

Installation mistakes are often to blame for leaky roofs

10 Roof Goofs and How to Fix Them

BY STEPHEN HAZLETT

As a roofer, I'm frequently called to solve the mysteries of leaky roofs. Surprisingly, it is not damage from wear and tear that causes most roof leaks but mistakes made during installation or reroofing. Some of these mistakes are impractical to repair after the fact. Others are repairable even years after the original installation.

When customers call about a leaky roof, they often have a good idea of where the leak is coming from. Regardless, I start my investigation with a few questions. How long has the roof been leaking? Has it leaked in that area before? How old is the roof?

If the leak has been appearing on and off for years, the problem is likely poor design or poor material choices. If the roof is 20 years old, it just may be worn out. If it is new (two to three years old), the problem is most likely faulty installation.

I first ask to see the water damage inside the house. I try to determine if the leak is even coming from the roof. What appears to be a leaky roof is sometimes a problem with siding or windows.

After I look inside the house, I go to the rooftop, where I usually can narrow the potentially leaky area to a 12-ft. radius around the damage inside. I examine the shingles. If they are in good shape, I look for punctures from nail pops or tree limbs, then check exposed fasteners. Poorly installed plumbing vent stacks, cable-wire guides, and satellite-dish mounts are always suspects on a leaky roof.

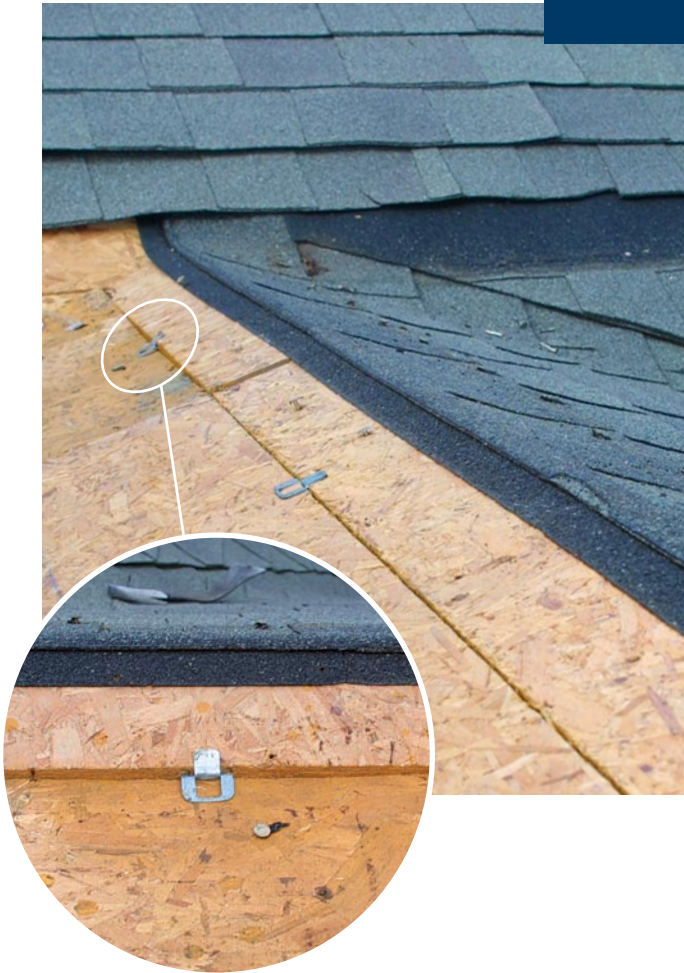
If I still haven't found the source of the leak, I look at the step flashing against sidewalls and chimney flashings. I also inspect all valleys. A valley is susceptible to leaks, and it's one place where I won't do repairs. If I find problems in a valley, I replace the entire valley. □

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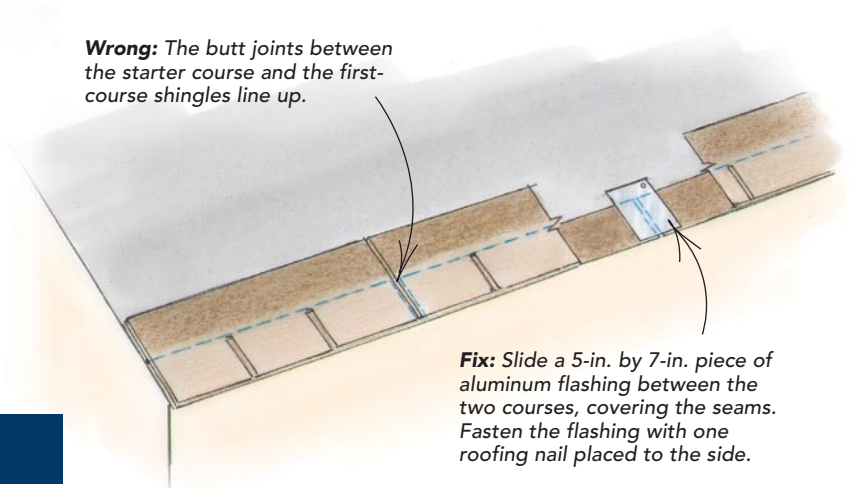
ONE

POORLY FASTENED SHEATHING



Sloppy deck installation on new roofs and poorly prepared decks on reroof jobs are among the most common problems I investigate. Poorly fastened sheathing curls along the edges, absorbs water, and swells. This movement causes the nails to pop out. Loose nails puncture the shingles and cause leaks. Tracking down the offending nail is often harder than the repair itself. Once I find and remove the loose nail, I replace the damaged shingle (sidebar p. 87). Nail pops are to be expected over time. On an older roof, they are not a big concern. On a new roof, however, nail pops are a sign of a sloppy installation and frequently are followed by more problems.

Wrong: The butt joints between the starter course and the first-course shingles line up.



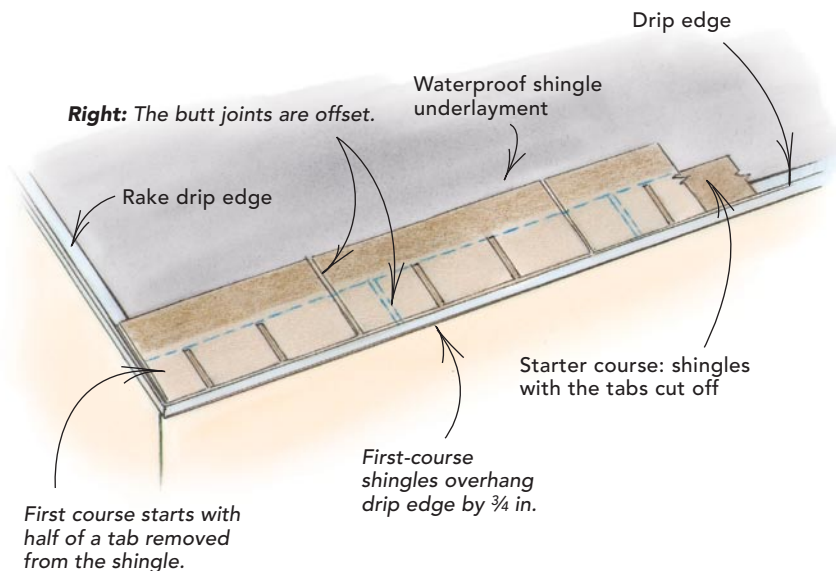
Fix: Slide a 5-in. by 7-in. piece of aluminum flashing between the two courses, covering the seams. Fasten the flashing with one roofing nail placed to the side.

TWO

MISALIGNED STARTER COURSES

It's surprising how often I see leaks because the butt joints between starter-course shingles line up perfectly with the joints between first-course shingles. This layout translates into a leak every 3 ft. along the bottom edge of a roof and will cause the rafter tails, wall sheathing, top plates, and drywall to get wet and rot. If the sheathing is not damaged, the repair is simple: Pull out a few nails, and slip a 5-in. by 7-in. piece of aluminum flashing between the starter course and the first course to cover the exposed joints. You can fasten the flashing with a single nail or with a bead of caulk between the flashing and the starter course and another bead between the flashing and the first course. If the sheathing is damaged, I remove several courses of shingles, replace the damaged wood, and install waterproof membrane with a properly aligned starter course.

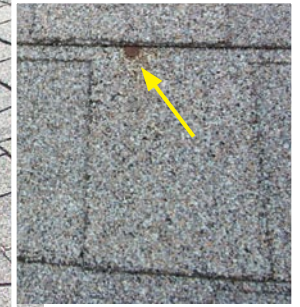
Right: The butt joints are offset.



THREE

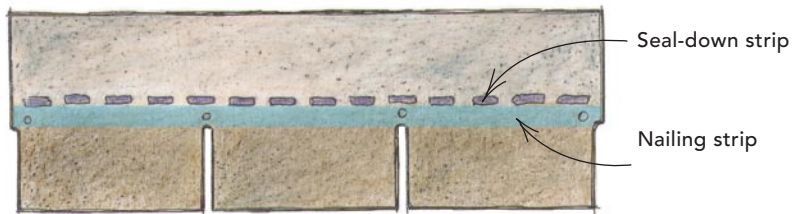
LAZY NAILING

If shingles are not fastened properly, the wind can get under them, lift up the edges, and give water an easy path into the roof. Examples of lazy nailing include too few fasteners; fasteners placed too high or too low on the shingle; staples shot in vertically instead of horizontally; and not storm-nailing (six nails per shingle in high-wind areas). Always follow the nailing guidelines on the shingle wrappers, and storm-nail shingles on all roofs in high-wind areas or on roofs steeper than 10-in-12 pitch.

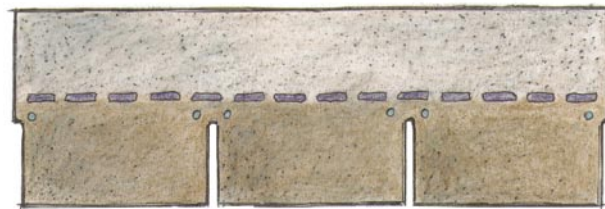


Nail placement is important. Nails should be driven through the nailing strip, just below the seal-down strip, where they'll be covered by the tabs of the next course of shingles. Exposed nails give water a way into the roof.

Typical nailing pattern: four nails per shingle



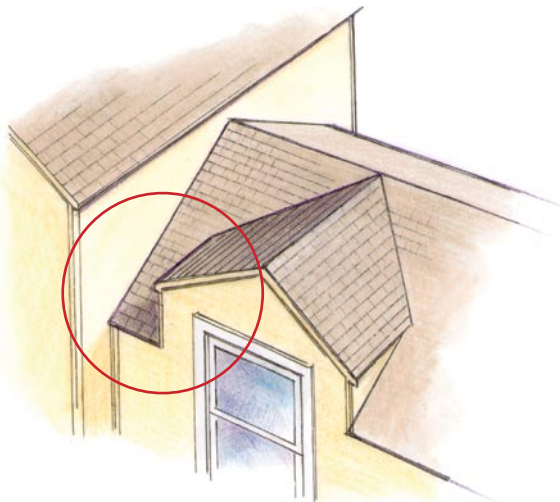
Storm nailing pattern: six nails per shingle



FOUR

DUMB ROOF DESIGN

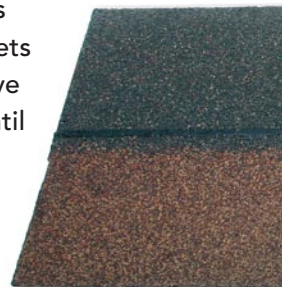
Roof goofs can occur during design and during remodeling. Design mistakes include misdirected gutter spouts, valleys draining against a sidewall, bad dormer locations, chimneys that block water flow, and excessively complicated rooflines. You can't do much about these design flaws once a house is built, but you should pay close attention to areas where roof design promotes problems.



FIVE

FLAWED SHINGLES

Here's one that may surprise you: Shingles with continuous seal-down strips can cause leaks themselves. Water that gets under the side edge of a shingle with a continuous adhesive strip won't be able to escape and will migrate sideways until it finds an exit point, usually a joint between two shingles. This joint is where the leak begins. Valleys, chimneys, waste stacks, and roof vents are the most likely places for water to get under shingles. These leaks are difficult to track down and repair. The solution is to use shingles with breaks in the adhesive strip. And don't use pieces of shingle smaller than the sections between breaks. If you must use continuous-strip shingles, make sure the valley and chimney flashing doesn't dump water where it easily can find its way under the shingles.



SIX

"BREAKING THE BUNDLES"

Some roofers make a big mistake when they load shingles onto the roof by folding the bundles over the ridge. Ironically, delivery crews call this "breaking the bundles," and that's exactly what happens. Breaking the bundles can create stress fractures and separates shingle laminations, reducing the life span of a new roof. Always store shingles flat on the roof. Because cold shingles are more prone to breaking, limit cold-weather roofing to emergency repairs.



Don't bend the shingles over the ridge. Folding bundles of shingles over the ridge can damage the shingles and diminish their life span. Lay the bundles flat on the roof, and use a board to prevent them from sliding down the roof.



Avoid continuous seal-down strips. They may seem like a good idea, but water that gets under the shingle can't escape. Shingles with segmented seal-down strips (top drawing, facing page) give water an exit every few inches.

Removing a damaged shingle

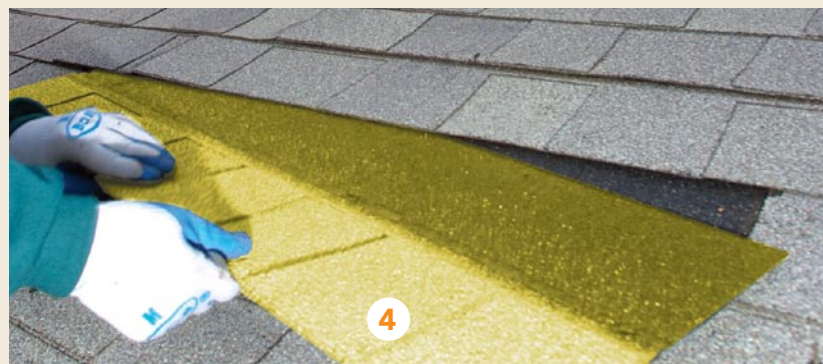
Some roof repairs—nail pops, for example—require replacing single shingles. Removing the damaged shingle without damaging the surrounding shingles is the tricky part. This process is best done while shingles are cool enough not to melt underfoot and warm enough not to crack. In the summer, I handle this part of the repair before 8 a.m. In the winter, I do only emergency repairs.

1 The first step is to break the bond created by the seal-down strips below and on the two courses above the shingle you want to remove. Breaking this bond may be difficult with some newer laminated shingles. A 50-year shingle with a 110-mph wind warranty has an aggressive adhesive bond. In these cases, I cut the adhesive strip with a pry bar.

2 With the bonds broken, I can remove the four nails holding the damaged shingle. **3** Before I remove the shingle, though, I have to remove four more nails driven through the course above.

4 Now I can pull out the damaged shingle, slip in a new shingle, and renail all the loosened shingles.

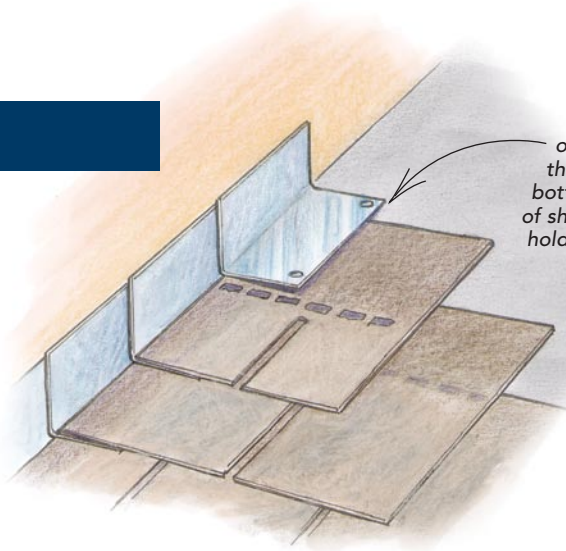
When refastening shingles, don't put new nails in the old nail holes; they'll pop right out. Instead, nail next to the holes and put a dab of sealant over the old holes. While your caulk gun is handy, seal down all the loosened shingle tabs with a dab of sealant.



SEVEN

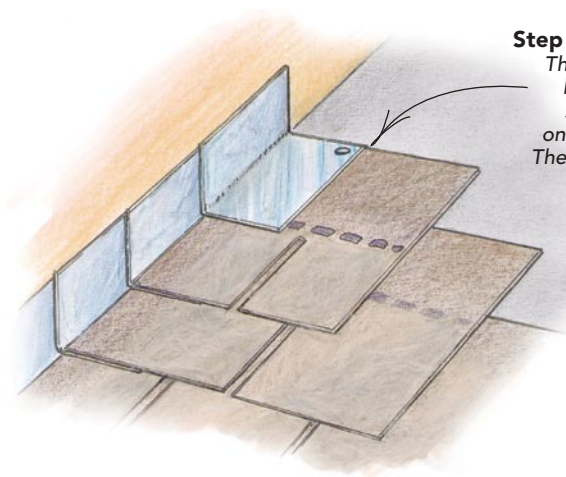
MISPLACED STEP FLASHING

Another common problem is improperly sized step flashing. Step flashing should be in line with the top of the shingle course being flashed and should extend down to the top of the shingle tab, about 7 in. on standard shingles or about 8 in. on metric shingles. Even properly sized step flashing can cause a problem if it is out of position. Because correctly placed step flashing covers the adhesive strip on a shingle, it won't let the next shingle seal down in that area. Some people try to solve this minor problem by moving the step flashing up an inch or so, extending the top edge of the flashing above the top of the shingle. When the top of the flashing is nailed, it transforms the top edge of the shingle into a fulcrum, and the flashing lifts up the bottom edge of the next course, causing a gap that water can enter. The installer then tries to fix the problem by nailing at the bottom edge of the flashing. This nail won't be covered by the next piece of step flashing and can cause a leak. Improperly installed step flashing should be stripped and replaced.



Step flashing no-no.

Nailing above the top of the shingle will cause the flashing to lift up the bottom of the next course of shingles. An extra nail to hold down the flashing is a potential leak spot.



Step flashing done right.

The flashing should be in line with the top of the shingle and nailed only once in the upper corner. The flashing pieces should overlap 2 in.



Chimney flashing is best left to the experts. Chimneys have great potential for leaks. If masons don't set counterflashing into the mortar or if the flashing fails, nails and caulk are not a solution. The mortar must be cut with a grinder so that carefully bent new flashing can be inserted between brick courses.



EIGHT

SLOPPY CHIMNEY FLASHING

A lot of roof leaks are blamed on chimney flashing, and for good reason. Before replacing the chimney flashing, though, spend a little time to rule out other possibilities such as a cracked mortar cap or missing chimney bricks. The most common chimney-flashing error is when roofers don't take the time to insert counterflashing into the mortar. Properly installed counterflashing is bent on a sheet-metal brake, producing sharp, straight, L-shaped bends that seat cleanly in the mortar between brick courses. Chimney flashing bent without a brake is a red flag to me; it signifies sloppy detailing. When I find a roof with poor chimney flashing, I look closely for additional problems.

NINE

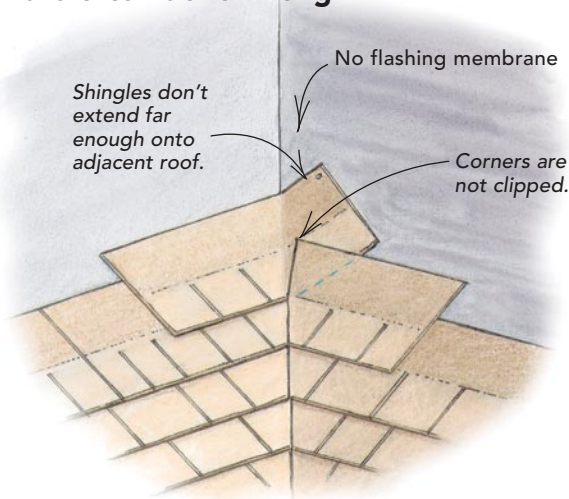
ROOF-MOUNTED UPGRADES

Leaks can be caused easily by the many roof penetrations inflicted by homeowners and remodeling contractors. TV-antenna or satellite-dish mounts, skylights, and roof vents never should be installed haphazardly, yet they often are. In the natural realm, overgrown branches can abrade roof shingles, and overly shady roofs can encourage moss growth that will degrade shingles.



Fixing a leaky valley usually means reshingling the entire valley. Start at the top, and remove one full shingle width from each side of the valley. Neatness counts a great deal here because the tidy disassembly of the valley determines how well it goes back together.

Closed-cut valleys are often done wrong



TEN

CARELESS VALLEY SHINGLING

I'm surprised by how many valleys have no flashing. An alarming new practice is using peel-and-stick waterproof membranes as valley flashing. Some less expensive waterproof membranes are warranted for only five years. Fifty-year shingles over a five-year membrane isn't a good investment in a valley where lots of things can go wrong. The only sure way to fix a leaky valley is to reroof the entire valley. I install a waterproof membrane and W-type valley flashing on almost all valley repairs. (For a complete discussion of shingling valleys, go to www.finehomebuilding.com).

Open valleys with W-type valley flashing are superior

