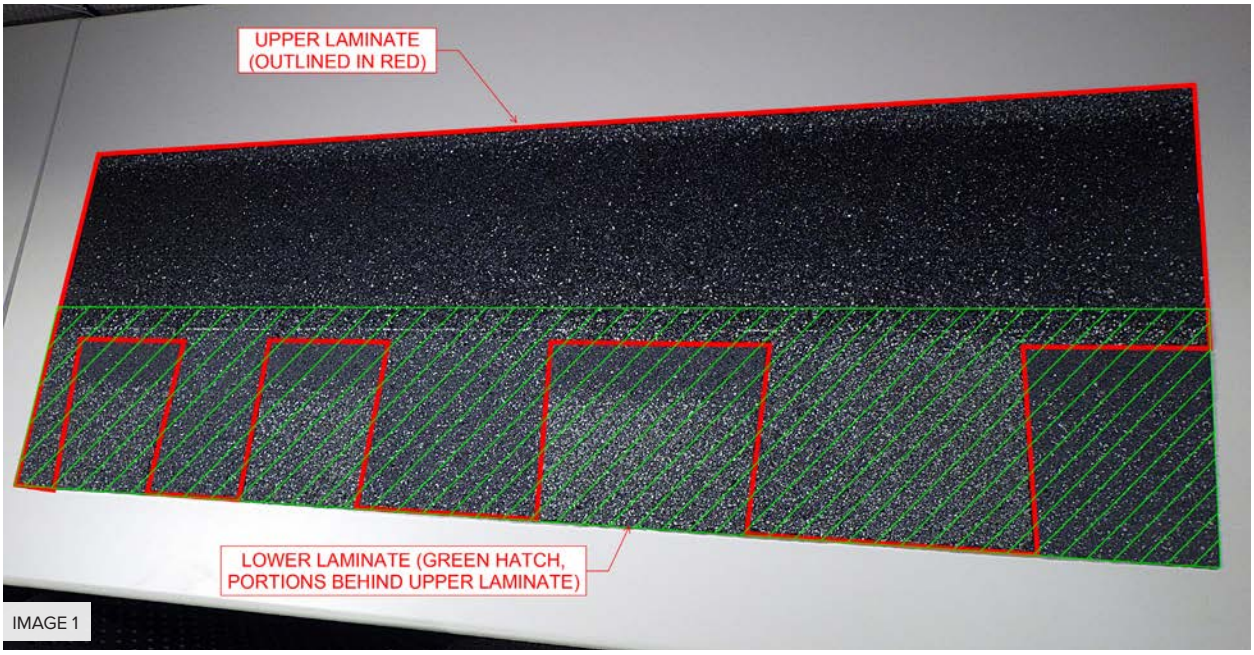

IMAGE 1

The upper laminate, or sawtooth section, typically extends the full shingle height (commonly ranging from 12 inches to 13.25 inches), with cutouts in the lower, exposed portion of the shingle to create the "sawtooth" or "dragon tooth" appearance (see Image 1).

The rectangular-shaped lower laminate, or backer strip section, extends from the base of the shingle to approximately mid-height of the shingle (Image 1). The lower laminate is adhered to the saw teeth and along the narrow band where the fasteners are intended to be placed, commonly identified as the nailable area (Image 2).

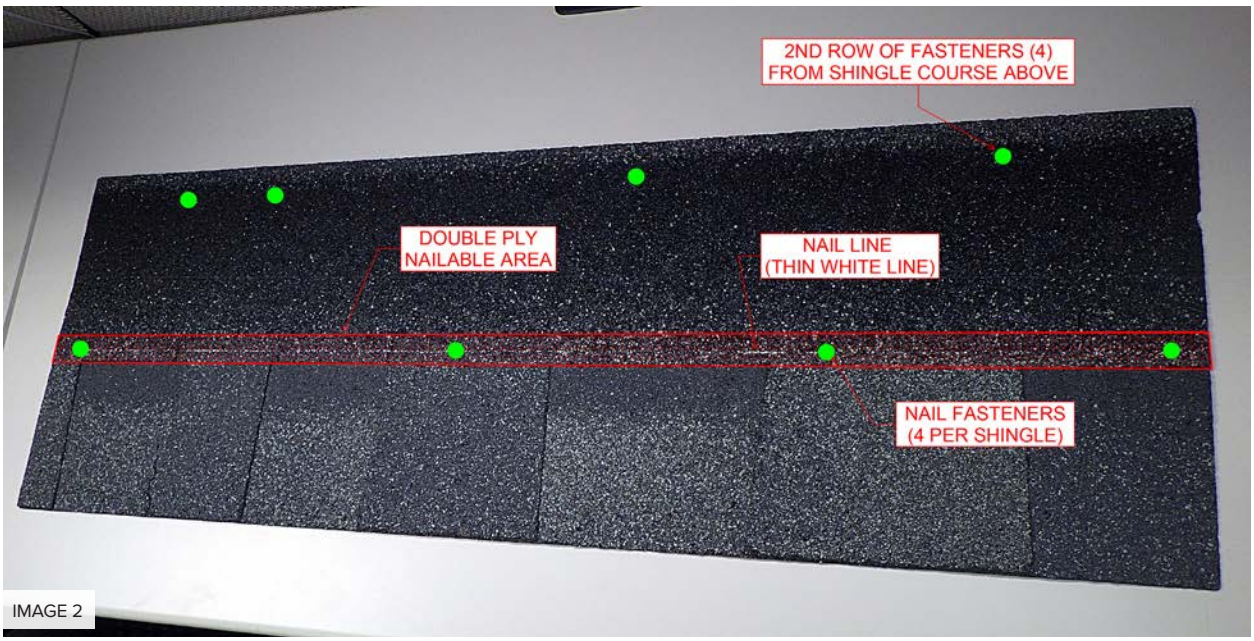

IMAGE 2

Standard shingle installation includes four fasteners per shingle within the nailable area, with fasteners approximately one inch from each end and the remaining two fasteners near the one-third points (Image 2). With the shingles installed in an overlapping fashion, each shingle will end up with a second row of fasteners attaching them to the roof deck and, therefore, eight total fasteners per shingle (Image 2).

For laminated shingles to be properly fastened to the roof deck, the four fasteners must be installed within the double-ply nailable area, a narrow band across the shingle typically 0.5 to 1.5 inches wide where the upper and lower laminate overlap, located immediately above the saw teeth (Image 2).

IMAGE 3

Now that we've reviewed some of the basics of laminated shingles and how they are attached to the roof deck, let's consider an issue we commonly observe on wind assessments (and commonly see misidentified as wind damage)—slipped shingles (see Image 3). Slipped shingles are those shingles displaced from their original position on the roof due to fasteners being improperly located and/or overdriven and thereby having a reduced or nonexistent attachment to the roof deck.

QUESTIONS TO CONSIDER

During your roof assessment, have you identified displaced shingles on the roof? Are these displaced shingles the result of wind forces or from slippage? The following is a list of questions to consider when you, as the inspector, are assessing a shingle roof for reported wind damage:

1. **Are there adjoining shingles that have remained sealed to one another but have displaced as a group?**
   Shingle slippage commonly occurs in groupings of shingles that remain sealed to one another (Image 3). The displacement could be fractions of an inch, several inches, or the shingles could have slid into the gutter or fallen completely off the roof. A tear is commonly observed in the shingle immediately above the fastener, revealing how much the shingle has been displaced (see Image 4).

IMAGE 4

2. **What is the pitch of the roof slope where the displaced/slipped shingles are located?**
   Shingle slippage commonly occurs on more steeply pitched roof slopes due to these shingles relying more heavily on the fasteners to hold them in place. As the roof pitch increases, the shingles bear less on the roof deck and "hang" more from the fasteners, and if these fasteners aren't installed correctly, the shingles can become detached and displaced (Image 5).

3. **What was the fastener placement within the affected shingles?**
   Four fasteners (for standard shingle installations) should be utilized; the fasteners should be properly located within the double-ply nailable area and a second row of four fasteners should penetrate near the top of the shingle (Image 6).

4. **Were the fasteners overdriven?**
   Overdriven fasteners result in the fastener head penetrating or cutting into the shingle surface and thereby reducing or completely eliminating the holding power of the fastener. This commonly occurs when improperly placed fasteners penetrate the single-ply upper laminate immediately above the double-ply nailable area, as a small gap, or air void, is present at the double-ply to single-ply transition, and the driven fastener can easily "punch through" the shingle (Images 6 and 7).

5. **Is there evidence that the affected shingles had been lifted and displaced by wind, or does it appear the shingles simply slid out of their original position?**
   Wind-damaged shingles will often exhibit creases or tears, be pulled through the fasteners, and may be displaced far from their original position. In contrast, slipped shingles typically don't exhibit creases or tears and will tear at the fastener location or slip overtop any overdriven fastener heads. In addition, the displacement is typically directly downslope of their original position.

IMAGE 5

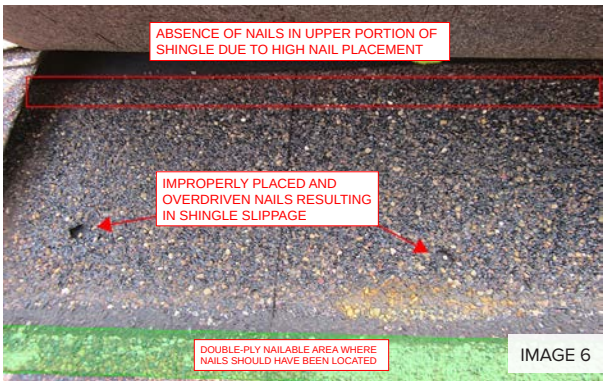

IMAGE 6

IMAGE 7

The previous list of questions is not an all-inclusive list of things to be on the lookout for, but it is a good starting point when shingle slippage is a possibility. Though we have focused on laminated asphalt shingles, similar slippage conditions can also exist on tabbed shingles, such as the common three-tab shingle.

In summary, as you are inspecting asphalt shingle roofing systems for reported wind damage, keep in mind there are other possible causes of displaced shingles on the roof. One of the common causes is shingle slippage resulting from the improper placement of the roofing fasteners.

ABOUT THE AUTHOR

Doug is the operations manager for the Investigative Engineering Group at American Structurepoint. He is one of the select few to earn certification as a Registered Roof Consultant (RRC), which requires at least four years of specialized roof consulting experience and over 70 hours of continuing education before sitting for a comprehensive exam. He has inspected hundreds of residential and commercial properties for wind-and hail-related damages and has provided consulting services related to arbitrations, appraisals, mediations, and court cases.

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