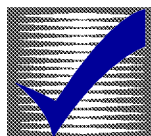




## HOW-TO BOOKLET #3076

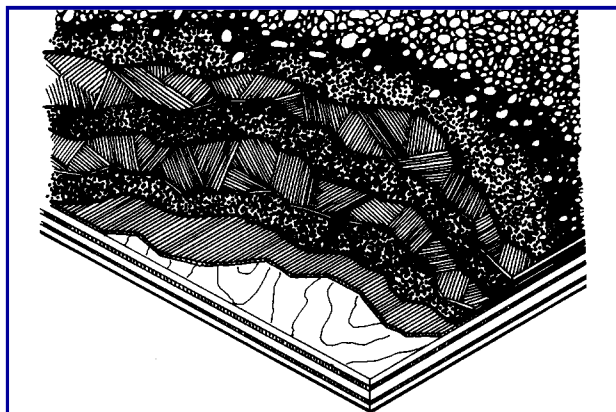
# FLAT ROOF REPAIRS



### TOOL & MATERIAL CHECKLIST

- Extension Ladder
- Stiff Broom
- Trowel
- Roofing Nails
- Caulking Gun
- Sharp Razor Knife
- Scoop-Type Shovel
- Asphalt Roofing Cement (Long Fiber)
- Hammer
- Several Strips of Asphalt Roofing
- Cartridge-Type Asphalt Roofing Cement
- Putty Knife or Stiff-Bladed Scraper

*Read This Entire How-To Booklet for Specific Tools and Materials Not Noted in The Basics Listed Above.*






**Anatomy of built-up roof** shows multiple layers of asphalt roofing cement and building paper or felt or roll roofing. Each layer is “hot mopped” with cement and the finished membrane is topped with stone/gravel. Layers are lapped about 6 inches.

Flat roofs would seem to develop more problems than pitched roofs, but some of the problems can be avoided with a little preventative maintenance. This means a flat roof should be inspected for cracks, exposed nailheads and flashing, and general damage at least twice annually—four times if possible.

Flat roofs are constructed of a series of asphalt roll roofing and/or asphalt building paper criss-crossed and “hot mopped” with hot asphalt liquid. A layer of gravel or crushed stone is embedded in the hot asphalt to finish off the surface. Because of this construction, flat roofs are usually installed by a professional roofer since the equipment necessary would be too expensive for a homeowner to buy—especially for a 1-time roofing project—or even for re-surfacing as wear and tear dictates. However, there are some maintenance repairs that you can make, and these repairs are detailed in this How-To Booklet.

**CAUTION:** Climbing up onto any roof can be dangerous. Be extra careful and follow these simple rules:

-  Do not lap the extension of a 2-piece ladder LESS than 3 rungs.
-  Set the ladder on even, firm footing.
-  Extend at least 3 rungs up over the eaves of the roof. You want to step from the ladder onto the roof. Do not climb over the eaves and guttering onto the roof. The extension hooks must be hooked. Check.

- 🏠 Watch out for overhead power/phone lines.
- 🏠 Climb the ladder one rung at a time.
- 🏠 On the ground, the ladder should slope about one-fourth its length from the side of the house.

**Example:** if the ladder is 16 feet long, it should be pulled out at the bottom 4 feet from the side of the house.

- 🏠 Check the rungs for safety by walking on the rungs with the ladder flat on the ground.
- 🏠 If the ladder even appears damaged, do not climb it under any circumstances.

## WHAT TO INSPECT

Since most flat roofs don't have a crawl space under them, you can't go into the crawl space on a sunny day and look for pinholes of light that detect holes. Therefore, on a flat roof, you have to guess where the leak or damage might be. Water is very tricky: the leak could be 10 feet away from the damage causing the leak. That's why very careful inspection is necessary.

Trouble spots include these:

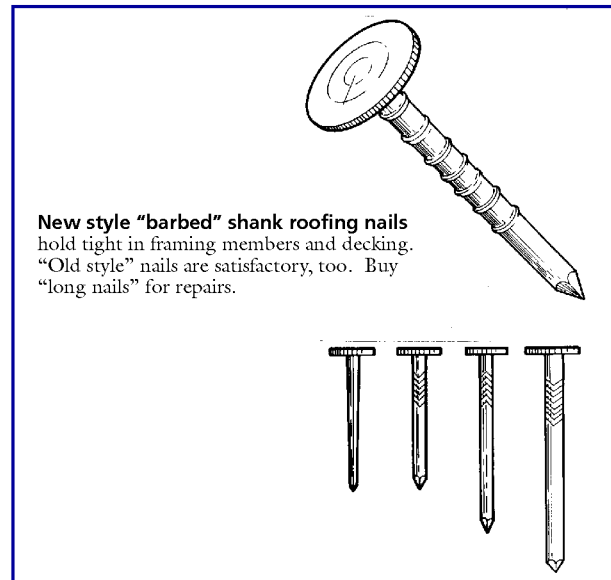
- 🏠 Flashing and roofing pulled away from chimneys, vents or tacks, and other roof projections such as skylights.
- 🏠 Exposed roofing nail heads.
- 🏠 Around roof drains where water goes into gutters, or downspouts or other drainage systems.
- 🏠 Exposed roofing—that devoid of gravel/stone.
- 🏠 Roofing seams or laps.
- 🏠 At junctures with other roofs.
- 🏠 At any valleys.

Pay special attention around small discolored spots on roof gravel or stones. Water often puddles in these spots (and discolors the stones) and causes leaks. Also look for blisters in the roofing. In these spots, the roofing has pulled away from the roof decking below. This is a normal condition caused by moisture between the decking and the roof membrane (building paper and/or roll roofing).

The very best time to make a flat roof inspection and repairs is on a fairly cool day when there is no moisture on the roof and no rain in the forecast—for a day or so. If it has been raining, let the roof dry (it gets dry in a hurry under a hot sun). Make the inspection and then determine the tools and materials you'll need and carry them to the roof at one time. This way, you avoid lots of ladder climbing and walking across the roof surface. We suggest that you wear thick rubber-soled shoes, for safety, even though the roof isn't pitched.

## MAKING THE REPAIRS

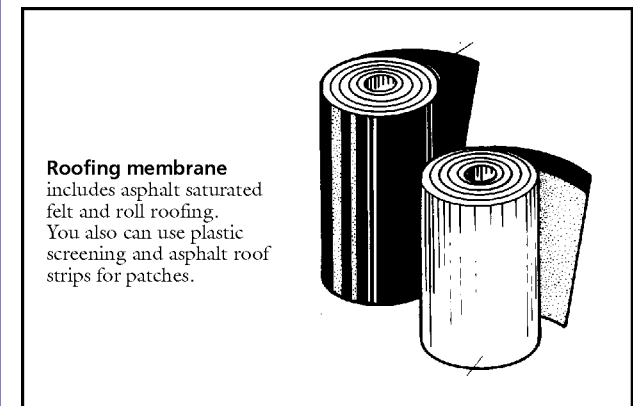
The roof problem and repair solutions, as detailed above:

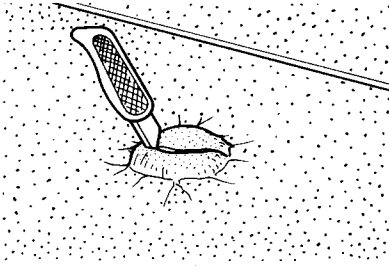


**Exposed nailheads.** With a broom, clean away the stone/gravel from the repair area. Further clean the spot with a putty knife or scraper, being careful not to dig the sharp edges into the roofing. Just scrape away the dirt. Then sweep the area again. With a putty knife, dip into the asphalt roofing compound and smear a tad of the compound over the exposed nailhead. Don't skimp; use plenty of compound. Then throw a handful of fresh stone/gravel over the new compound and press it into the compound with the flat of the scraper blade. Don't push down hard or fuss with it. You just want to sink the covering slightly in the asphalt roofing compound.

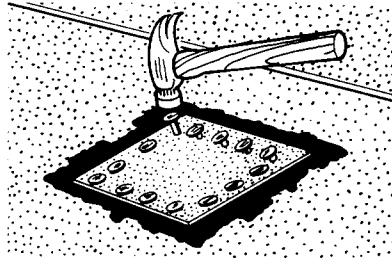
**Pulled-away flashing and roofing.** If possible, re nail the flashing/roofing to narrow the gap. If not possible, use cartridge asphalt roofing cement in a caulking gun and fill the void full of the material so it oozes out the top of the gap. Then lightly trowel the compound with a putty knife to smooth it.

If the gap is really wide, the flashing/roofing might have to be replaced. Wide cracks often can be traced to the house settling on its foundation. Some settling is a "normal" condition. If the crack is really wide, or large cracks appear often, better consult a contractor.

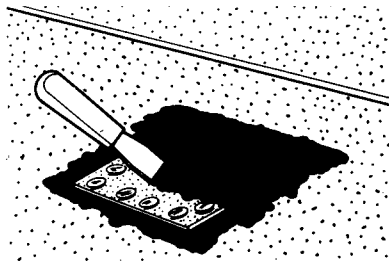




**To patch blisters**, score blister with utility knife so the roofing lays flat on the decking. Cut membrane down to the roof decking if necessary.



**Place patch** over blister cut so it overlaps 4 inches. Embed it in a thick layer of asphalt roofing cement. Use roofing nails to secure the patch. Don't skimp.



**Cover patch** with asphalt roofing compound. Use a putty knife (or trowel) and spread it beyond the patch, feathering the edges. Replace stone.

### Exposed roofing devoid of stone/gravel.

This, too, can be a normal problem: heavy rains can wash the gravel into the roof's drainage system and away it goes. This material must be replaced.

If the area is small, sweep it with a broom and then trowel on a very thin layer of asphalt roofing compound. Embed the new stone/gravel in the compound by pressing it lightly with the flat of a shovel so it sticks in place.

If the area is a large one, it is recommended that you thoroughly clean the roof with a broom and then, with a garden hose, wash away all debris. When the roof is dry, coat the area with reflective asbestos-aluminum sealer. The sealer helps stop leaks, and the reflective qualities of the sealer help keep the roof cooler during the summer months. You can add stone/gravel to the roof when the sealer dries—spreading it evenly over the area that you have coated with sealer.

**Seams, junctures, and valleys.** You may be able to just coat the area to stop the leak. Try cleaning the spot with a broom and scraper, removing all debris around the crack or worn area. Then trowel on a thick coating of asphalt roofing cement, feathering out the edges with the trowel. Sprinkle stone/gravel over the spot and embed the stone/gravel with the flat of the trowel. Easy does it; press down lightly.

If the spot feels spongy or the crack is large, chances are the roofing has pulled away from the roof decking and needs to be replaced. This is easy to do by following the step-by-step illustrations at the left. Use roll roofing or asphalt building paper for the patch. Or, you can use fiberglass screening the same way. We recommend the barbed nails for this job.

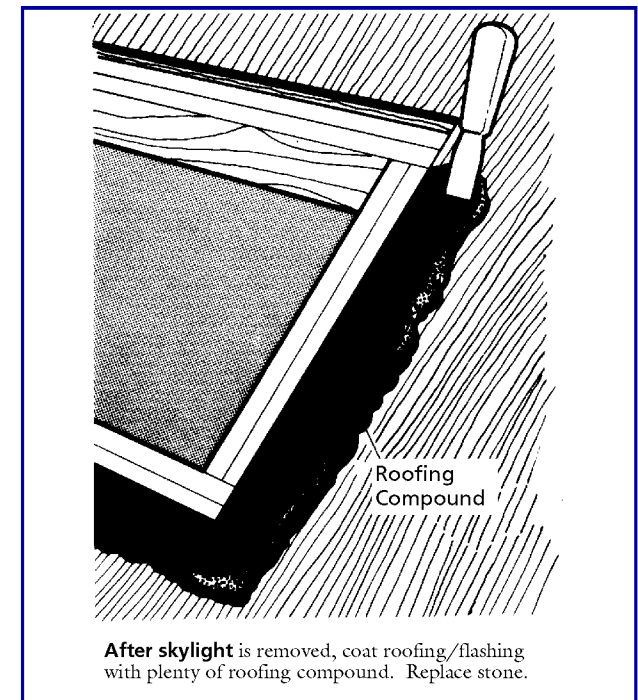
**Nail pops.** These are common. Drive the popped nail flush with the roofing surface, and then drive a new roofing nail next to it. Cover both with asphalt roofing compound for a weather-tight seal.

### STOPPING FLAT ROOF LEAKS AT SKYLIGHTS AND PARAPETS

The flashing around the curb of a skylight on a flat roof seldom has to be replaced, but the flashing can pull away from the curb due to the expansion and contraction of the wood that forms the curb. This causes leaks. If the gaskets sealing the skylight are okay, look for the leaking problem at the flashing.

You will have to remove the skylight (probably) from the curb to get to the flashing. Once the skylight is off, the job is easy. Clean away all debris with a broom.

With roofing nails, reset the flashing against the curb, driving the nails flush with the flashing and asphalt building paper and roll roofing that is lapped up against the flashing. Just drive the nails flush to the surface of this material. Then trowel asphalt roofing cement over the area in a fairly thick coating.



If the roofing is damaged where it “folds” or laps up against the curb, you may be able to replace it with a patch. Clean away the stone/gravel next to the curb and lay a piece of asphalt roll roofing in a fairly thick bed of asphalt roofing compound. Fold the roofing gently and lap it up the curb. Then nail it in place. Cover the patch and nails with the compound. Then add stone/gravel and embed it slightly into the compound with the flat of a trowel or shovel.

The wooden curb could be rotted, causing leaking. If this is the case, the curb has to be replaced along with the flashing and the roofing that overlaps both. This is really a job for a professional since the curb may be tied in structurally with the roof framing.

### PARAPET FLASHING

If the roof has a parapet, chances are the parapet is flashed along its top with metal (although sometimes the flashing is just roofing lapped up and over the top).

If flashed and the flashing is damaged you can replace the damaged section easily.

- 1 Remove any stone/gravel from the area.
- 2 With a prybar padded with a piece of scrap wood which also acts as a fulcrum, loosen the nails that hold the flashing into position. Then pull the nails. You should be able to lift off the flashing cap now.
- 3 Clean the area under the cap.
- 4 Cut a piece of asphalt roll roofing for a patch to fit under the flashing. The patch should overlap the spot that you are repairing at least 4 inches. Embed the patch in roofing compound troweled on fairly thickly. Press the patch in place.

- 5 Cut another patch that overlaps the first patch by about 6 inches. Coat the first patch with compound and press the second patch in place. Add extra compound at the joints. Use plenty of compound.
- 6 Replace the flashing over the patch. You’ll probably have to bend the flashing for a tight fit. Once in place, tack the flashing with roofing nails and then seal the nailheads with roofing compound. Replace the stone/gravel to complete the project.

### VENT STACK FLASHING

If the flashing is leaking around a vent stack, you may be able to replace this flashing with new flashing you can buy at many building material outlets and home center stores. The cost is not prohibitive.

- 1 Remove the stone/gravel around the stack. With a utility knife, cut the roofing membrane at the old flashing. You’ll be able to see the outline of it through the roofing. Then with a prybar and scrap wood fulcrum, remove the old base plate of the flashing.
- 2 With a piece of roll roofing (or buy pre-formed), make a patch to cover the area of the old base plate. Cut a round hole in the patching material to fit down over the stack. Make this hole a tight fit so the roll roofing laps up the stack slightly. Cover the patching area with compound and embed the roll roofing into it.
- 3 Now slip the new flashing over the stack, embedding the base of the flashing in a thick layer of compound. Nail the flashing to the roof decking and with pliers crimp the top of the assembly into the opening of the stack. Coat the base of the flashing with plenty of roofing compound and replace the stone/gravel around the repair

