Double the Life of your Asphalt-Shingle Roof

by: Tim Carter

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Foreword:

As I write this, it's December, 2008, and the United States of America (USA), actually the World for that matter, is headed downward in an epic economic downturn of historic proportions. I don't believe we are at the bottom of this ugly mess, and history will eventually tell us how bad it was.

But you and I can't wait for history. We are in the here and now. For many right now it's really bad. Money is tight, and any expenditures that can be put off help with survival. The purpose of this document is just that. It will allow you to temporarily put off the replacement of your roof. This can save thousands of dollars, while at the same time preserve the structure of your home and the integrity of the things inside it.

I have first-hand experience of how tough things can be in situations like this. When I stopped building homes to start my new career as the **AsktheBuilder.com** guy, we got into serious financial trouble in a hurry. Within nine months, all of our savings were depleted, and Kathy and I were living week to week. I've been where you might be right now. Years went by before we ever exchanged birthday or Christmas gifts to one another. We always made sure the kids got something, but Kathy and I cut expenses to the bone.

I was an avid do-it-yourselfer anyway, but even in my own tough times I did even more. You may have to do this now to survive this storm. Even when the gale abates, the advice in this document will help you or others save money. It contains practical advice about regular three-tab asphalt roofs that many homeowners don't know. Once you understand how these roofing materials are installed, you'll discover how easy it is to extend your roof's life.

Let's get to work.

Tim Carter
AsktheBuilder.com **Do it Right, not Over**

Acknowledgments:

This eGuide is the first one of a series. It was inspired by Brent Walter, my videographer. He pointed out several months ago that people needed my help when they were in trouble. He said, “Mr. Carter, people need life preservers when things go wrong or bad at their homes. You need to throw flotation devices to homeowners every chance you get.”

Brent was right, and there are more eGuides coming.

I also want to thank Dave Evans of Roofing Distributing Company in Cincinnati, OH for his years of sharing roofing facts. He is a wise businessman who has allowed his family-owned business to thrive.

Roger Henthorn, my virtual assistant, once again helped with this document. He checks for errors and takes it to the final stages so that you can download it and see all the high-resolution photographs.

I also wish to thank Ms. Victoria Bradley. Victoria edited this guide offering suggestions to make the document as user-friendly as possible. She also thoughtfully pointed out all the typographical and grammatical errors.

Finally, I have to thank my wife Kathy. Without her unending patience none of my **AsktheBuilder.com** work would be possible. She had the original vision, and has allowed me to continue down the pathway of sharing the building knowledge I’ve accumulated over the years.

Section One: Asphalt Shingle Construction

To understand how to double the life of your three-tab asphalt-shingle roof, I feel you need to understand how a common three-tab shingle roof is constructed. I'm not talking about the wood framing, rafters and sheathing. What I'm referring to is the method and science of the overlapping shingles.

Asphalt shingles on the roof of your house work much like the feathers on a bird. They overlap one another tightly, producing a highly effective weather barrier. On birds and ducks, the feathers are so well designed and waterproof that the mammals can stay dry in rain and even when they swim in water. It's really a marvel of nature when you think about it.

Before we get too deep into this topic, I want to make sure your roof looks like this green one. This is a standard three-tab asphalt shingle roof. It is, perhaps, the most common asphalt-shingle roofing material made and installed in the USA.

You'll notice in the photo horizontal black shadow lines that separate the shingles into rows. Then there are smaller vertical lines that are visible that separate the tabs. In the most-common three-tab shingles, the visible tab you see is just a little bit under 12-inches wide and 5 inches high. That's the dimensions of each tab in this photo.

But not to confuse you, the actual dimension of the shingle, when it's in the package and in the hands of the roofer, is 36-inches wide and 12-inches tall. The shingle has two knockouts punched into the shingle that work to create the three separate tabs. This is why it's called a three-tab shingle.

If you're an old timer, then you can remember when roofers installed roofs that looked like the finished product in this photo. But the difference was that each shingle was a

single tab! Yes, each shingle measured 12 inches by 12 inches. When I was a very young remodeler, I remember tearing off old roofs that were made with **single tab shingles**. Roofing manufacturers decided to make the three-tab shingle because they are easier and faster to install the shingles. The roofers used fewer nails, and the reduction in butt joints where one shingle touches another made for a more watertight roof.

In this photo, I'm showing you an unusual shingle to illustrate what one looks like when you or a roofer takes it fresh out of a bundle. This shingle is a five-tab shingle made to look like a slate roof. See the five tabs? They are medium gray, and make up the lower 40 percent of the shingle. The shingle is resting on the starter strip of the roof so it wouldn't slide to the ground as I took the photo. I used these interesting shingles on my garden shed.

Ignore the black strip of shingles you see under the five gray tabs. That black strip is the starter strip that's nailed first at the bottom of the roof. If you think about it for a moment, you'll understand why it's necessary to have that strip. If I were to install the shingle you see in the photo without a starter strip, you would just have the thin tar paper showing at each of the knockout slots that you see between the five tabs. **These knockout slots are the entire focus of this document. They are the weak link in your asphalt-shingle roof.**

Another thing to note in this photo of the five-tab shingle is the fact that approximately 60 percent of the average shingle is invisible once the roof is complete. **You can't see this top part of the shingle that extends above the top of the knockout slots because it's covered by the overlapping shingles in the next row above it.**

In this same photo, you can see some shiny spots above the tops of the knockouts that run in two rows across the width of the shingle. These are dabs of special asphalt cement that allow the overlapping shingles to stick to one another once the roof is installed. **The bottom of the shingle on the next row up will contact this cement.** Once the sun hits the new roof, it heats up the cement and glues the overlapping row to the row below. This feature of asphalt shingles prevents the tabs from flapping and breaking off in severe windstorms.

Section Two: Tools and Supplies

To double the life of your three-tab asphalt-shingle roof, you'll need just a few tools and supplies. This is an amazingly simple job requiring no power tools at all. You need a tape measure, a framing square, sharp tin snips that are set to cut straight lines, work gloves, needle-nose pliers and a pry bar.

The only supplies you need are metal strips. You can use aluminum or tin-coated steel. Aluminum is probably a better choice, as you can get aluminum coil stock that comes in over 30 colors. Rolls of colored aluminum can be found at specialty businesses that sell vinyl siding and aluminum gutters.

In this photo, you can see just about everything I need to demonstrate the technique of extending the life of your roof. You'll note that there is no tape measure. I used the rulers that are embossed on the framing square. In this photo, you see the framing square, the tin snips, a pry bar and a flat piece of metal that's 5-inches tall by 24-inches wide. It was cut out of the coil of material that's standing upright in the top of the photo. The metal is tin-coated steel. It's actually 40-pound tin. This means it has 40 pounds of tin applied to 100 square feet of the metal. The more tin you have, the better.

I used the tin because it was readily available in my garage. The disadvantage of using it on your roof is that it will create a shiny line at each knockout. You'll see a photo of what I'm talking about in just a few moments.

What you'll discover is that on most three-tab shingles, and even the five-tab shingles I used on my garden shed, is the color of the upper half of the shingle is often black. If this is the case on your roof, it makes sense to use metal that is black. You can buy rolls of aluminum coil stock that's painted flat black. If I were hired to do your roof, that's what I'd recommend. You can use the tin, but you just have to add an extra step and paint it before you cut it into the needed pieces.

Section Three: Cutting the Metal

You may be wondering at this point what in the world do we need the metal for. I'll cover that in the next section, but suffice it to say that for every 100 square feet of roof area you have with standard three-tab shingles, you'll need approximately 240 strips of flat-black metal. Each piece needs to be 5-inches long and 1.5-inches wide. The critical dimension is the 5 inches. If the strips are slightly smaller or larger than the 1.5 inches, that's okay. But in no instance can the strip be less than 1-inch wide.

It's an enormous amount of work to cut all of these strips by hand. If there is a sheet-metal shop near you that makes ductwork for heating and air conditioning installers, they may be interested in giving you a price for cutting a large coil of aluminum into the strips. They have shears and stamping presses that can do this very rapidly.

But if you need to do it by hand, I would take a large roll of aluminum coil stock, say 18-inches wide, and start to cut off pieces that are 5 inches by 18 inches. You then cut these strips into the needed smaller strips. Each of these larger 5x18-inch strips will yield 12 of the smaller 1.5 x 5-inch strips. Suffice it to say, this task will take a while doing it by hand. Be sure to wear work gloves to prevent blisters on your hands.

The average shingle roof is probably 20 squares (a square is a unit of measure in roofing and equals 100 square feet). This means you need nearly 5,000 of these narrow strips of metal. Yikes! However, the good news is you're about to discover where to use them, how easy they are to install, and how fast you will complete the job.

Section Four: Where Your Roof Will Leak

Let's talk about where your roof will leak when it starts to go bad. Many chronic roof leaks happen at roof flashings. Flashings are transitional roofing materials that connect roofs to things that are not a roof. Here are places where you commonly find flashings:

- Chimneys
- Plumbing Vent Stacks
- Skylights
- Walls that Touch Roofs and Rise above Them
- Valleys Where Two Roof Planes Intersect
- Dormers
- Etc.

As part of this roofing project, I urge you to inspect all of your flashings, and repair them if necessary. If they are tin-coated steel, all they may need is a fresh coat of paint. But this document is not intended to have you replace flashings. **All I'm trying to do is show you how to extend the life of your roof at the weakest part of the roof - that narrow slot between the tabs called the knockout.** However, you should pay attention to any trouble spots in and around your flashings.

The Overlap Gap

What I'm about to explain may be a little confusing, but please hang in there with me. Look at this photo. There is a dashed yellow line and a red line with two arrowheads on it.

The yellow line is the top of a shingle that's **two rows down** from the tabs that the keys are on. The tabs for that shingle can't be seen in this photo. Below the dashed yellow line in the narrow knockout slot there are two layers of roofing material. Immediately to the left and

right of the slot in this same 2-inch-high part of the shingle tabs(the row the keys are sitting on) there is actually triple thickness of roofing. You have the visible tabs, the shingle in the row just below the keys, and of course that shingle that you can't see that's off the bottom of the photo.

However, just above the dashed yellow line in the knockout slot next to the red line with the arrowheads you have just one layer of roofing material! That's the weak link I mentioned in Section One. If you were to punch a hole in the knockout slot area to the right of the red line, you would see tar paper or bare lumber if there was no tar paper installed on the roof deck.

Let me add this to see if it helps. The tab that the keys are resting on is 5 inches from the bottom to where it disappears under the tabs of the next row up. The part of the visible tab the keys are on that's **BELOW** the dashed yellow line is 2-inches high. The part of the tab **above the yellow line** is then 3 inches. This means the red line with the arrowheads is 3-inches long. The knockout slot is thus 5-inches high.

This small 3-inch-high area in the knockout slot is the place where older three-tab asphalt shingles start to leak first. If your roof is older, money is tight and you simply can't afford to install a new roof, you can extend the life of your roof by sliding the metal strips you've cut under the two tabs in this area to provide a second layer of needed protection. Let's go see how easy it is to provide this thin layer of protection. You'll be shocked at how simple it is.

Section Five: Installing the Strips of Metal

You are armed to the teeth with information, perhaps too much, but I feel it's very important for you to know how your roof keeps you dry. All that's left to do is get up on the roof and start to install the metal strips under the tabs at each knockout slot or those knockout slots where you see the ceramic granules eroded away.

WARNING:

Working on roofs is dangerous. If you fall, you can die or be seriously injured. OSHA regulations call for fall-protection gear and restraints. If you don't feel comfortable on your roof, don't get up there. Roofs that are wet, damp, covered with debris, moss or algae can be extremely slippery and hazardous.

In other words, be careful. I don't want you getting hurt just to save some money. If you can't do the following work, then hire a handyman who can install the metal strips.

Check out this photo. I'm using the pry bar to gently separate the shingle tabs from the shingle below the tabs. Remember the dabs of asphalt cement that were on that five-tab shingle I showed you earlier? That same self-sealing cement is on just about every three-tab shingle. **You need to just pry up the corners of the tabs, NOT the entire tab.** If you pry up the entire tab, you'll lose your protection against wind damage. It's much easier to do this when the shingles are cool or cold then when they are hot. What's more, it's easier on you if you work on the roof when the air temperature is cool and the roof surface is not burning hot. I urge you to

obtain a thick foam pad to sit on as you do this work. It will really help prevent a sore bum.

You should be wearing decent work gloves, because the metal strips you'll be installing are sharp. You'll be applying pressure on the strips as you slide them up under the tabs. Without gloves on, you will surely get cut. That's the voice of experience talking to you.

Here I am sliding the thin strip of metal up under the two tabs. You want to be really careful that you don't bend the metal putting a upwards hump in it or curling the bottom edge upwards. This will cause a hump in the shingle. You want the shingles to lay flat.

As you slide the metal up under the tabs, you'll encounter more and more friction. It will be impossible for you to get it all the way into position with your hands. You'll need to push against the bottom edge of the metal with a tool. I was able to successfully use the end of the pry bar to do this, but you may discover it's better to use the end of a pair of needle-nose pliers. Whatever tool you use, it must be narrower than the width of the knockout slot.

You can see me using the pry bar to persuade the metal strip to go up higher and higher under the tabs. I still have about 5/8 of an inch to go before I'm finished. The top of the metal strip MUST be past the top of the knockout slot. **This means that it will be overlapped by the row of shingles you see above the piece of metal in this photo. This is MISSION CRITICAL.** If you fail to slide the metal strip up under that next row, you could have a leak. Water will flow under the metal strip instead of over it.

This is the finished look. The metal strip is in place, it's at the right height under the tab above and most importantly, the shingle tabs overlapping the metal to the right and left are smooth and flat.

You should be able to see why you want painted-metal strips as this tin really stands out and brings attention to the knockout slots. You really want the slots to be dark. This is why the shingle manufacturers almost always apply black ceramic granules on the top half of shingles.

Be aware that in many cases the most you'll be able to slide the metal strip up under the shingle **above the knockout** is maybe 3/8 an inch. That's not much at all. The reason is simple - there is a roofing nail in the shingle just above the knockout. That's where shingles are supposed to be nailed. So don't be a hero and try to push the metal way up under the shingle. As long as it's 1/4 or 3/8 of an inch up under it, you're in great shape.

Congratulations! All you have to do now is finish the rest of the roof. Remember, be careful, stay hydrated and be careful at the edges of the roof. Don't take any chances.

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