

# REPLACE YOUR ASPHALT SHINGLE ROOF

Asphalt shingles properly applied to a roof are extremely durable, but eventually they will need replacement. How do you select the type of shingle and the roofing contractor? Do you tear off the shingles or roof over them? What important details of the installation and the roof replacement contract should you know?

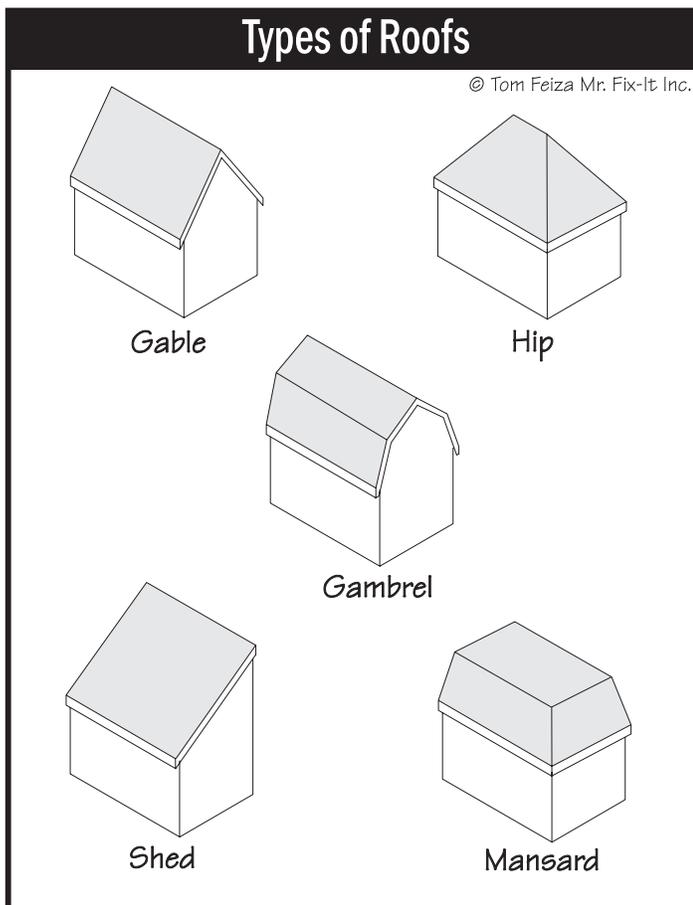
Things are pretty confusing when replacing a roof, and there aren't many resources to give you a quick or simple answer. Most people aren't familiar with roofs or roofing terms unless they've had a roof leak, have just replaced a roof, or have had a problem with a roofing contractor.

I have prepared this information to help you make sense of the many decisions involved in asphalt shingle roof replacements. This article will help you select a

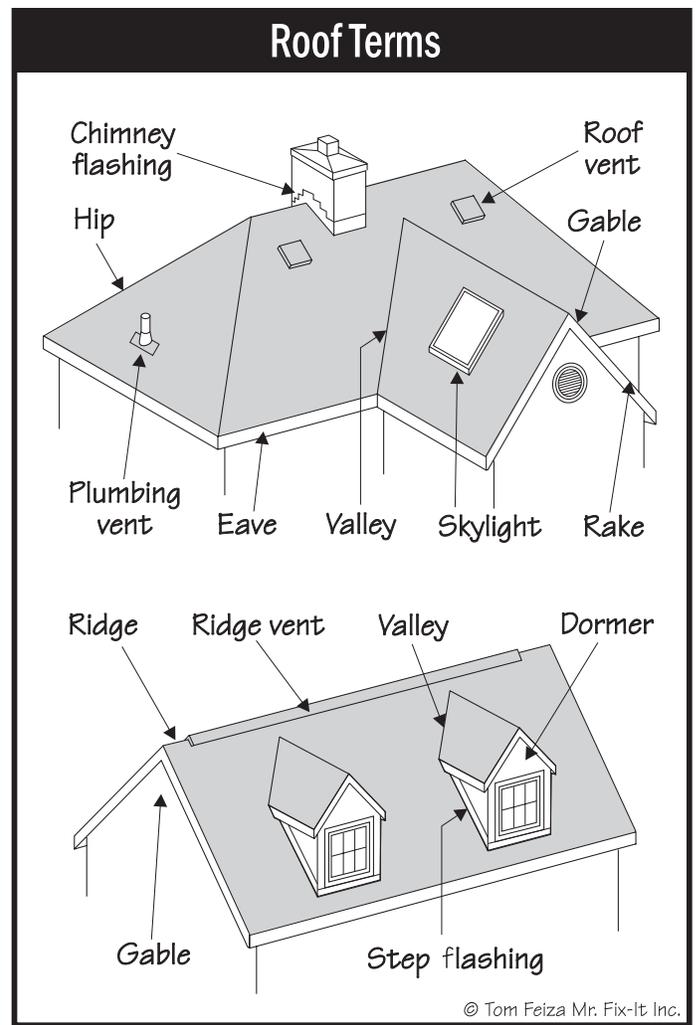
contractor, choose the roofing material, and establish a good contract for the replacement roof. By following through with the information in this article, you will have a better chance of completing a good roof replacement project.

## Basic Terms

Knowing a few basic terms will help you communicate with roofing contractors and establish fair specifications for your new roof. Review the illustrations for details on the terms. (Drawings R003, R004)



R003



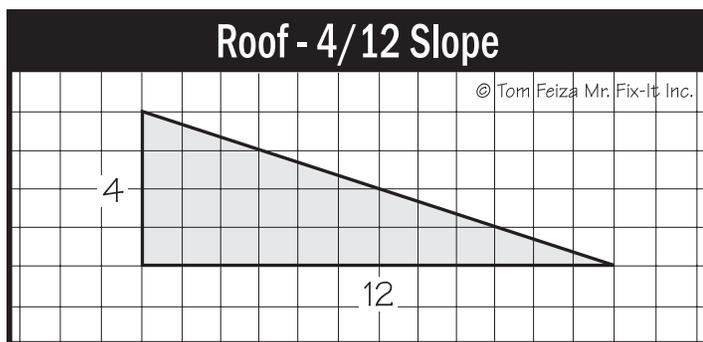
R004

**SQUARE** – The amount of roofing material needed to cover 100 square feet. A roof that is 15 square has 1500 square feet of surface area.

**FLASHING** – Metal or roofing material that is used at starts, stops, penetrations, and changes in direction of the roof. This includes the intersection of the roof to chimneys, vents, valleys, and vertical surfaces. Step flashing is used at intersections to all vertical surfaces such as chimneys. Flashing is also installed around plumbing vents.

**ROOF-OVER or RE-ROOF** - Applying an additional layer of asphalt shingle roofing over an existing asphalt shingle roof. Normally, the maximum number of roofing layers is two.

**SLOPE** – Refers to the angle of the roof. A 4/12 slope refers to a roof that drops 4 feet (vertical) in a 12 foot run (horizontal). The 4/12 can be measured in feet or inches. A 12/12 roof is at a 45-degree angle. (Drawing R001)



R001

**THREE-TAB SHINGLE** – This is the most common asphalt shingle. It is divided into three segments or tabs with a small vertical slot in the exposed lower edge of the shingle.

**LAMINATED OR ARCHITECTURAL SHINGLE** – An asphalt shingle composed of several layers of material to give the roof a wood-like or textured appearance.

**ASPHALT, FIBERGLASS, ORGANIC, AND COMPOSITION SHINGLES** – These terms are confusing because they are often interchanged. A composition shingle is an asphalt shingle. An asphalt shingle can be organic or fiberglass; asphalt bonds the shingle materials together. The base material for the shingle may be fiberglass (inorganic) or cellulose (organic) felt. About 80 percent of modern shingles have a fiberglass base material. In years past, organic base shingles were more common.

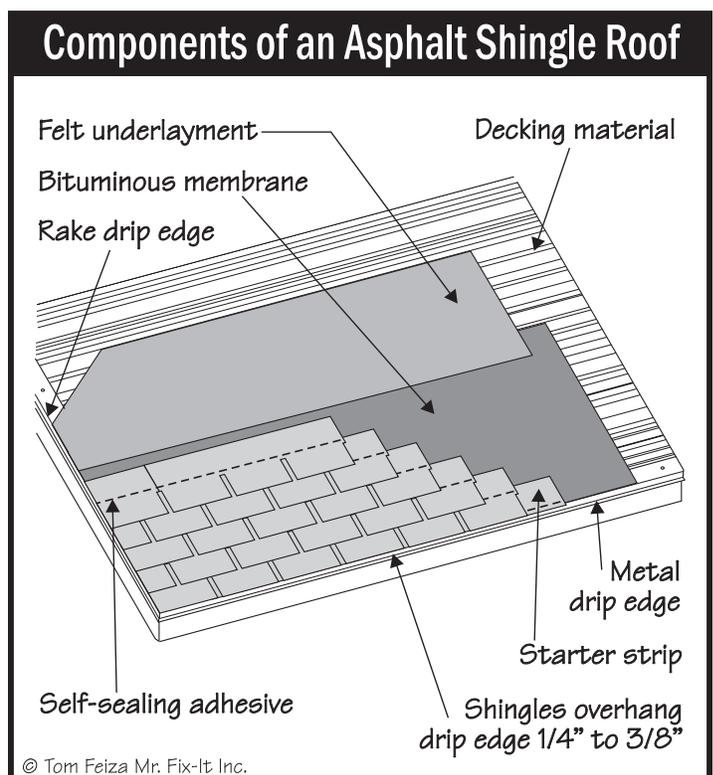
**EAVE** – The overhanging lower edge of a roof.

**RAKE** – The pitched edge of a roof that overhangs the wall of a home. This also refers to the board or molding placed along the sloping side of a gable roof end.

**RIDGE** – The top intersection of two roof planes; the peak.

**VALLEY** – The internal angle at the intersection of two roof planes. Can be an open metal valley or a valley formed of shingles or asphalt roofing material.

**DRIP EDGE or GUTTER APRON** – The metal strip that is installed along the edges of the roof to shed water away from the trim or into a gutter. It is often called a gutter apron or apron at the gutter. Usually, this is an L-shaped aluminum strip fitted under the edge of the shingles. (Drawing R005)



R005

**DECK** – The wooden board, plywood or oriented strand board (OSB) that supports the roof material and spans the framing joists or trusses.

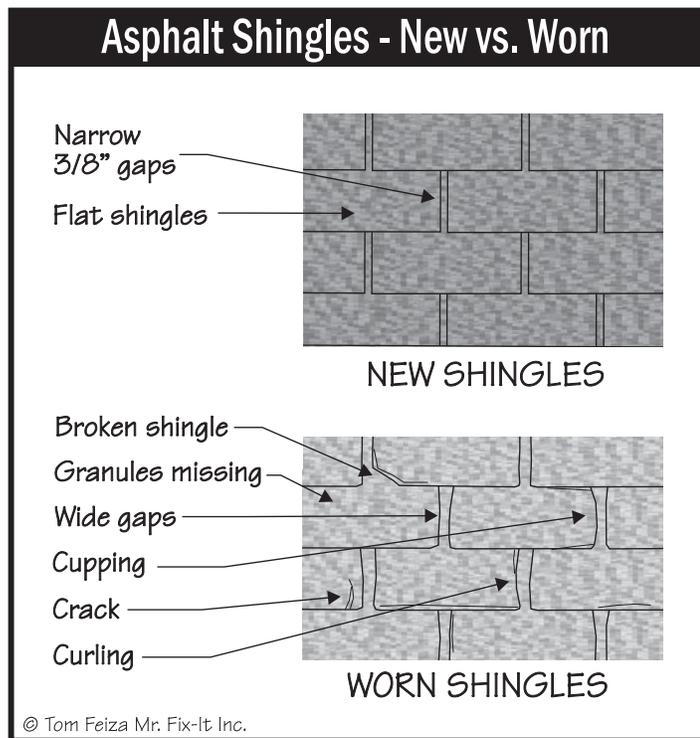
**FELT, TAR PAPER, BUILDING PAPER** – Asphalt-saturated roll felt material used under roof shingles and siding. It can also be designated 15# or 30# felt. The 30# felt is thicker and heavier than the 15# felt.

## Evaluate Your Roof

Asphalt roofs fail with age. A typical asphalt shingle roof lasts about 20 years. Sun is the main cause of natural aging, and you will find that southern exposures have the most wear and tear. Wind, hail, poor drainage, tree limbs, pollution, and climate extremes also affect the aging of a roof.

If your roof is 15 years old, you should start planning for replacement. If your roof is 20 to 25 years old, you need to have your roof evaluated for potential replacement.

When a roof ages, you will see the shingles shrinking and vertical gaps between the shingle tabs opening up on the typical three-tab shingle. On a new roof, the gap will be about 3/8 inch wide and the edges of the shingle will be square, smooth, and flat. On an older roof, the gap will open from 3/8 inch to 3/4 inch or even 1 inch, and the edges will curl and lift. Older roofs will also lose their granular coating, crack, cup, split, and thicken at the edges. (Drawing R006)



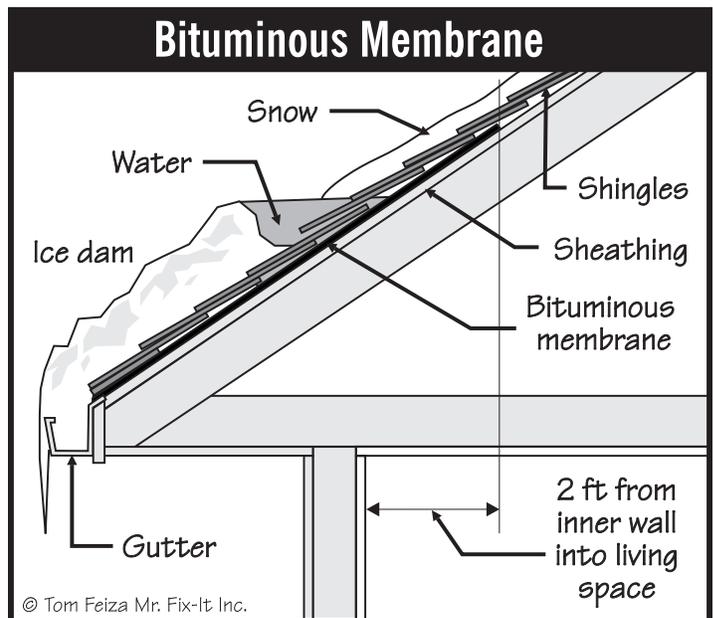
R006

## Tear Off or Roof Over?

If you have a single layer of asphalt roofing material, adding a second layer of shingles ("roofing-over"/"re-roofing") is an option. This can be done if the old roof shingles are flat and in relatively good condition. A laminated or architectural single is a good option for a "roof-over" because the texture of the new shingle will

cover imperfections. The roofing contractor must evaluate the roof before a roof-over is considered.

On a roof-over, you don't have the option of adding a special bituminous flashing material at the overhangs, valleys and penetrations. (Ice and Water Shield is a popular brand. Also, the Grace Company makes bituminous flashing.) This flashing material will help prevent leaks from ice dams—an important consideration for cold climates and for homes that have experienced ice dams. (Drawing R007)



R007

If your roof has two or more layers of shingles or if the existing shingles are in poor condition, you must tear off the existing shingles down to the wood deck. In a tear-off, the wood deck and roof framing remains and all asphalt roofing materials and flashing materials are removed. Removing the old roofing materials also provides access to the roof deck so repairs can be made if necessary.

Adding a third layer of roofing material is never a good idea. It may not be allowed by local building codes, and it may violate the warranty for the new shingles. The third layer may also overload the roof structure.

## What will it cost?

The cost depends on many variables. The material selection, the height of the home, the access to and slope of the roof have the biggest effect on cost. Flashings are also a major cost factor. If the home has chimneys and many changes in the roofline, the cost will be higher. Costs go up when roofing contractors are busy or if you are in a hurry to get the job done.

In general, a roof-over will cost about \$2 per square foot, and a tear-off will cost about \$4 per square foot. These estimates are based on 2003 prices for a simple low-slope roof with minimal penetrations or changes in direction and good access around the home.

## Find a Good-Quality Professional Roofing Contractor

Finding a professional roofing contractor is the key to a successful roof replacement project. All manufacturers make good roofing materials, but only a knowledgeable contractor can properly design and install a replacement roof. The essentials are knowledge, experience, and attention to details during installation.

Ask friends and neighbors about contractors they have used. Local professional builders' or remodelers' organizations and roofing material suppliers can also provide names of good contractors. Start with two or three contractors.

Sit down with the contractor or contractor's salesperson and review the company's qualifications:

- Get a full name and street address. If the contractor has a permanent office, you know you'll be working with a larger, established business.
- Check on insurance: comprehensive liability and workers' compensation. Ask for a certificate of insurance; a quality contractor's carrier will provide this automatically.
- Is the contractor licensed by the state or the local municipality if required?
- How long has the company been in business? Established companies usually have greater experience and knowledge.
- Ask for references from local jobs. Take the time to call a few references and ask about appearance, cost, quality, promptness, cleanup, and problems.
- Ask about a performance guarantee. Normally, a roofer will guarantee workmanship, and the manufacturer will guarantee the roofing material.
- Will the contractor company perform the work with its own employees or use a subcontractor? Quality, knowledge, and performance are easier to control when the contractor uses its own employees.
- Will the contractor walk the roof and inspect the

attic when preparing the quote? If not, how can the company give an accurate quote and address existing conditions? The contractor should check the attic to determine the condition of framing and roof deck to help prevent unpleasant surprises during the job. The contractor must also evaluate attic ventilation and plan for any necessary changes.

- Will the contractor follow the installation and product requirements of the material manufacturer? This is important to ensure a quality installation and to qualify for the manufacturer's material guarantee.
- Will the contractor provide on-site supervision during the job and complete a walk-through with you before final payment?
- How will the contractor protect your property during the project?
- The contractor should be a member of a professional group of builders or remodeling contractors. This ensures that the contractor is established and takes the time to invest in professional growth.

## The Contract

A roof replacement requires a written contract to protect you and the contractor and to ensure that all terms, materials and conditions are identified. The contract should address all of the following.

- Material selections, described in detail; type of shingle and the specific name, color and manufacturer; valley, rake edge, and vent materials; and underlayment (tar paper) for the shingles. (The manufacturer's installation instructions must be followed.)
- A statement that all materials will be installed per the manufacturer's instructions. This will ensure that work is done correctly and the manufacturer's warranties will be honored.
- Details on initial deposit and progress payments. The contractor may want a partial payment when the job is started or materials are delivered. Some contractors ask for a small down payment when the contract is signed. Final payment should be made after the job is completed and inspected. A contractor should never be paid before work is completed and should never be given a substantial down payment.
- Construction start and finish date.

- Lien waver requirements. When bills are submitted, the contractor should submit a form that removes the ability of the contractor and suppliers to place a lien on your property. This means the contractor has paid the bills for work and material used on your property.
- Details on how flashings will be replaced—specify type of material and installation details for the chimney, valleys, plumbing vents, roof vents, and any interruption in the roofline.
- Specifications on the following: Will the shingles be removed? How will the home be protected from damage and debris? Will the site be cleaned up every day?
- Information on how any damage to your property or your neighbors' property will be handled.
- Details on how your property will be protected if a rainstorm or weather problems develop during the project.
- Working hours if this is important to you and your neighbors. Roofing is noisy and messy.
- Details on these issues: How will existing gutters and downspouts be protected, saved and re-used? Or, if the gutter and downspouts are to be replaced, what will be the size, color, and thickness of materials used?
- How additional work will be handled. Add a clause stating that deviations from the contract require a written change order before the work is done. The change order must specify the change and the cost.
- Details on costs of any additional roof deck plywood, OSB, or boards that will be required. This is a common situation and should be described as cost per lineal foot for lumber or per sheet for plywood or OSB decking.
- Specifications on how materials will be delivered and stored.
- Particulars on whether special bituminous flashing will be used at eaves, valley and gutter flashings. The contractor should describe the type of material that will be used. Such flashing should be use in cold climates like Wisconsin's, and it should extend at least 24 inches over the heated space. This may require two 36-inch-wide strips at the gutters if the home has wide overhangs.
- A description of insurance covering the job. The contract should also state that you will receive a certificate of insurance before work begins.
- Description of building permit requirements and a statement that the contractor will obtain the permit, pay for it, and ensure that a final inspection is completed.
- If subcontractors are to be used, the contract should identify them.
- Warranties and guarantees from the contractor and the material manufacturer.
- Details on type of fasteners and how they will be applied.
- Details on attic ventilation material and installation.

## Insurance

An established contractor will automatically offer a certificate of insurance. The certificate, issued by an insurance company, will describe the type of insurance and the coverage. The contractor should carry comprehensive liability insurance and workers' compensation insurance.

The insurance certificate should be provided before the job is started. This requirement should be stated in the contract.

## Lien Waivers

Contractors and suppliers for construction projects don't always get paid for work and materials. Filing a lien against the property for unpaid bills protects them. Owners are protected from liens by obtaining a lien waiver from the contractor when bills are paid.

Liens can become a sticky issue if you pay a contractor for a project but the contractor never pays for roofing materials used on your home. If the supplier files a lien against your home and you don't have a waiver, you are responsible for the cost of the materials. You could end up paying twice if the contractor has financial problems and takes a walk.

## Subcontractors

Subcontractors—not a good idea? Unfortunately, some contractors sell roofing projects to homeowners and then turn around and hire a subcontractor to do the work. This is not bad if the contractor takes the time to supervise and communicate with the subs. It is bad if

the contractor just turns the work over to the sub and then shows up to collect the check.

A contractor doing the roof project with its own employees usually employs better-qualified tradespeople who take more pride in their work. When the contractor buys materials, plans work, schedules workers, loads trucks, and so on, the contractor has a lot more ownership of the project and the results.

When you interview the contractor and establish the roof replacement contract, specifically address whether subcontractors will be used, and consider this in your selection process. Some states require contractors to identify subs in the contract.

## Select the Shingle Material

Selecting an asphalt shingle for your roofing project is a major deal because of the many colors and texture variations. You can have a little fun with colors and appearance. Right now, architectural or laminated shingles are the most popular because they add some texture and color variation to the roof. You should review samples of the shingles and pictures of the shingles applied to a roof.

I believe you should purchase a 25-year or better shingle from a major manufacturer offering a good warranty. Your contractor can give you some advice on the products he or she prefers. You can purchase a shingle with more life, but don't buy a cheaper shingle.

The most common shingle style is a three-tab shingle with two thin slots that divide the exposed shingles into three parts or tabs. Almost all shingles today are "asphalt" shingles with a fiberglass (inorganic) mat. Asphalt shingles with an organic or cellulose fiber mat are less common but still used.

Shingles are rated by their weight per square. The heavier the weight, the longer the life of the shingle. The surface is coated with granules that protect the shingle from sunlight and provide color.

## Manufacturer's Instructions

Shingles must be installed per the manufacturer's instructions to ensure a proper installation and comply with the warranty. These instructions are printed on the shingle package. You can also find them on the Internet or obtain them from the contractor or the material supplier.

The instructions include specific sketches and details on

fastening, underlayment, spacing, valleys, flashing, and virtually any other detail required for the installation. Be sure to ask whether the contractor will follow the instructions. Add a clause in the contract stating that the instructions must be followed.

## Warranties

Warranties will vary with contractors and material manufacturers, and you should take some time to review them. In general, the manufacturer warrants materials and the contractor warrants workmanship.

Contractors' warranties generally cover 1 to 5 years on workmanship. The important part of this warranty is the contractor's ability and intent to correct any workmanship problems. When you select an established contractor, there is a better chance that the contractor will be around to honor the warranty.

Manufacturers' warranties will cover materials and may cover some labor for the first few years for manufacturing defects. These warranties will require that materials are installed per the manufacturer's instructions. Warranties specify some type of proration based on age. They will also require that proper ventilation, fastening, flashing and installation details are used.

## Fasteners

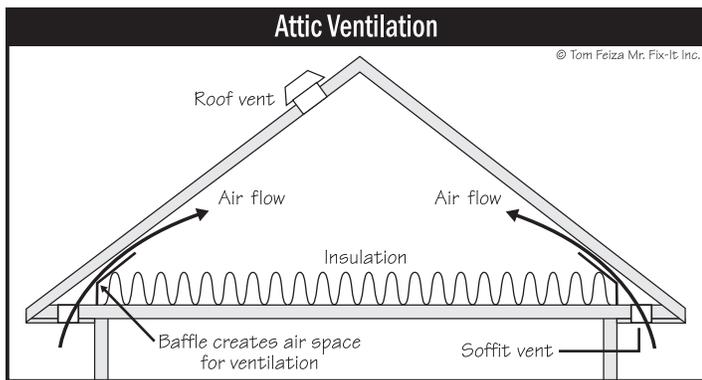
Most shingle manufacturers recommend using nails to fasten shingles to the roof deck. Nails can be driven by hand or with pneumatic nailers.

It is possible to get sloppy with pneumatic nailers, resulting in fasteners driven too deep, too shallow, at a slight angle, or beyond the proper nailing line location. This can cause problems down the road as shingles blow away from the surface. The old-fashioned hammer may just be the best tool for driving these fastening nails. Working by hand allows the installer to feel problems with the wood deck and quickly reset an offending nail. Discuss this with your contractor.

## Ventilation

A good roofing contractor will always evaluate the ventilation of the attic below the roof. All roof material manufacturers' warranties require adequate attic ventilation. Ventilation removes moisture, limits heat build-up, and helps prevent ice dams. (Drawing V002)

Most roof and attic systems that are 20 or more years old lack adequate ventilation. The general rule for ventilation is one square foot of net free ventilation area per



V002

150 square feet of attic floor space. If there is a vapor barrier, ventilation can be reduced to one per 300. Half of the ventilation should be high on the roof and half should be low on the roof. Screens and grills on the vents reduce the “net free” area by about 50 percent. (Drawing V042)

Vents in the overhangs are often filled or covered with insulation as we add more insulation to our attics. A baffle should be installed under the roof sheathing at the eaves to provide a channel for air movement above and around the insulation.

Today, ridge vents are often utilized as a replacement for the standard roof vent that looks like a large metal mushroom near the top of the roof. A ridge vent runs along the peak or ridge of the roof. Most ridge vents are now covered with shingles to match the roof. From the ground, you will see a section along the ridge raised about 1 inch. (Drawing V005)

Cathedral ceilings present a special concern because it is hard to provide ventilation between all the rafter bays if there is limited air space below the roof deck. Most of these installations require a continuous ridge and soffit vent.

## Ventilation: Bath and Kitchen Fans

When checking the attic ventilation, make sure that any bath and kitchen exhaust fans routed through the attic discharge to the outside. Before 1980, it was common practice to allow such fans to discharge into the attic, but this routes too much moisture into the attic. During roof replacement, the contractor should install special vents through the roof for these fan discharges. (Drawing V003)

## Valley Flashings

Valley flashings can be installed with any of three methods, and all will work well. In northern climates, an

### Attic Ventilation Requirements - Typical

Attic Area = 20 x 50 feet = 1000 sq. ft. NFA

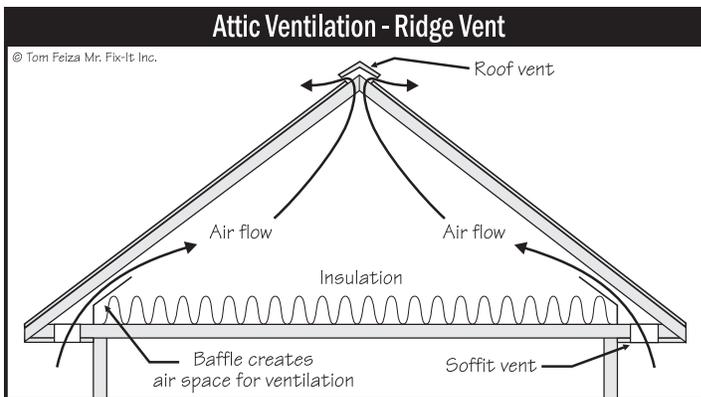
Min. Ventilation w/o Vapor Barrier =  $\frac{1000}{150} = 6.6$  sq. ft. = 960 sq. in.

Min. Ventilation w/ Vapor Barrier =  $\frac{1000}{300} = 3.3$  sq. ft. = 480 sq. in.

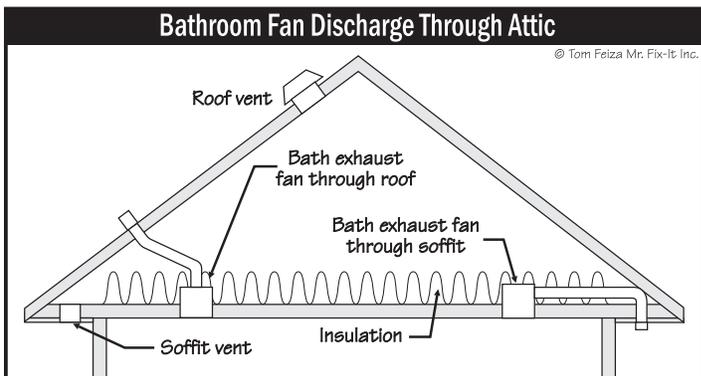
Typical attic ventilation requirements are based on the attic area divided by 300 or 150 depending on the type of construction. 50% of vent area must be high on the roof and 50% low on the roof. NFA is “Net Free Area” of the vent. The actual “free vent” area is reduced by screens and louvers on the vent.

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V042



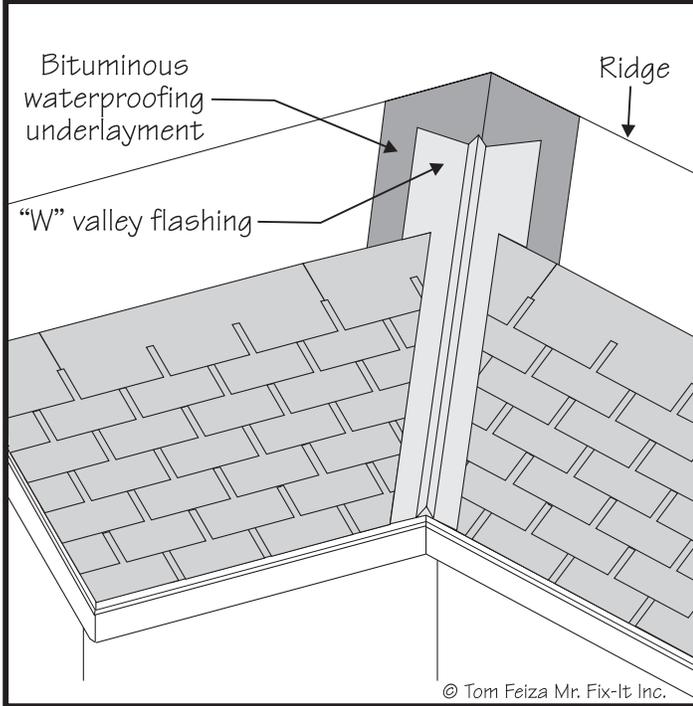
V005



V003

open valley with a metal flashing is the most common. The metal extends up and under the shingles to form a joint between the planes of the roof. The metal carries the water to the edge of the roof. (Drawing R008)

## Metal Valley Flashing (Open Valley)



R008

A closed cut valley has one side of the roofing run up on the adjacent roof plane. The shingles from the other plane are then run up over the shingles into the valley and cut.

A woven valley uses shingles from both intersecting planes to "weave" a valley.

Discuss with your contractor the type of valley to be installed. Any type of valley will perform, and the contractor should install the preferred valley but must follow instructions for the specific shingle that will be used.

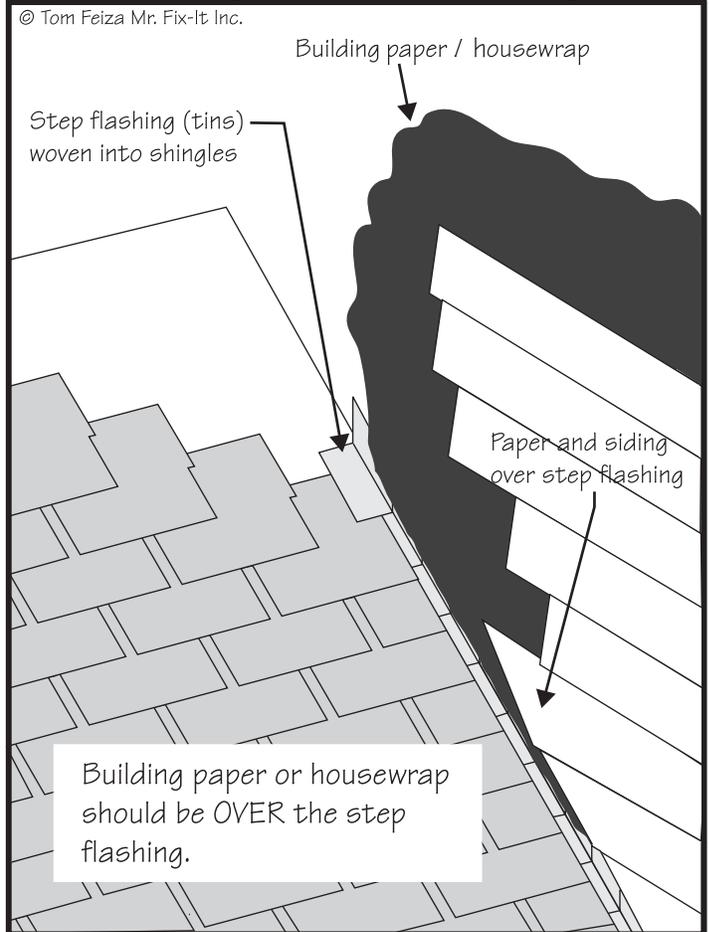
## Flashing Against a Vertical Sidewall

Flashing must be installed at all sidewall-to-roof connections. You will see this where the roof abuts a dormer or a second story. Where the roof angle intersects with a wall, a step flashing or tin must extend up and under the siding and building paper or house wrap. The siding and paper act as a counter-flashing and cover the tin used for the step flashing. (Drawing R015)

## Masonry (Brick or Stone) Chimneys

Chimneys present a special problem because they penetrate the roof and expand and move independently of the structure of the home. At the joint of the masonry chimney to the roof, there should be step flashing covered by counter flashing. The counter flashing

## Step Flashing - Sidewall / Building Paper



R015

should be cut into the masonry joints of the chimney. (Drawing R009)

Always require a metal step and counter flashing, and don't accept anything less. Watch out for contractors who quote a sealant or mastic flashing—these will not work.

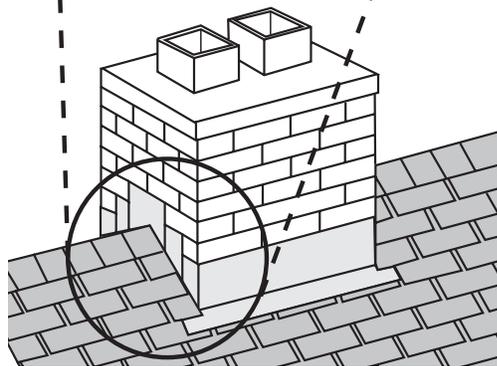
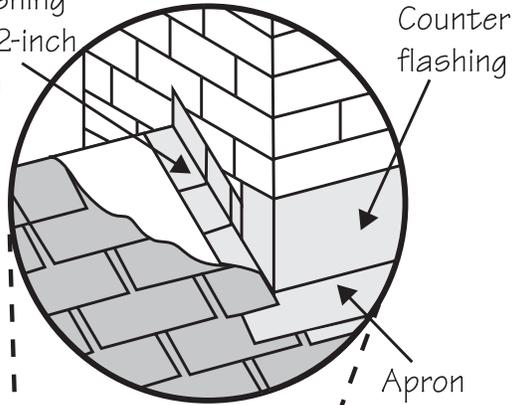
Wide chimneys present special problems if water must flow around the chimney. The rule of thumb is that when a chimney is more than 3 feet wide it should have a cricket (saddle) to divert water. (Drawing R010)

## Prevent Ice Dams

Ice dams occur when snow melts on a warm roof, slides to the cold edge of the roof, and re-freezes as ice in the gutter and overhang. This ice buildup creates a "dam" that blocks water on the roof. The water then leaks through the standard asphalt shingle assembly that is not designed to resist ponding water. (Drawing R002)

## Chimney Flashing

Step flashing  
overlap: 2-inch  
minimum

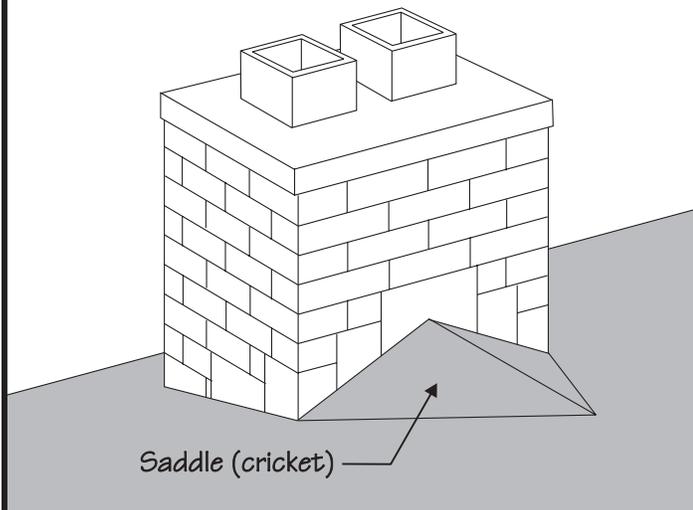


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R009

## Chimney Saddle (Cricket)

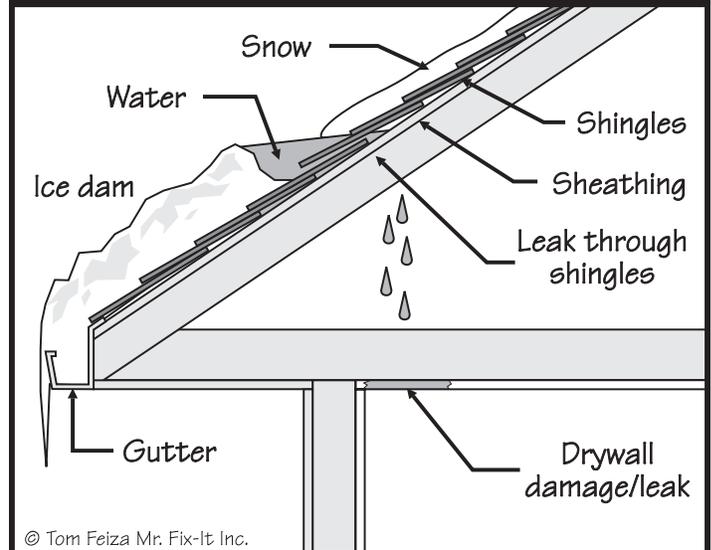
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R010

In northern climates, a bituminous membrane should be used on all roof replacements. The bituminous membrane is laid on the roof deck, under the shingles. The membrane seals around the nails as the shingles are applied. This membrane protects against ice dams by

## Typical Ice Dam and Leak



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R002

directing water to the edge of the roof even if the water has penetrated the asphalt shingles.

The bituminous membrane should be used at valleys and roof penetrations. At overhangs, the membrane should extend 24 inches over the heated space of your home.

## Gutters and Downspouts

Gutters and downspouts must be considered when replacing roofing materials. If your home has newer gutters, you can ask the contractor to remove them and re-install them with the new roofing materials. If the home needs new gutters and downspouts, the best time to replace them is during a roof replacement project. When done with a roof replacement, better performing "high back" gutters can be installed.

## Skylights

Skylights that penetrate the roofing deck require a special step and counter flashing. These should be replaced. They are often purchased as a kit from the window manufacturer.

If your home has an inexpensive plastic skylight without step and counter flashing, consider replacing the skylight with a modern unit. Modern skylights will not leak, while the older plastic skylights will leak at some point.

## Codes

Some municipalities require a permit for a roof replacement and will also inspect the project. Be sure the contractor handles the permit requirement and potential

inspection coordination. Most municipalities have restrictions on the maximum number of roofing layers.

## The Roof Deck

A “roof-over” adds asphalt shingles over existing shingles. Before the job, your contractor should inspect the roof deck to make sure it is in good condition. The deck must be sturdy enough to support the additional weight and provide sufficient grip for the shingle fasteners. Excessive rot or water damage are potential problems.

When a “tear-off” is completed, the roof deck must conform to the requirements of the shingle manufacturer. Shingles must be applied to a smooth, flat surface that will support the shingles and properly hold the fasteners.

A tear-off on a home built before 1950 or a roof that has old wood shingles as its lowest layer of shingles may reveal spaced roofing boards. These are generally a 1-by-6 nominal dimension with a space of 1/16 inch to 2 inches between boards. This spacing originally provided for air circulation and drying of the wood shingles. However, the arrangement will not properly support asphalt shingles. During the roof replacement, spaced boards are usually covered by plywood or oriented strand board (OSB) panels. This will add to the expense of the project, but it must be done.

In some cases, the contractor may propose adding strips of 1-inch-thick lumber in the gaps between the original deck boards.

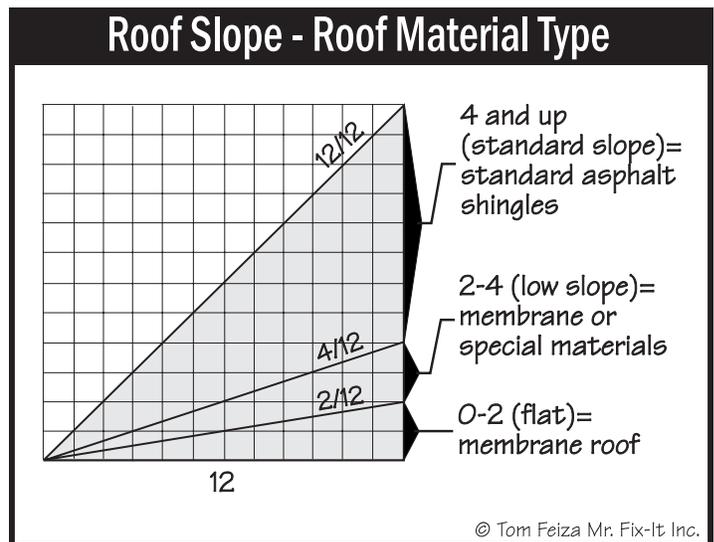
## Flat and Low-Slope Roofs

Information on replacing roof materials on flat or low-slope roofing could fill a whole new article. Low-slope roofs have a pitch of less than 4/12, and flat roofs are flat or close to flat. Asphalt shingles can't be used on low slope or flat roofs without special precautions. The most common roofing material for a flat roof is a rubber roof because it must be watertight. Rubber roofs are actually made of ethylene propylene diene monomer (EPDM). (Drawing R013)

Don't ever let a contractor place a standard asphalt shingle roof on a low-slope or flat roof. Without special construction details, it will leak. Every shingle manufacturer has specific instructions for low-slope roofs.

## Unknowns

Expect some problems with a roof replacement project. Often, when the roof material is removed, problems are uncovered and need to be corrected.



R013

## Low Bid or Best Bid?

Don't select your roofing contractor based on price. While you want a reasonable price, the quality of the roofing materials and the contractor's experience should be the most important criteria. Evaluate the contractor based on materials, roofer experience, completeness of the contract, references, and the overall feeling of confidence you have in the contractor.

## Mildew and Algae Problems

Roofs that are shaded often show stains from the growth of algae or fungus. You can trim trees to help sunlight reach the roof and limit fungus problems.

If you select a darker shingle, staining will be less noticeable. If there is a severe staining problem, you can purchase special shingles that are algae resistant. These shingles use a metal oxide that prevents algae growth. You can also have zinc metal strips installed high on the roof under the edge of the top shingles. The zinc metal oxidizes, and the zinc oxide flows down with roof with rainwater to prevent algae growth.

## When and How Long for Work To Be Done?

A small roofing project should be completed in a few days. A larger complex roof that includes a tear-off may require a week or more. Of course, the size of the roofing crew and the preparation of the contractor will affect the time required. Once the project is started, work should proceed uninterrupted. Gutters and downspouts may take a few extra days for completion.

The contractor should always provide protection from the elements if a roof is not completed at the end of the shift.

## Protecting Your Home

The contractor should protect the siding of your home and your neighbors' homes. This may require tarps or plywood sheets to direct debris to the Dumpster or the ground. Discuss how your home will be protected and how debris will be removed.

How will your home be protected if a rainstorm occurs? Discuss this with the contractor and put some details in the contract. During a roof removal process, your home should never be left unprotected from weather problems. This often requires a contractor to remove roofing and finish those areas each day. A roof should never be left without some protection overnight.

## Mess in the Attic

If a roof "tear-off" is part of the project, this can create a substantial mess in the attic. Homes built before 1950 usually have spaced wood deck boards. When roof material is removed down the decking, debris falls into the attic between the spaced boards. The debris consists of bits of shingles, tar paper, roof coating granules and nails.

Be prepared for the mess. Discuss options with your contractor. You may need to cover stored items in the attic or clean up the mess later.

## During the Project

Cut the contractor a little slack during the project. Roofing projects are messy and noisy. Working conditions can be very hot. Keep your kids and cars clear of the project.

Check the shingle packages. Is this the product you selected? You can see the manufacturer's installation instructions on the package.

Take some time to talk to the contractor on the site and offer your help with details and coordination. Then stay out of the way. Provide the workers with refreshments and treats—a little help that can mean a lot to workers on the job.

## Problems?

Address any concerns immediately with the contractor. Don't address the workers; talk to the office, the project manager, or the foreman. Most concerns can be solved easily if addressed early in the process. Don't keep a secret list of problem or concerns to spring on the contractor at the end of the project. Contractors are people, and they appreciate good communication that addresses issues as the project goes on.

## The Finale

Try to establish a very good contract that establishes all the specifics of the roof replacement project. Compare prices based on the contract specifications, the materials, and the quality of the contractor. Base your selection on quality, not price.

Please note: A special thanks goes to the technical roofing experts at J & B Construction in Milwaukee, WI for their help with this article – Scott Cline, Tom Dooley and Jerry Wycklerndt. (Phone 414-265-5800)

## HOME TIPS

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