

## Roof

The roof cannot be adequately evaluated during dry weather, especially during a hot, dry summer. Consequently, roof problems might not be detected at the time of the inspection and might not be able to be detected until a significant storm comes along. Roofs are particularly prone to leaking after extended dry periods due to weathering, drying, and shrinkage of the various components of the roof

### Walking on roofs

The roof is usually walked on and inspected. Under certain conditions, however, this is just not practical, or to put it bluntly, safe. I will, under no circumstance, walk on a roof surface that I deem unsafe (e.g. steep roof pitch, snow/ice, wet). I always try to go above and beyond during an inspection, and in my opinion, feel that a much better evaluation of the roof can be determined by walking on the rooftop.

### Roof drainage

The roof drainage system (gutters and downspouts) helps keep water away from the siding and foundation, thereby minimizing structural damage and helping prevent water from undermining the foundation, possibly causing settling damage (ceiling, wall, and floor cracks).

If gutters and downspouts have not been installed on your house, I recommend having them installed so that they will be there during the unexpected rain storm. Gutters and downspouts should be cleaned regularly, certainly at least annually. A good time to do this is when you set your clocks back in late October. Do not let vegetation grow in your gutters

### Vegetation

Vegetation growing on your roof, or rubbing the roof, or vegetation debris accumulating on your roof is never good. If it's growing on your roof, then its roots are attaching to your roof, and roots can be very invasive in their never-ending search for water and nutrients. If it's rubbing on your roof, especially tree branches, then it's rubbing sections of your roof away, causing your roof to wear faster in those areas and ultimately resulting in a leak even though the roof as a whole looks okay. Vegetation debris result in acidic materials as is deteriorates which can eat through most roof coverings, again ultimately resulting in roof leaks.

Moss on roofs – Visit <http://bryophytes.science.oregonstate.edu/page24.htm> for more information.

### Skylights and solar tubes

Skylights and solar tubes are prone to leaking, typically due to deterioration of the sealant and flashing at the roof location, and particularly if they were added after the house was built without re-roofing at the same time. If not done properly, cutting a hole in the roof is bound to cause problems during the rainy season after ten or eleven months of hot sunshine and dry winds.



## Homeowner repairs

There's many reasons why roof work is expensive: (1) it's difficult, (2) it's dangerous, (3) it's slow and requires diligence and care to do safely and properly. It's generally not best to attempt roof repairs yourself.

## Attic ventilation

Proper attic ventilation is necessary to help the roof covering meet its life expectancy. Many homes are designed by architects and engineers to function in specific environments using specific materials. When those materials are changed, or the home design is altered, there can be significant consequences.

There are several different types of attic ventilation, usually used in conjunction with each other. The most common are the vents at the ends of the house, called gable vents. Gable vents usually are used in conjunction with soffits vents, which are the small holes, squares, or rectangles under the eaves of the roof. Turbine vents, or whirlybirds, and static vents are installed on top of the roof, and a ridge vent sometimes is installed at the topmost peaks of the roof. None of them should be defeated by any means, but they should be checked regularly to ensure that they are working and not damaged. Make sure that the vent screens are in place; missing or damaged vent screens can allow unwanted wildlife to intrude into the attic space, resulting in unusual noises, damage to utilities or storage in the attic, and odors and health hazards from wildlife droppings.



Figure 1. Premature roof deterioration resulting from lack of attic ventilation.

## Recommendations

- ü Recommend having gutters and downspouts installed if not present.
- ü Recommend inspecting and cleaning gutters and downspouts at least annually.
- ü Recommend monitoring roof function during and after rainfall and further evaluation by qualified roofing contractor if any problems are detected.
- ü Recommend monitoring areas around skylights and solar tubes during rainfall and further evaluation by qualified roofing contractor if problems are detected.
- ü Recommend having the roof (and attic) inspected at least annually.
- ü Recommend checking attic vents and vent screens to ensure that they are working and are not damaged.
- ü Recommend regular homeowner monitoring and maintenance.

## Roof Maintenance

It's easy to ignore your roof unless it begins to leak. Then the roof demands immediate attention. If you inspect your roof periodically, however, you can correct minor problems before they cause major damage.

Do not go up on your roof unless you feel comfortable working from heights, know how to safely use an extension ladder and have the necessary tools and equipment. If you have a tile or slate roof, do not go on your roof for any reason. These roofs are easily damaged. Tiles and slate shingles can be broken by the weight of a person. Call a professional contractor to perform roof maintenance if you are uncomfortable with heights, don't like handling extension ladders, have a tile or slate roof or have a steeply pitched roof.

## **Roof Materials**

A wide variety of roofing materials are used on today's homes. Some of the more common materials are discussed below. Inspecting your roof is also discussed. If you discover signs of a leak or other roof problem, call a professional roofing contractor immediately before the problem and any related damage becomes worse.

Many roofing materials come with manufacturer's warranties. However, in order to make a claim on a warranty, you may need to know the manufacturer's name, the place purchased and the installer's name. In addition, if roof repairs are necessary, you will want to use roof materials that are the same brand, color and size as the original. If you record this information (computer file or filed hard copy) when repairing or replacing your roof, it will be easier to assert a warranty claim or purchase replacement materials when needed.

## **Composition Shingles**

The most common roofing material is composition shingles. These shingles are made of organic or fiberglass material impregnated with asphalt. Colored mineral granules are embedded on the surface of the shingles. Many composition shingles are notched at regular intervals to form tabs. This creates the appearance of smaller shingles. Composition shingles should last for 15 to 30 years.

During the roof inspection discussed below, you should look for shingles that are cracked, torn or curled. In addition, look for bald spots and accumulation of granules in the gutters. If you find damage, arrange to have the roof repaired as soon as possible. If the damage is extensive, it may be time to replace the entire roof.

When repairing the roof, use shingles that remain from the original roof installation or try to purchase new shingles that are the same brand, color and size. As discussed above, recording this information (computer file or filed hard copy) is recommended, so when you're repairing or replacing your roof, it will be make it easier to purchase replacement shingles when needed.

## **Wood Shingles or Shakes**

Wood shingles and shakes are popular in many areas. Both shingles and shakes are made from western red cedar. Wood shingles are cut by a saw so they have a smooth, finished appearance. Shingles come in random widths and 16, 18 or 24 inch lengths. Shakes are thicker than shingles and are split by machine or by hand for a rough-hewn look. Shakes also come in random widths, with 18 or 24 inch lengths.

Wood shingles and shakes usually last between 15 and 25 years. You can add to your wood roof's life by hiring a professional roofing contractor to treat the roof with preservatives every five years to prevent decay. Wood shakes should be replaced when the wood crumbles easily between your fingers.

Look for moss or mildew growing on the wood shingles or shakes during the roof inspection discussed below. Tiny roots from these organisms penetrate the wood, allowing water and the elements to damage the shingles or shakes and speeding decay. If you find moss or mildew on wood roofing, call a professional roofing contractor to treat your roof.

During the roof inspection, you should also look for shingles or shakes that are curled, broken or split or that have been lifted by the wind. If you find damage, arrange to have the roof repaired as soon as possible. If the damage is extensive, it may be time to replace the entire roof.

## **Ceramic Tiles**

Tile roofs are high quality, no-maintenance roofs. A tile roof should last 20 to 50 years or longer. It is not uncommon for tile roof manufacturers to guarantee their products for 40 or 50 years.

One precaution, do not walk on a tile roof for any reason. The weight of a person can break the tiles. Broken tiles may allow water to leak into your home. Call a home maintenance professional if it is necessary to go up on your tile roof for any reason.

If you notice a buildup of moss or debris on your roof tiles during the inspection discussed below, you can have a professional contractor rinse your roof with a pressure washer. However, do not walk on the roof yourself to perform this task.

During your roof inspection, look for any tiles that may be damaged or broken. If any repairs appear to be needed, call a professional roofing contractor.

### **Cement-Fiber Shingles**

Cement-fiber shingles are a relatively new roofing material. As the name suggests, cement is mixed with a fiber, such as wood chips. The result is a durable, versatile, light weight, long lasting roof material. Cement-fiber shingles can be formed to resemble natural materials such as wood shakes, slate shingles and clay tiles or different looks can be created.

Manufacturer's warranties of 30 to 50 years indicate the long life of this product. Like tile roofs, little maintenance is required for cement-fiber shingles.

If you notice a buildup of moss or debris on the shingles during the inspection discussed below, you can have a professional contractor rinse your roof with a pressure washer. During your roof inspection, look for any shingles that may be damaged or broken. If any repairs appear to be needed, call a professional roofing contractor.

A unique trait of cement products is a white powder that can form on the product's surface. This natural process is known as efflorescence. If a powder forms on your shingles, you can have the shingles rinsed to restore their natural state.

### **Slate Shingles**

Slate shingles are a natural, long lasting roofing material. They can last for 30 to 100 years, or longer. Although slate shingles are extremely durable, they are brittle and expensive to replace. Do not walk on your slate roof for any reason. If you have any problems with your roof, contact a professional roofing contractor that is experienced with slate roofs. Do not settle for anything less than an experienced slate roofing contractor.

If you notice a buildup of moss or debris on the shingles during the inspection discussed below, you can have a professional contractor rinse your roof with a pressure washer. During your roof inspection, look for any shingles that may be damaged or broken. If any repairs appear to be needed, call an experienced slate roofing contractor.

### **Metal Roofing**

Metal roofs come in a variety of materials and shapes. Aluminum, steel and copper are common metal roofings for homes. Aluminum does not rust and is coated in a variety of colors. Steel is also color coated for style and corrosion protection. Since copper does not rust, copper roofs are not coated. This allows the distinctive color of the copper to add to the character of the home. Metal roofing can be formed into shingles, tiles and sheets.

If properly maintained, a metal roof should last 40 years or longer. When inspecting a metal roof, as discussed below, look for rust spots. If rust appears, you can preserve your roof by having a professional roofing contractor scrape the corrosion off and paint the roof with special paint or compounds. Re-paint the roof as needed to preserve its life.

Inspect a metal sheet roof by looking for cracks or open joints at the soldered seams. As the metal sheets expand and contract, stress is placed on these joints. The stress can break the seal and cause leaks. Have any problems repaired by a professional roofer.

When inspecting metal shingles or tiles, look for loose, missing or damaged shingles or tiles. Have any problems repaired by a professional roofer.

### **Built-up Roofs**

Built-up or “tar-and-gravel” roofs are found on flat or low-sloping roofs. Layers of roofing felt are covered with alternating layers of roofing tar to form a continuous sealed surface. The top layer is covered with rock or crushed gravel to protect the roof from the sun, wind and rain. This roof is given its name because it is “built-up” into several layers.

Built-up roofs should be inspected regularly as discussed below. During the inspection, look for patched areas, cracking, blistering, surface erosion, alligatoring and wrinkling. Look for cracks at roof joints, near roof mounted structures and the flanged metal strip along the roof perimeter. All leaks, cracks, blisters and other problem areas should be sealed or patched and sealed.

Do not step on any blisters when walking on your roof. Blisters are usually caused by air or water vapor trapped between layers of roofing felt. A person’s weight on a blister can crack the roofing felt.

Record the location of any cracked or patched areas on a work sheet. Look inside your home for leaks around the areas noted on the work sheet. Built-up roofs should last 10 to 20 years, depending on the sun’s intensity. Erosion of the gravel, dry felt and blistering are signs that your roof is due to be replaced.

### **Roll Roofing**

Another material used on flat or low sloped roofs is mineral felt or roll roofing. The material comes in rolls of roofing felt that has been impregnated with asphalt. Colored mineral granules may be embedded on the surface of the material. One or two layers of the roofing are applied over the roof’s surface. Joints are sealed or the entire surface is coated with tar.

During the inspection discussed below, look for blisters, cracks and eroded, torn or curled sections. Look for cracks at roof joints, near roof mounted structures and along the roof perimeter. All leaks, cracks, blisters and other problem areas should be sealed or patched and sealed.

Do not step on any blisters when walking on your roof. Blisters are usually caused by air or water vapor trapped between layers of roofing felt. A person’s weight on a blister can crack the roofing felt.

Record the location of any cracked or patched areas on a work sheet. Look inside your home for leaks around the areas noted on the work sheet. Roll roofs should last 10 years or so, depending on the sun’s intensity in your area. Erosion of the surface, dry felt and blistering are signs that your roof is due to be replaced.

### **Membrane Roofing**

Single-ply membrane roofing is a relatively new material for flat or low sloped roofs. A single sheet of thin rubber or resilient plastic is glued or fastened to the roof’s surface. A layer of stones may be added for extra protection.

During the inspection discussed below, look for cuts, gaps, blisters, wrinkles and open seams in the protective coating. Look along joints, near roof mounted structures and along the roof perimeter. All leaks, cuts, blisters and other problem areas should be sealed or patched and sealed by a roofing contractor familiar with the material. Your membrane roof should last 15 to 25 years.

### **Roof Inspection**

You should inspect your roof each fall before the winter weather moves in, after heavy wind or snow storms to inspect for damage and again in the spring to look for winter damage. If you discover any problems, call a roofing professional.

Inspecting from inside. Begin your roof inspection in the attic. Examine the main roof ridge, rafters and sheathing for moisture or signs of moisture such as water stains, dark-colored areas of wet wood and soft spots that may indicate dry rot. Use a strong flashlight to inspect visually, then use a knife or thin screwdriver to probe for dry rot. Mark any problem areas with chalk so you can find the areas later.

If it is necessary to remove fiberglass insulation to examine the sheathing, wear loose clothing, gloves, goggles and a respirator for protection.

Next, turn off the lights and look for shafts of light coming through the roof. This is a sign of holes, cracks or other problems. Small shafts of light coming in at an angle indicate cracks that may swell shut when shingles are wet. If you see any holes above you, drive nails or poke wire through the holes so they will be visible from the roof's surface.

Inspecting pitched roofs. You should also inspect your roof from the outside. It is often safer and more convenient to inspect sloped or pitched roofs from the ground. Step away from your home until you are able to see all exposed sections of your roof. Then, use binoculars to visually inspect all portions of your roof. Binoculars allow you to get a close-up view of your roof without the inconvenience of climbing up and moving around on a sloped surface.

By using binoculars, you avoid damaging your roof by walking on it. Some roofing materials are more easily damaged by the weight of a person than others. Tile and slate roofs, for example, can break easily when walked on. No matter what the material, you should avoid walking on your roof if you can.

During the inspection, check the roof structure first by looking at the lines of the ridge and rafters. The ridge line should be perfectly horizontal. Inspect the line of the rafters by looking along the plane of each roof section. The plane should be straight. If either the ridge line or the plane of a roof section sags, call a professional contractor. You may have a structural problem.

Next, inspect the roof's surface. Look for the signs of wear and damage discussed above for the particular roofing material or materials found on your home. Discuss any problems with a professional roofing contractor. Repair or replace any defective roof material. If the damage is extensive, consider replacing the entire roof.

Inspecting flat roofs. Flat roofs are not visible from the ground. If you have a flat roof, you must inspect it from the roof itself. If your roof is higher than a single story, look for a way to access the roof from a door, window, access panel or other interior access. If the roof is higher than one story and does not have an interior access, then it is best to have the roof inspected by a professional roofer.

If you use a ladder to access your single story flat roof, you do so at your own risk. Follow all safety precautions recommended by the ladder's manufacturer. If you have any questions regarding ladder safety, consult a home repair book or magazine that discusses ladder safety or talk to an experienced building material merchant that carries ladders.

During your inspection, look for puddles of water. Although some people used to believe standing water on a flat roof would help keep the home cool during the summer, the disadvantages far outweigh any cooling benefits. Insects, plants and fungi can breed and grow in the water. Roots from growing plants can puncture your roofing material. During the winter, freezing water can cause serious roof damage. If you see standing water or signs of past water puddles, discuss this matter with a professional roofing contractor.

Your flat roof should drain along the roof edges and into downspouts or through drains located in the roof itself. Gutter and downspout maintenance is discussed later in this section. If your roof has one or more interior drains, inspect the drains to make sure they flow freely and are not clogged with debris.

## Roof Flashings

Flashing protects your roof from leaks around protrusions and roof joints. These are your roof's vulnerable points. Flashing is the sheet metal or other durable material that protects these joints from water penetration.

You will find flashing sealing roof valleys, roof and plumbing vents, around chimneys, along eaves and anywhere water can seep through open joints into the roof sheathing. The flashing's edges are sometimes sealed with caulk or roof cement. Flashing is a key to keeping your roof watertight.

Roof leaks are common along flashed areas. If you ever have a leaking roof, be sure to remember to inspect your flashing. You do not want to replace your entire roof when you can stop the leak by re-caulking a dried out flashing seam. With proper maintenance, you can guard against flashing leaks.

Inspect your roof flashing twice a year during the roof inspection discussed in the previous section. Once again, if you have a pitched roof, use binoculars to perform a visual inspection. Inspect those areas listed above where flashing is likely. Have a professional roofing contractor repair any problems.

During the inspection, look for any flashing that has buckled or pulled away from the joints it is supposed to protect. Next, look for holes and rust spots along the flashing surface. Small holes and rust patches can be patched or sealed. You should have the flashing replaced if you find large holes or extensive corrosion. Also look for loose nails and exposed nail heads. They should be re-nailed and covered with caulk or roofing cement. Finally, examine the flashing seams for dried or cracked roofing cement. Re-seal as necessary.

## Gutters and Downspouts

Gutters and downspouts collect water from the roof and carry it away from the house. This prevents topsoil erosion around concrete footings, basement flooding, siding and woodwork decay, paint failure, wall damage and other problems. Uneven soil moisture caused by water runoff can even cause serious foundation problems. Gutters and downspouts that leak or that are clogged with debris cannot perform their vital task. Therefore, it is important that you inspect, clean and maintain your gutters and downspouts regularly.

When inspecting your roof with binoculars, check your gutters for any loose spikes or support straps and have repaired as necessary. Gutters should slope gently towards the downspouts. Reset gutters that sag or slope improperly. Inspect seams, corner joints and downspout joints for proper fit. These joints should be repaired or sealed with caulk if they allow water to leak.

Gutters collect leaves, sticks, seed pods, mineral granules from roofing products and other debris. They should be cleaned in the fall after most of the leaves have fallen and again in the spring after the trees have bloomed. If you have low gutters and know how to safely use extension ladders, you may feel comfortable performing this task yourself. If you have a multistory home, don't like working from heights or don't like handling extension ladders, you may want to hire a contractor to clean your gutters.

During the gutter cleaning, the wood boards behind the gutters should be inspected for dry rot. Probe the boards with a knife or thin screwdriver for soft spots. Any decay should be repaired.

Plastic or metal screens can be installed over your gutters to keep them free from debris. These screens can be effective but the screens themselves must be cleaned. You must also continue to inspect your gutters and downspouts and clean as necessary.

You should also inspect your downspouts. Repair or replace any disconnected downspouts. Check for corrosion, clogged sections, improper connections, loose straps and missing sections. Repair any problems. Make sure the downspouts direct water away from your home. There are many ways to modify the downspouts to direct water away from your home.

Inspect your gutters and downspouts during rainstorms. Look for leaks from holes or joints and for water pouring over the sides. Make notes of any problems and repair when the weather permits.

## **Chimney**

Your chimney should be cleaned and inspected each year after the burning season ends. This reduces the risk of fire and increases chimney efficiency. A hot fire can ignite obstructions such as bird nests, leaves and thick deposits of soot and tar and turn your chimney into a torch. Such obstructions will also restrict the chimney's draft and reduce your fireplace or wood stove's efficiency.

Cleaning your chimney is a messy job requiring special tools. You may want to hire a professional chimney sweep to clean your chimney. If you want to tackle this chore yourself, it is possible to clean the chimney from inside the house through the fireplace. A number of home maintenance books are available at local bookstores to assist you.

If you have a masonry chimney, inspect the chimney in the same manner as brick, block and stone siding. If you ever notice that the chimney appears to be "pulling away from the house," is leaning, has bulging sections or has large cracks, have the condition examined by a contractor. It may indicate structural problems.

Also, [click here](#) for more information on chimneys.

## **Other helpful websites**

Roofs & roof maintenance - [www.gaf.com](http://www.gaf.com)