

# Eliminating Shingle Callbacks

By Ray Corbin

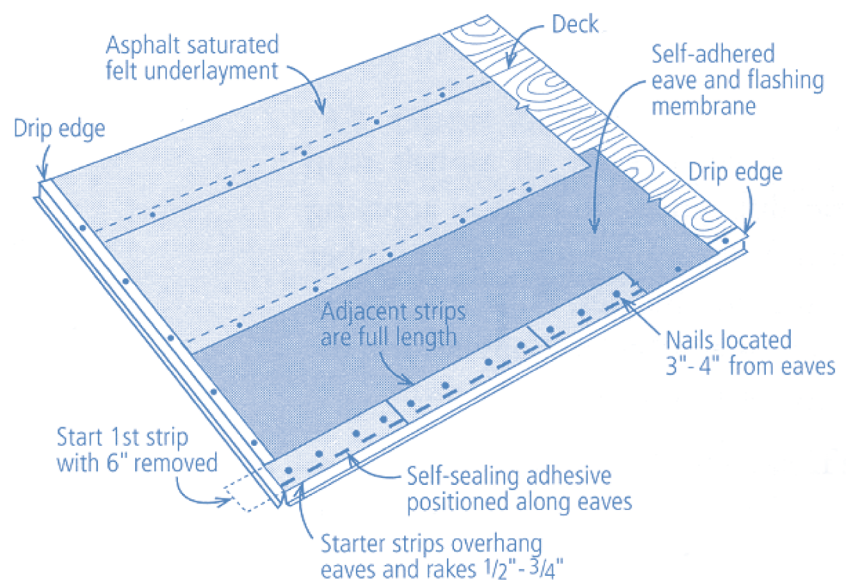
**P**roper shingle application often means the difference between a profitable job and one that is not! The experienced applicator usually is able to apply the shingles more quickly than one who isn't. The challenge to the applicator is to understand the fundamentals of shingle installation and ensure that they are met or exceeded. Otherwise, the risk of callbacks is as certain as is the reality of an unhappy owner.

Two major areas of application concern are those of flashing and fastening. Improper flashing often results in a leak at the first rain, while improper fastening might take longer for the shingle(s) to be blown off and leak. The best way to avoid these problems is for the installer to follow published industry application procedures, as outlined by the shingle manufacturer and referenced within the application manuals of the National Roofing Contractor's Association (NRCA) and the Asphalt Roofing Manufacturer's Association (ARMA). Unnecessary callbacks can be best avoided by complying with these key roofing practices.

## Flashing

Proper flashing incorporates the use of an appropriate underlayment felt, correctly installed over the entire roof deck. In many areas of the country, good roofing practice (and building codes) require a self-adhering membrane (ice and water shield) be used on key areas of the roof. To prevent the occurrence of leaks, use a self-adhering membrane on roof areas where there is a possibility of ice and snow accumulation. Areas that can be troublesome are along the eaves, valleys, roof penetrations, and behind chimneys

that interrupt the plane of the roof. These problems also can occur in certain southern areas of the country, where the buildup of pine needles and leaves can cause a water dam, and the resulting back-up of water may result in a leak.



*Figure 1: In many areas of the country, good roofing practice (and the building code) requires a self-adhering membrane be used on key areas of the roof.*

Valleys are critical since water flows from both intersecting roof planes, channeling into the valley area. A self-adhering membrane must be run through the center of the valley, with additional widths added to either side to a point at least 36" from the

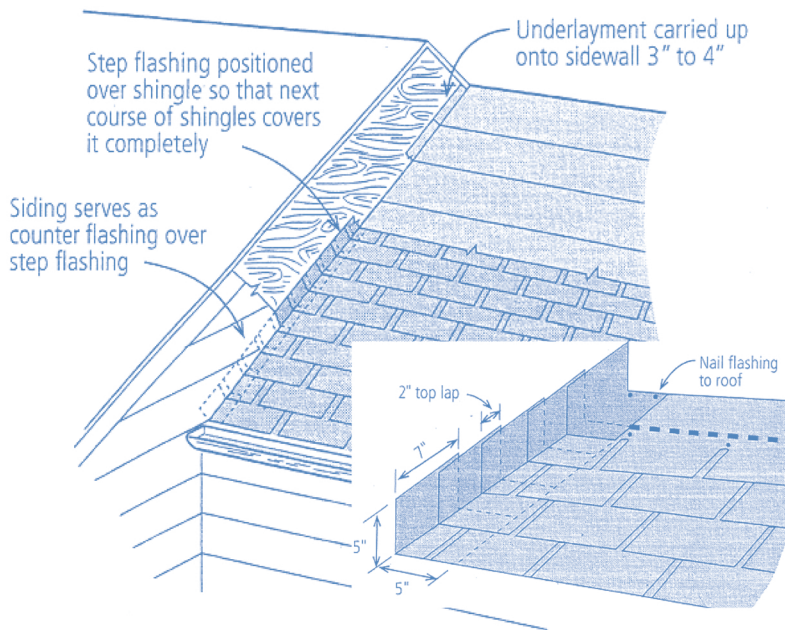


Figure 2: As shingles are individual units, they must be flashed with individual pieces of metal, referred to as "step flashing."

valley centerline. When joining rolls of self-adhering membrane, the sides should be overlapped a minimum of 2" to 4". When running the underlayment felt to the valley, it is best to overlap the self-adhering membrane a minimum of 12".

Another major area of concern is the flashing used along the vertical side walls of chimneys, dormers, etc. As shingles are individual units, they must be flashed with individual pieces of metal, referred to as "step flashing." This is necessary because a continuous piece of flashing could not adapt to the changes in thickness encountered on succeeding shingle courses and would leak. Also, the use of roof cement with continuous flashing will only delay the leak until later. However, the use of roof cement can be helpful when used with step flashing on lower slopes (2:12" to 4:12") to assist with keeping water from running in behind the flashing.

Chimneys, which are usually set on a different foundation from the rest of the structure, require flashing that will accommodate a certain amount of movement. Leaks will occur when flashing can not adjust for this movement. Chimneys that are adjacent to the roof require step flashing at the point where they tie into the shingles on the roof. Chimneys that are in the field of the roof also require the use of step flashing as well as installing a cricket on their high side to divert the flow of water to either side. Use of a self-adhering membrane as a secondary protection system in these areas is important to help prevent leaks caused by a backup of water.

Improper flashing of skylights also can result in leaks. The skylight must always be installed on curbing high enough to allow the use of "step flashing" along its sides and a cricket on its high side. As with other flashing details, the use of a self-adhering membrane along the skylight will help to keep it watertight.

## Fastening

Proper fastening is also important in order to prevent callbacks, since it is essential to the shingle's ability to resist being dislodged or blown off by the wind. Proper fastening is easily observed or measured. Manufacturers print a set of application instructions on each shingle wrapper, and most use diagrams that specify the correct fastener location. The way many contractors increase their profitability is to quickly apply the shingles, thus reducing installation time. Because of this, the installer is usually paid by piecework, often resulting in hurried application, inattention to detail, incorrect fastener location, and too frequently, a missing fastener.

While pneumatically-applied fastening (whether nails or staples) increases the speed of installation, the technique can create callbacks if not used properly. The key with any pneumatically-applied fastener is to have the gun's pressure set properly and to drive the fastener flush with the shingle's surface as it sits tightly to the deck. This becomes difficult when over-roofing a surface that has started to curl and cup or where the new shingle is not as thick as those used on the first roof. Care must be exercised when re-roofing, as surface irregularities will complicate pneumatic fastening. The gun's pressure also needs to be adjusted as the shingle's temperature changes, so as not to under or overdrive the fastener.

Staples can be effective when properly applied, but problems are created when applicators take short cuts. The most common misapplication is when the staple's crown is not applied parallel

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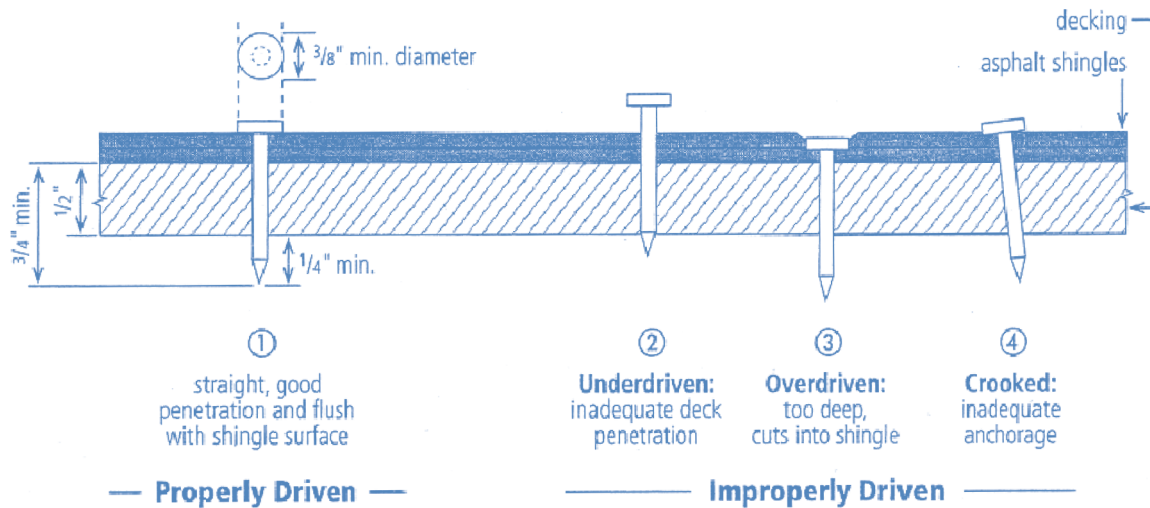


Figure 3: When installing a laminated shingle, place the fastener so that it penetrates both the overlay and the underlay portion of the shingle.

to the shingle's length, but rather in an arc. As the staple arcs, the leg rather than the entire crown becomes the leading holding point, which is not enough holding power to resist shingle blow-off. Since this was a common occurrence, the pneumatically-applied nail has almost entirely replaced the staple today.

When installing a laminated shingle, it is very important to place the fastener so it penetrates both the overlay and the underlay portion of the shingle. Most manufacturers place a visible fastening line on each shingle to indicate the correct location for the fastener. This is even more critical on steeper slopes where the underlay portion could slip off the roof if not fastened securely.

To further increase the speed of application, some installers "rack" or apply the shingles straight up the roof. This practice reduces the amount of lateral effort required, thus speeding up the installation. The danger from racking is that when the installer feeds in the next row of shingles, he does not raise the covering tab and nail into the end of the inserted shingle. As a covering tab occurs in every other row, the result is usually one missing nail in one out of two shingles. In addition, on steep slopes or in high wind areas, good roofing practice requires that six, rather than four, fasteners be used per shingle.

Fastener location is also very important. If the fastener is too far left or right it could line up in the cutout area of the shingle in the succeeding row and be exposed to the weather, and eventually leak. If it is too low, the fastener will be exposed, and if too high, it could interfere with the shingle's ability to seal properly. Additionally, with high-nailing, the added wind leverage on the tab could reduce its wind resistance. If the fasteners are so high that they miss the underlying shingle entirely, potential damage from wind is greatly increased since only four fasteners penetrate each shingle rather than the eight penetrations that normally occur.

Once again, shingles are individual units and not a waterproof membrane. As the slope of the roof decreases, the ability of the shingle to shed water is also reduced. Longer runs of roof area also hold more water on the roof surface, further reducing the

roof's ability to perform its water shedding function. Therefore, as the roof slope decreases and the run or length of the roof increases, the use of proper flashing details and correct fastening become even more critical.

Callbacks are never profitable and must be avoided. As a rule of thumb, all penetrations or changes in the plane of the roof can and often do

result in a leak. To prevent leaks, all details must be adequately flashed to be watertight. Inattention to these details often results in time-consuming investigation and repair, a non-profitable callback, and most importantly, a dissatisfied owner. ■



Figure 4: The fastener must catch the top edge of the underlying shingle.

## ABOUT THE AUTHOR

**Raymond L. Corbin** is the President of Corbin Roofing Systems. He has been the Director of BURSI for Johns Manville for 19 years. Ray holds four United States roofing shingle design and application patents. He has been an industry member of RCI since 1985. Mr. Corbin was honored with the Richard Horowitz Award for excellence in technical writing for *Interface* in March 2003.



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