

Installing a Sturdi-Panel® Metal Roof



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1. Warnings and Cautions

Power lines on and around a roof are *very* dangerous. The metal panels and trims are highly conductive and sharp in places and *must* be kept away from all power lines. To bring panels or trim into contact with power lines can mean instant death or severe injury.

The sharp edges on the panels and trim can easily cut skin, clothing, wire insulation, etc.

Windy days are not conducive to handling metal roofing safely. Wind can blow the panels around and make them very difficult and dangerous to handle.

After the panels are installed they can very quickly accumulate a thin covering of dust or dew, which can be difficult to see, and may become very slippery, particularly when the panels have been installed for a day or more. Be sure to use adequate safety precautions against sliding off.

2. Introduction

a. Our Company

Wytheville Metals was established June of 2003, and in the years since has rolled out many miles of metal panels per year. We are a family owned and operated business and our primary goal is to obey the teachings of Jesus while achieving our secondary goal of customer service and satisfaction.

b. Our Products

Sturdi-Panel[®] Roofing Panels, Sturdi-Lok[®] Standing Seam, and matching Trim Profiles are manufactured at our facility and are formed from premium materials. We use only the finest Galvalume[®] Steel Coils painted with Valspar WeatherX[®], for a product that is warranted not to chip, crack, or peel for 40 years, and not to fade more than 7 “Hunter e units” in 30 years. We also keep everything in stock that you will need to do a complete, high quality roof job including, but not limited to, color-coded Screws, Terpolymer Rubber Sealant, Touch-up Paint, and a variety of Snow Guards. Also in stock are Tools, Roof Boots, Closures, Driver and Drill Bits, and Underlayment. We also stock many other items such as, EPS Insulation, CHI[®] Overhead Doors, Chamberlain LiftMaster[®] garage door openers and Cannonball[®] sliding barn doors and hardware.

c. Benefits of Metal Roofing

i. Sturdy

80,000 lbs minimum tensile strength panels: It’s possible to put the metal panels on horizontal purlins spaced at 24 inches and still walk on the panels without damaging them.

ii. Long Lasting

The Valspar paint is warranted not to chip, crack or peel for 40 years and not to fade more than 7 Hunter e-units in 30 years.

iii. Attractive

Widely used from barns and pole structures to designer houses in both new and replacement roofs.

iv. Energy Efficient

Nearly all of our colors meet or exceed the Energy Star Cool Roof Specification.

3. Preparation

a. Terminology

To familiarize yourself with some roofing terminology and the trim profiles that are available:

- **Pitch** is used to refer to the steepness of the slope of a section of roof. For example, a 4/12 pitch means that for every 12 inches of horizontal **Run** you will have 4 inches of vertical **Rise**. A 12/12 pitch is up (rise) one inch for every inch out (run).
- The side of the building labeled with the letter **J** is called a **Gable**, or **Gable End**.
- At the very top of the roof, (Fig1) the line between sections **E** and **G** is called a **Ridge**.
- The line where sections **A** and **B** meet is called a **Hip**, or **Hip Ridge**.
- Ridges and Hip Ridges are both covered by **Ridge Cap**. Ridge Cap goes on last, after the roofing panels and Rake trims are in place (See Rake Trims). It is sometimes desirable to use a flatter Ridge Cap on the Hip Ridges to provide a better fit under the upper Ridge Cap. This is called a **Hip Ridge**.
- At the outer edges of sections such as **F**, **H**, and **I**, where the panels are not cut at an angle, **Rake** or **Gable** trim is used. Since trim is often 50% of the cost of materials it can be a temptation to skimp on Rake Trim. You should be aware that these trims not only look nice and make the job look finished, but in areas where it is windy the Rake trims are essential to prevent the wind from getting under the panels and vibrating them loose. A roof with Rake trims is much less likely to have the panels blow off than one without them. We have three profiles that can be used for Rake trim: House Rake, Outside Corner, and Narrow Outside Corner (Fig4).

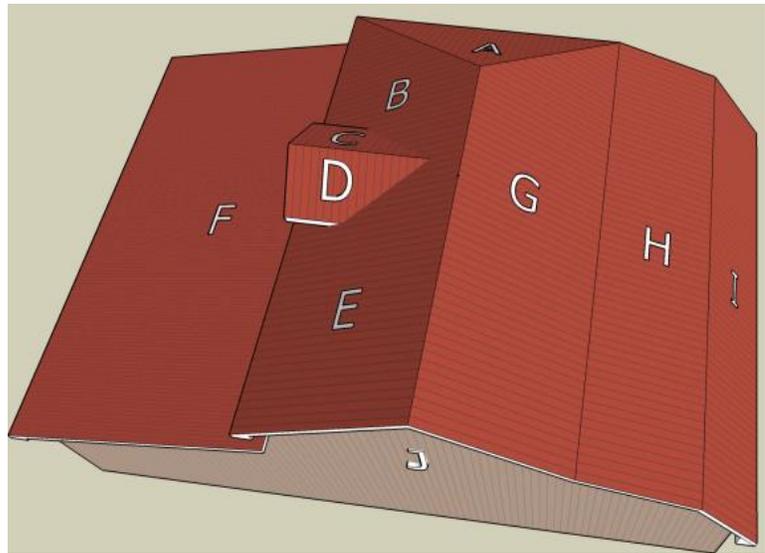


Figure 1

- The line between sections **G** and **H**, where a steeper roof above changes to a flatter roof below, is called a **Transition**. A **Transition Flashing** is usually used at this juncture. During installation, it is preferable to install the lower roofing panels, then the transition flashing, then the upper roofing panels. *Note: Normally a transition flashing and an Endwall flashing are identical* (See also Endwall).
- The opposite of a **Transition**, called a **Gambrel**, is used when a flatter roof above changes to a steeper roof below, such as between sections **H** and **I**. A typical gambrel style roof has two of these ridges, one on each side of the peak, and is commonly called a “barn” roof. As with transition, with **Gambrel Flashing** it is preferable to install the lower roofing panels, then the gambrel flashing, then the upper roofing panels.
- The space under sections **C** and **D** is alternately called a **Dormer**, **Doghouse**, or **Reverse Gable**.

- A **Drip Edge** is installed at the bottom edge of sections **F**, **B/E**, **I**, **C**, **D** and **A**. Drip Edge goes on before the roofing panels, and the metal panels are installed over it.

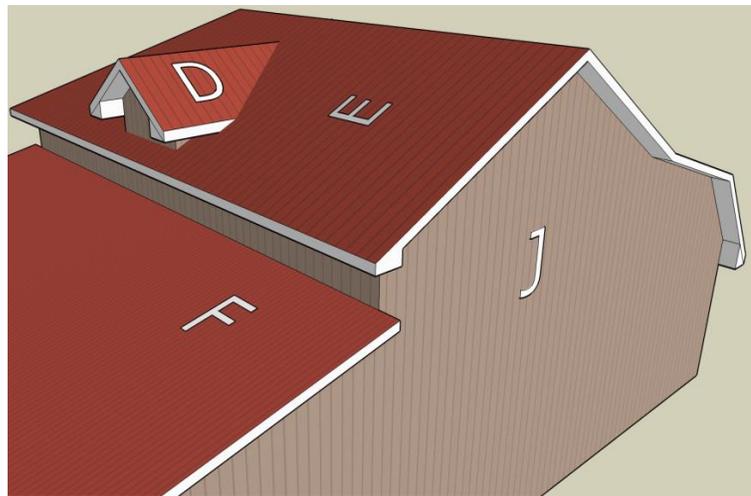


Figure 2

- **Valley Flashing** is used in areas where the panel ribs meet each other at angles, such as between sections **C** and **B** or **D** and **E** (Fig2). The valley flashing is put down before the roofing panels, and the panels laid on top of it, so that the water from both sides runs downhill toward the center of the valley.
- The line at the top of the slope on the **F** section, where section **F** meets a vertical wall, is where an **Endwall Flashing** will be installed. There will also be an endwall where the face of the dormer (**C/D**) meets **B/E** on the lower side. Endwall flashing is put on *after* the roofing panels are installed, and it is preferable to tuck the upper side of the Endwall flashing under vinyl siding or in the case of wood or masonry to cut a groove in the siding and bend a 90° el on top of the flashing to insert into the wall, and then use Solar-Seal® along that groove. The Endwall flashing with a 90° bend on top is also called Chimney End flashing (See also Chimney Flashing). *Note: Normally the Endwall and Transition are identical* (See also Transition).
- The **Sidewall Flashing** is designed for use where the panels run alongside a vertical wall, such as under section **D** (Fig3). Sidewall is installed after the roofing panels are on and it is preferable to tuck the upper side under vinyl siding, or in the case of wood or masonry (like Endwall above), to cut a groove in the siding and bend a 90° el on top

of the flashing to insert into the wall and then use Solar-Seal® along that groove. This sidewall (with a 90° bend on top) is also called Chimney Side flashing.

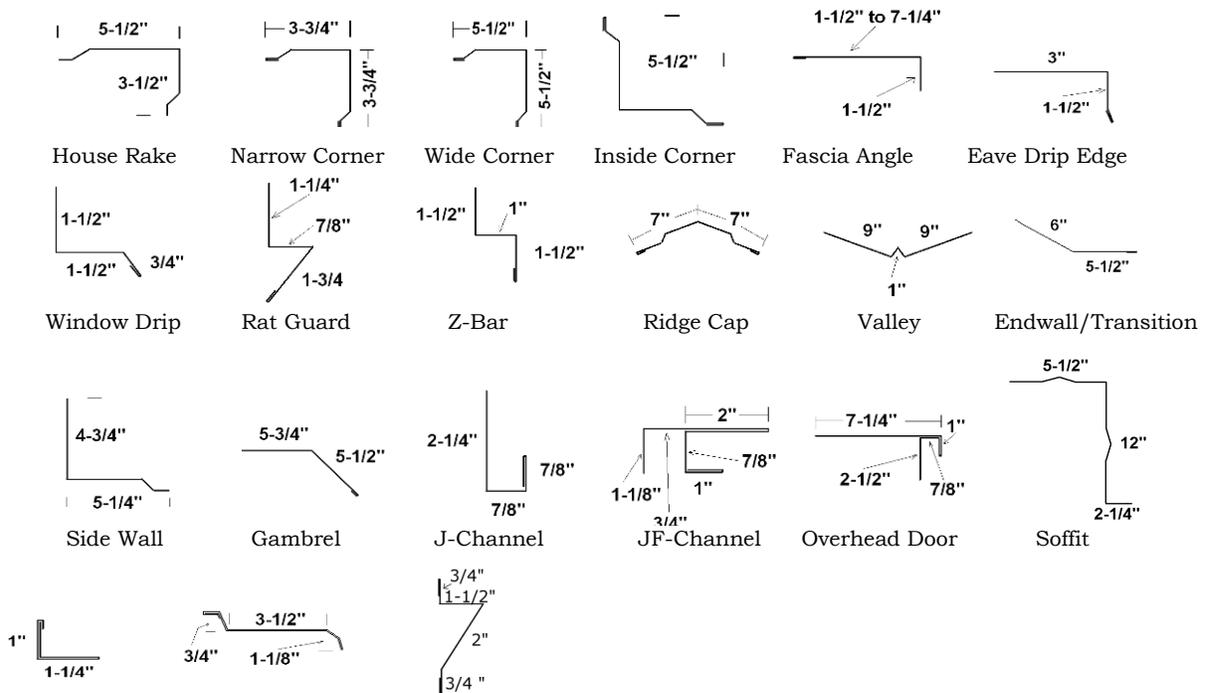


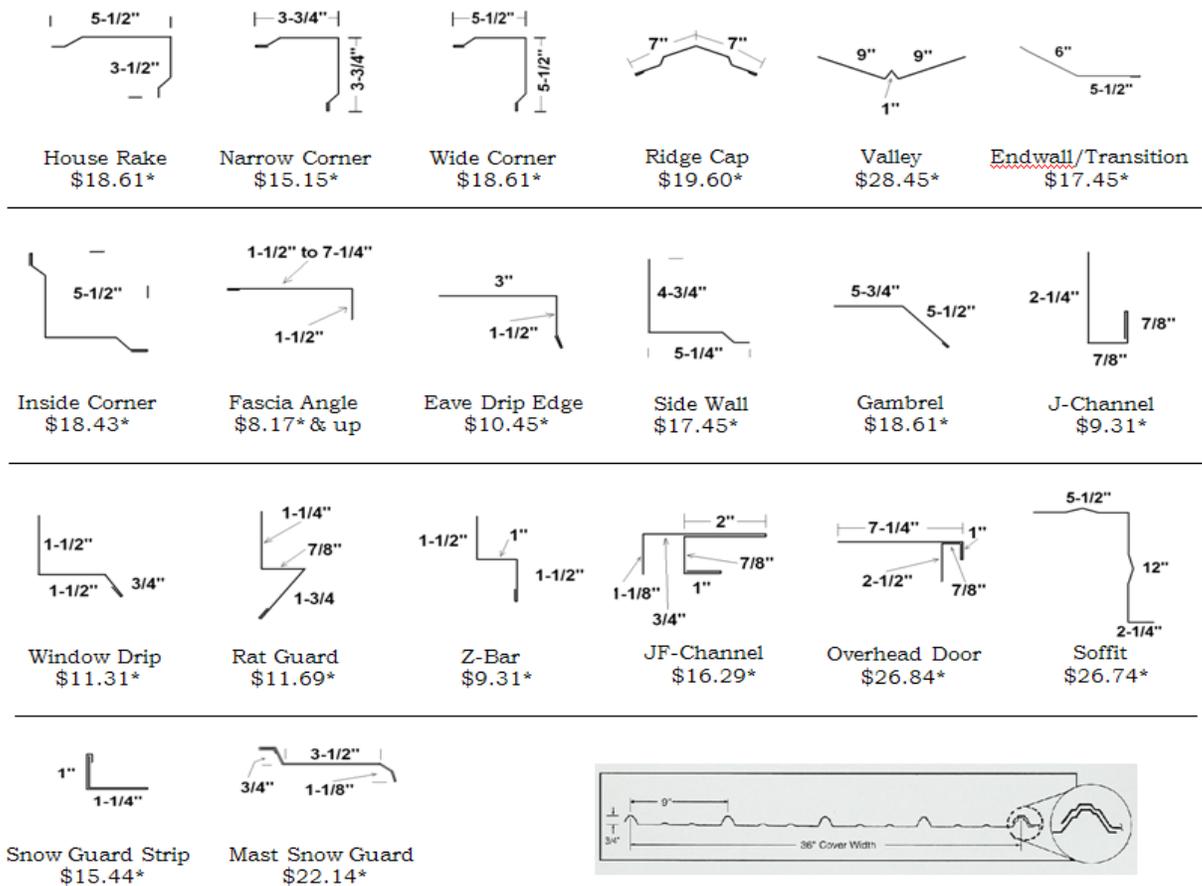
- One way to distinguish between **Endwall** and **Sidewall** flashing is that **Endwall** covers the *ends* of the ribs and the *ends* of the metal panels where they meet a vertical wall. **Sidewall** covers the *side* of the metal panels where they meet a vertical wall.
- After the roof is on you will probably need **Snow Guard**. We have several profiles that we make here (Fig4), as well as individual **Snowbirds**. All are effective if enough are installed, so your choice is mostly a matter of which ones are most appealing to you. One thing to keep in mind with the Mast Snow Guard is if you have trees close to your roof and your gutters tend to become clogged with debris, these will tend to do so as well. If you have a situation where you *must* use the Mast Snow Guard to keep water from overshooting your gutter, vent material can be put under them to keep debris out but still let water through.

Figure 3

Trim

The following is a list of the most common trim profiles, some of which are available in lengths from 10 to 20 feet long. Some are only available in 10 foot lengths.





*Prices subject to change without notice.

b. Tools Needed

Figure 3

Below you will find a list of tools that you will need to complete the job. Items flagged with an * are optional, but will significantly reduce the time you spend on the job.

1. Left handed and Right handed Offset Aviation Snips
2. Cordless Drill/Drivers with extra batteries
3. 1/4" Magnetic Driver Bits
4. 6" Quick Clamps similar to the ones available at Lowes for \$5.00
5. Caulk Gun
6. Hammer
7. Small Pry Bar
8. Utility Knife with extra carpet/linoleum-hook and regular blades
9. Chalk Line
10. Leather Gloves
11. Carpenter's Pencil
12. Tape Measure (25-35')
13. Circular Saw with old blade and new blade

14. Safety Harnesses and ropes
15. Shingle Shovels (if the old roofing is to be torn off)
16. *4' "T" or Drywall Square (Cut to 39")
17. *1/8" Drill Bits
18. *Small Air Compressor
19. *Air Nailer and/or 1/2" Crown Air Stapler
20. *Malco TurboShear[®]

Here are a few comments on the above list to guide you.

You might be tempted to try to get by with just one pair of Hand Snips (#1 above), but both left and right are frequently needed. You will almost always need both on any given job, because there are situations where only a left or only a right will work.

It is possible to use a corded drill (#2 above) to drive the screws, but electrical cords and sharp roofing metal are mortal enemies- to say nothing of the possibility of tangling your feet in a cord while on the roof. Cordless drivers are now relatively common and inexpensive. You will want one for each person who will be fastening metal to the roof as well as one for the person on the ground who will be pre-drilling the metal and using the *Malco TurboShear[®] to cut the angles for hips or valleys.

Quick Clamps (#4 above) are used to hold the metal stack while drilling to keep the panels from sliding and also when securing things for the night. The stacks of panels that have not yet been installed *must* be secured with clamps before quitting for the night. We have learned from experience that the wind will disperse a stack of metal much like cards from a playing deck, and the panels are sharp and heavy, increasing the hazard to life, limb, and property should a chance storm blow them around. Put a *minimum* of 2 clamps on each stack on opposite ends and sides. It may be a temptation to simply stack something on top of the panels to hold them down, but panels have been known to blow away even when weighted down by 4x4's.

We advise choosing a tape measure (#12 above) with good stand-out which is important on a roof to reduce the number of steps you must take. A limp tape measure is very frustrating and will cause you to move around more than necessary or will require an extra person to hold the other end more often.

c. Decide if the old roofing will be torn off.

If the existing roof is metal with ribs of any kind we strongly advise that it be torn off. If it is shingled it is usually preferable to leave the shingles in place, provided that: 1) local building codes permit, 2) there is not more than one layer of shingles, and 3) the decking beneath is not damaged. If the above conditions are met we actually prefer to leave the shingles on for the following reasons:

- i. It eliminates paying to tear off and dispose of the shingles.
- ii. It adds an extra barrier to stop heat and moisture.

d. Choose A Color

At the time of this writing, we have at least 25 colors in stock to choose from, nearly all of which meet or exceed the Energy Star Specification for Steep Slope Cool

Roofs. We can also order almost any other color on the market. Allowances must be made for extra time and money on items not in stock. Color charts and actual samples of the material are available at our office.

e. Measure For and Order New Material (at least 1 week in advance)

As you measure keep in mind that standard practice is to let the panels overhang the drip edge by 1". Usually it is best to measure top to bottom and have the roofing panels cut to that exact length, but then move the whole panel down one inch so that it overhangs at the bottom and gives breathing room at the top. Also keep in mind that the coverage on the panel is 3 ft, which is the panel measurement from the center of cover-lap to center of under-lap (See Figure 3).

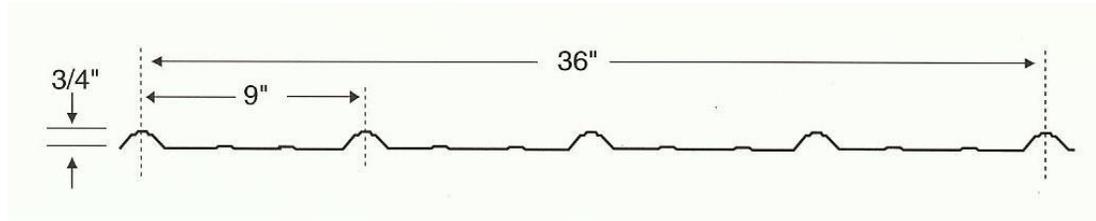


Figure 3

Get complete measurements of your roof, including any perforations for vents, pipes, chimneys, etc. In Figure 1, for example, you would measure all sides of each section. Sections C, D, F, G, H and I would each have four measurements. You It may be tempting to measure only twice on these sections, but in many cases the underlying construction is not quite true enough to do this. For example, the left side of F might be longer or shorter than the right side of F. If so, it's better to know it at the beginning and order adequate materials than to order materials and come up short. Thorough measurements now will also alert you of the need to deal with these discrepancies as you apply the new roof. These differences in measurements may even be by design in some instances.

Section A would have four measurements, as well, but they would be side-to-side, top-to-bottom and the two ridges that make up the top of the pyramid.

Section B/E has many measurements. Even though B and E are part of the same plane of the roof, it's often simpler to measure them separately. Draw an imaginary line from the ridge on the C/D dormer up between B and E to the ridge between B/E and G. Then measure all sides of both B and E.

Once you have these measurements, the preferred method is for the person who is installing the roof to make a list of all the pieces and accessories needed. With hips or valleys, it's best to use graph paper and draw out each of the roof sections with corresponding measurements. Let each square on the graph paper equal one foot. This allows you to get fairly precise measurements on each panel up the valleys and hips. Alternatively you can give us the measurements and drawings and we will do the "best we can" method of figuring everything you need which sometimes leads to wasted materials due to errors or poor communication. These wasted materials will be **your responsibility** if all we had to work with is measurements instead of a materials list.

f. Trim Shingles/Tear-Off (if needed)

If shingles will be left on, use a carpet/linoleum-hook utility knife and go the whole way around the edges of the shingles and trim them back flush with the decking and existing drip edge. It is advisable to wear gloves during this process since the shingles are covered with rough gravel and have fiberglass shards protruding from them when cut or broken.

If existing roofing must be torn off, wait until the new materials are at the jobsite before beginning to tear off. It is also advisable to keep tarps on hand if the weather is uncertain or wait for a more favorable forecast, but if everything is ready go ahead and tear off the old roof.

g. Prepare/Repair Decking (if needed)

Be sure that old nails, etc. are hammered down or removed from the decking before applying the new roofing. At this point you may want to try to straighten sags bumps or ridges that might deform the panels as they are installed. Replace any rotted decking.

h. Venting

Venting the attic through the ridge cap is simple and highly recommended. Chalk a line two (2) inches down from where the panels meet at the ridge, one line on each side of the ridge. Use an old blade on your circular saw, set the depth of the blade to 1/8" deeper than the thickness of the roof decking plus the shingles, and cut along this line. Remove the decking and roofing materials from this gap with a pry bar or hammer and discard. On some houses and manufactured homes there are square attic vents installed. Square objects coming through the roofing are very difficult to seal and if their only purpose is to vent the attic, it is highly recommended that they be removed, since the ridge has been cut out and will do a thorough job of venting.

4. Installation

a. Choosing Options for Underlayment

You can choose to simply cover your old shingles or your decking with underlayment paper or 1x4 strips, or you can tear off shingles and put down underlayment paper and/or 1x4 strips. The following paragraphs will help you choose which one is best for your situation.

i. Should I tear off my old shingles?

Check to see if your old roof has any rotten or soft places that need repair and check to see if it has more than one layer of shingles. If one or both of these is true we recommend that you tear off the shingles. After the shingles are off, treat the roof as you would a new roof.

ii. Should I use 1x4 Strips?

1. Pros:

Using 1x4s gives a nice air space under the roof panels and this keeps the panels cooler and drier. It also keeps you from seeing the waviness of the shingles under the panels.

2. Cons:

Raising the metal with 1x4s often makes the water overshoot existing gutters. It can also complicate flashing of perforations that come through the roof.

b. Vapor Barrier/Underlayment

If the shingles are still in place and you plan to use 1x4 strips, it is not necessary to put down another layer of underlayment/vapor barrier over the whole roof. The shingles and their underlayment will act as your vapor barrier.

However, if no 1x4s are to be used, you will need Titanium 30-Year or 30# felt on top of the shingles to prevent them from abrading the back of the metal panels **which would void the warranty** on the panels. It is also advisable to put some sort of underlayment in valleys even if you're not removing the shingles for added protection.

If this is new construction you need to be aware that building codes in our area permit 7/16 OSB decking on your roof. We have found this decking to be **inadequate** to give the screws enough material for a firm grip. It is highly recommended that you specify at least 5/8 decking. You will also need a vapor barrier such as Titanium or 30# felt. You also have the option to use 1x4 strips on new construction with none of the above Cons, and the only disadvantage would be the added expense of the strips themselves.

c. 1x4 Strips

If 1x4 strips are to be used, begin at the bottom of the roof and tack a 1x4 the whole way along the bottom, flush with the decking or the trimmed shingles. If the shingle rows are reasonably straight, count up the roof to the fifth row of shingles and run your next row of 1x4s across on that row. If the shingle rows are not straight, nail the strips on at 24 inch centers. The strips should have no wider than 30" centers, but 24" is recommended. Continue up the roof until you reach the top. For the top row measure down 7-1/2 inches from the peak and put the bottom edge of your last run of 1x4s on the top of that line. The distance between centers of the last two runs of 1x4s can be as much as 30 inches. In the Valleys measure out from the center of the valley 2 inches on each side and then put a double row of 1x4's on the outside of these lines. This gives ample room to screw the metal panels. Finally, cut short pieces of 1x4 strips to tack down around each perforation such as mud pipes and chimneys. This is to give you something to screw the panels, boots, and trim to later.

d. Before-Panel Trims

i. Drip Edge

Next is the Drip Edge. Extend the drip edge past the ends of the roof $\frac{3}{4}$ inch at each end. Overlap the pieces 2 to 4 inches. Be sure to pull the drip edge in snug against and then tack them in place with $\frac{3}{4}$ inch roofing tacks. You will want as straight a line as possible along the bottom because it reduces the need to manipulate the panels later. Drip edge only goes along the bottom edge of the roof at the eaves.

ii. Valleys

Start at the drip edge with the valleys and work your way up. On the first valley push it down far enough that the shortest side (if there is one) overhangs the drip edge by 1 inch (See Figure 4). Push it tight into the roof, shifting it back and forth to find the center as you do. When you find the place that it fits snugly, hold it firmly in place while you use a $\frac{3}{4}$ inch roofing tack to hold it in place. Place one tack out toward the edge of the valley, approximately an inch from the edge and about an inch from the bottom. If one piece of flashing will cover the entire length of the valley, move up to the top and push it tight into the valley and nail the top end like you did the bottom.

If your valley is more than you can cover with one flashing wait to put more nails in until you have the next piece on. Lay the next piece in the valley and overlap it onto the lower one at least 12" and then move to the top end of the second piece. There you will push it down into the valley like you did the bottom piece and nail the top end of the top piece like you did the bottom end of the bottom piece. You now have the two pieces lying in the valley, tacked at opposite ends and loose in the middle (See Figure 5). Then move to the center where they overlap and have someone sight along the valley to tell you when it's lined up straight. As they do this you can move the overlapped ends back and forth until they are straight. Nail the valleys where they meet and finish tacking them down along the

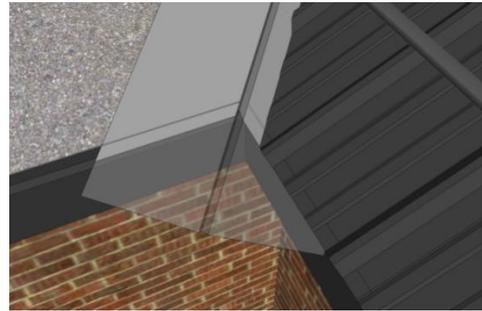


Figure 4

Push it tight into the roof, shifting it back and forth to find the center as you do. When you find the place that it fits snugly, hold it firmly in place while you use a $\frac{3}{4}$ inch roofing tack to hold it in place. Place one tack out toward the edge of the valley, approximately an

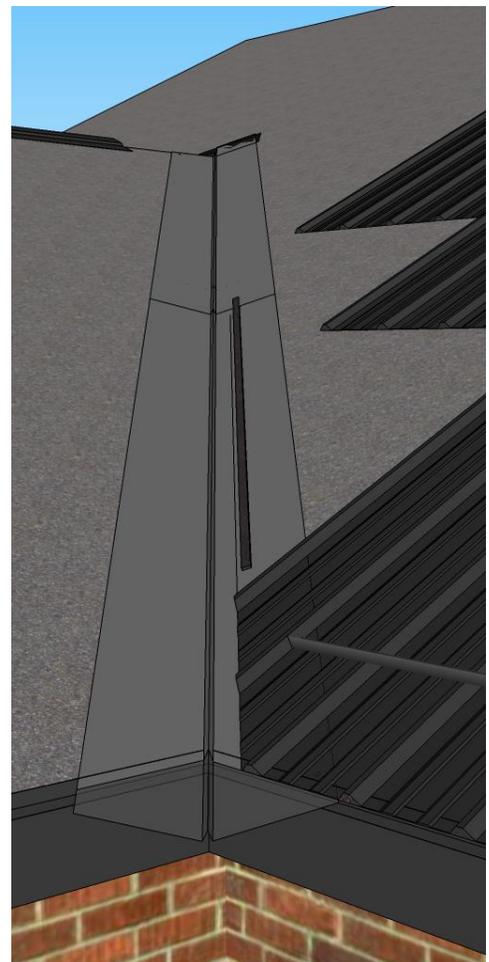


Figure 5

edges. One tack every 24” should be sufficient since the screws through the panels will do the bulk of the holding once installed.

If these valleys meet short of the perpendicular ridge cap you will leave one side of each valley longer so they overlap where they meet at the top (See **Figure 6**).

In each valley measure out from the rib 2 inches at the top and at the bottom and snap a chalk line on each side of the rib. On the side of this line away from the rib put 1” Expanding Foam Tape approx ½” from the line (See **Figure 5**).

iii. Chimney Cricket Valleys

Chimneys are flashed in a variety of ways but probably the most reliable for the upper side is to build a **Cricket** unless the chimney bisects the ridge cap. (See **Figure 7**) A cricket is simply a very small peaked roof centered behind/above the chimney so that water doesn’t run directly down to the chimney but is channeled out to the sides.

For Chimneys that are less than 3’ **Figure 7** from the ridge cap see “Alternate Upper Chimney Flash” below.

iv. Upper Chimney Flash / Chimney Endwall

This flashing is like the Endwall / Transition flashing (See **Figure 2**) except that there is a 90° **kick** on top that turns back into the chimney. You will need to cut a groove in the chimney for the kick to fit into and then seal it with Solar Seal.

To use this flashing method, cut a length of this flashing a foot longer than the width of the chimney and then tuck the flashing behind/above the chimney with the kick in the groove of the chimney and centered on the chimney. Tack it in place with roofing tacks into the decking. For now you should leave the extra length in place until you begin to lay the panels around the chimney and at that time you will cut things to fit when you see where the ribs fall.

Note: This method is not the preferred way to flash the upper side of a chimney, but it can be made to work reasonably well if the chimney isn’t

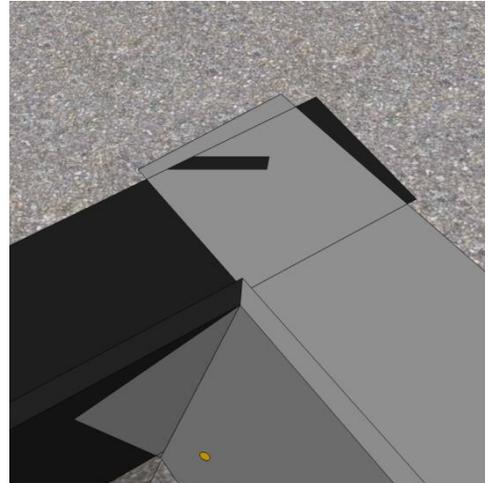
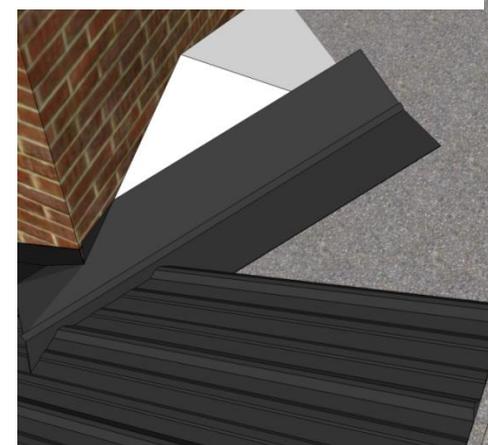


Figure 6



more than 24" wide. The recommended way is to build a cricket as in subsection iii above.

For Chimneys that are less than 3' from the ridge cap see "Alternate Upper Chimney Flash" below.

e. Roofing Panels

!!WARNING!!: After the panels are installed they can very quickly accumulate a thin covering of dust or dew, which is difficult to see, and may become very slippery, particularly when it has been installed for a day or more. Be sure to use adequate precautions against sliding off.

i. Pre-Drilling

If you have long, unbroken stretches of roof that are all the same length there are many advantages to pre-drilling the panels.

Start by figuring out how many panels you will need and separate them from the rest into a nice evenly aligned stack with several pieces of scrap wood underneath to get the stack off the ground. Put at least 2 quick-clamps on the stack to hold them in place. This keeps the stack from shifting while drilling.

Measure on the roof where the screws will go, keeping in mind that standard practice is to let the panels overhang the drip edge 1" at the bottom. Carefully transfer these measurements to the stack of panels.

A few words of caution: It is very easy to put the marks for drilling in the wrong place. Always measure from the bottom end of the panels if possible. Always put a mark about 3/4" from the cover lap rib and then move over to the 4th rib and do the same thing on the same side of the rib as you did the cover lap. Repeat this procedure at every horizontal row of screws up the panel. Then lay a straight edge across the panels at each of these rows and mark ribs 2 and 3 (See **Figure 8**). This method tends to visually catch errors in marking. It is not necessary to mark rib 5 because it is the under-lap and it is not necessary to put a screw by it. Remember that if you drill wrong you've probably ruined the whole stack.

ii. Where to Start and How to Lap

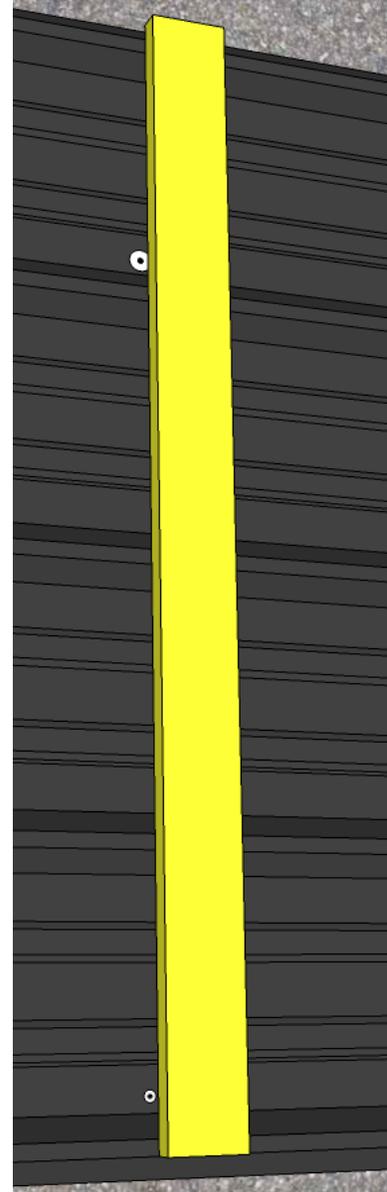


Figure 8

If this is your first roof it is advisable to start on the side of the house that is hardest to see since this will be the side you will learn on and are most likely to make mistakes on.

After choosing which side to start on, stand on the ground facing the house and determine where the prevailing winds come from and the angle that the roof will most likely be viewed from. If the roof will most often be seen from the same direction that the hardest winds come from then you can combine looks and functionality and start at the end of the house farthest from the wind and the viewer. You will start with the **cover-lap** at the end of the roof so that the **under-lap** of the first sheet can be covered by the cover-lap of the next sheet.

If the wind comes from one way and this side of the house is usually viewed from the other way, then you must choose between looks and functionality. If you get high winds from this side of the house then it is advisable to start on the end of the house opposite the direction the wind comes from (as in the preceding paragraph). If you don't get high winds from this side of the house then you can start the first panel on the opposite end from which it is most often viewed. This makes it harder to see where the panels join.

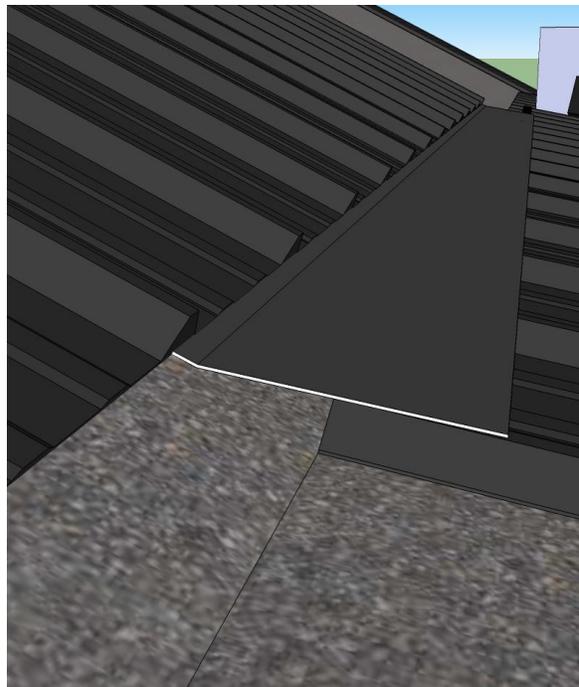
iii. Beginning Rib, Ending Rib

Care should be taken where the ribs will fall at the ends of the roof. The ends of the roof are where you will need to install **Rake** or **Gable** trim. It makes the job look bad to have the Rake trim's turn-down flange end up on top of the rib, but with a little extra effort before you start, you can avoid this situation. Since the panel ribs are spaced on 9" centers, you can measure the whole distance from end to end on the roof and then adjust the first panel from side to side to make sure that there will be no rib-center located from 3-1/2" to 6" from the edge of the roof decking on both ends of the roof.

On the first panel it is usually best to line up the rib with the edge of the roof and give yourself 1" overhang from the drip edge at the bottom of the under-lap. This will make the ribs straight with the **Rake** or **Gable** trims so that misalignment doesn't catch the eye of the observer.

iv. Transitions

When two pitches meet and the bottom one is more gradual and the upper is steeper this is called a transition. Sometimes we have seen where these panels were simply overlapped. We won't say that this should *never* be done, but in most cases it is preferable to use a flashing between the two



itches so that the panels don't interfere with each other and scratch themselves.

When doing a transition, in most cases it is easiest to install the lower roof first, then the closures and transition flashing, then the upper roof. This requires that care be taken not to scratch the lower roof as the upper roof panels are carried across to the upper roof. It is possible to put the upper roof on first, then the lower roof, and then slide the transition flashing up under the upper roof; but this is not as easy as it sounds since the flashing catches on the underlayment and decking as you try to squeeze it in.

Push the lower roof panel all the way into the transition line. (See Figure 9) When fitting the top panels onto the transition flashing leave them up an inch at least and two inches at most from the transition line. (See

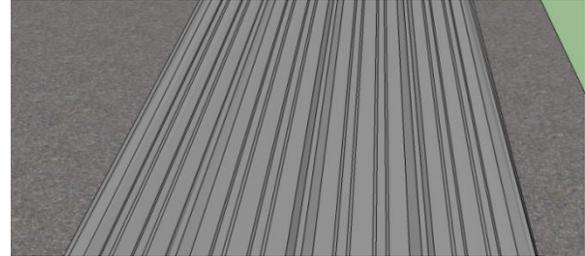


Figure 9

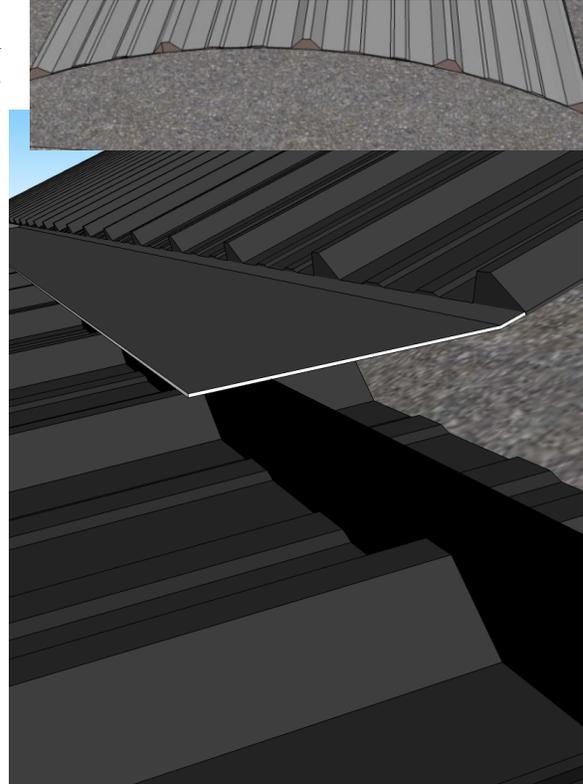


Figure 9) It is also best to use closure strips on a transition. (See Figure 10)

On the upper side of the transition flashing use an inside closure under the panel and on top of the transition flashing, and on the lower side use an outside closure under the transition flashing and on top of the roofing panel (See Figure 10).

v. Adjusting Alignment

As you move across the roof installing panels check the overhang at the bottom of each piece as you put it on. Put the new sheet on with the cover-lap of the new piece over the under-lap of the last piece and align them top to bottom so that they are flush/even at the bottom. Hold the cover-lap tightly down onto the under-lap at the top and bottom and install one screw at the top and one at the bottom about $\frac{3}{4}$ inch from the cover-lap. Now measure the overhang on the under-lap of the new piece. If you have too much you can try to stretch the

Figure 11

panel at the bottom by stepping sideways onto each rib, (flattening it slightly) pushing toward the direction it needs to go, and compress it at the top by pulling up in the middle of the sheet (See **Figure 11**) and putting a screw in the under-lap side first and then by the other ribs. If you don't have enough you can do the opposite, stretch at the top and compress at the bottom. You may not be able to get all you need in one panel so you may have to do the same on the next panel or two.

f. After-Panel Trim

i. Rake/Gable/Barge Trim

Refer to page 3 for a picture and page 5 for a description of where the rake trim goes. When installing rake trim it's best to use all one piece if possible, however if the distance is more than 20 feet you will need to use two pieces and split them as near the center as possible. You will almost always need two people to install rake trim, one at the top and one at the bottom. On the roof side of the rake where the water flows a strip of butyl tape on the bottom side of the rake flange will prevent water from seeping in around the screw. Many contractors don't do this but it isn't a bad idea. Put screws about 24" apart on the outside (vertical edge) as well as on the roof through the panels. It is sometimes tempting to not use rake trim in an effort to save money but one of the major functions of the rake trim is to keep wind and water from getting under the edge of the metal. The wind can actually peel the whole roof off but it isn't likely to get started when there is rake trim installed. So if you have wind we highly recommend installing rake trim.

ii. Sidewall

Sidewall is installed where the side of a roofing panel meets a vertical wall (See **Figure 12**). As with rake trim a strip of butyl tape on the bottom of the flange that fits against the roof keeps water from seeping in around the screw. Usually the vertical side of the sidewall should be placed under the wall siding. This may mean removing and replacing a few strips of siding. Sometimes chimney sidewall is used where there are bricks or blocks meeting the side of the panels. In that case a groove is cut in the masonry and the top "kick" of the chimney flashing is inserted in the groove and then sealed with Solar Seal[®].

iii. Endwall

Endwall is used where the ends of the roofing panels meet a vertical wall (See **Figure 12**). As with Sidewall,

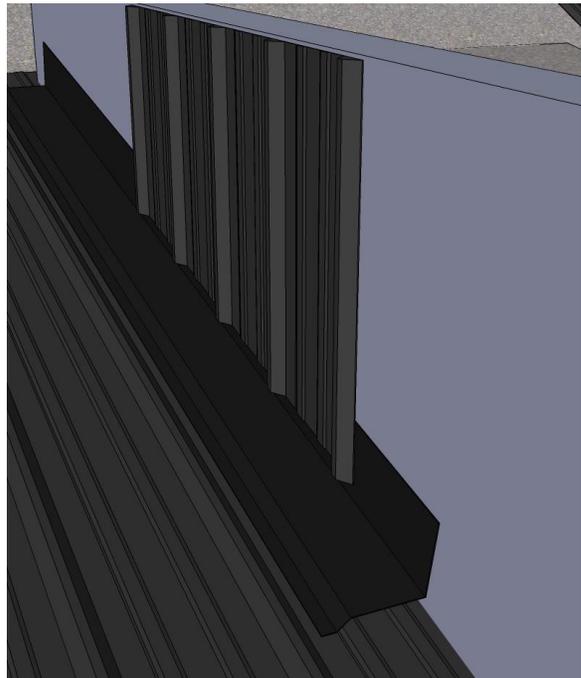


Figure 12

the vertical side is placed under the siding or in the case of masonry a Chimney Endwall is used and a groove is cut in the bricks. Underneath the lower side of the Endwall and on top of the roofing panel use an outside closure.

iv. Alternate Upper Chimney Flash

When there is less than 3 feet from the ridge cap to a chimney you can flash the upper side of the chimney by using a piece of flat stock 10 to 12 inches wider than the chimney and long enough to reach up under the ridge cap. Place this on top of the panels and 4 to 5 inches against the upper side of the chimney.

v. Lower Chimney Flash

Lower chimney flashing or Chimney End is put on top of the roofing panels and the upper part is cut back so the lower part is extended past the sides of the chimney and covered by the chimney side flashing (See Side Chimney Flash) (See Figure 12). Also outside closure is put under the flashing and on top of the roofing panels. The top of this flashing has a “kick” that is inserted into a groove in the chimney which must be cut, and then Solar Seal® is used along this to seal it.

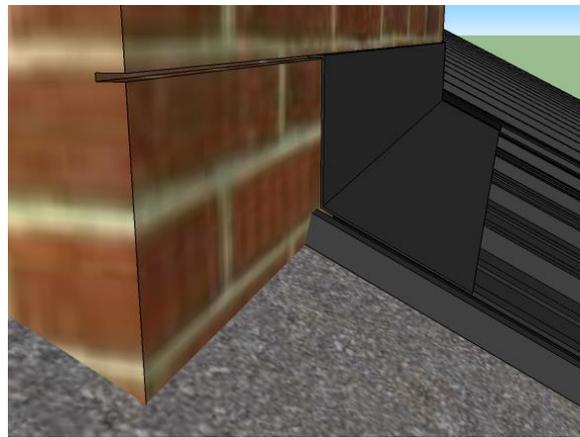


Figure 13

vi. Side Chimney Flash

Chimney Side Flashing is put on after all other chimney flashing and is left long at the bottom to cover the lower chimney end flashing. It utilizes a groove in the chimney like the Lower chimney flashing (See Figure 14).

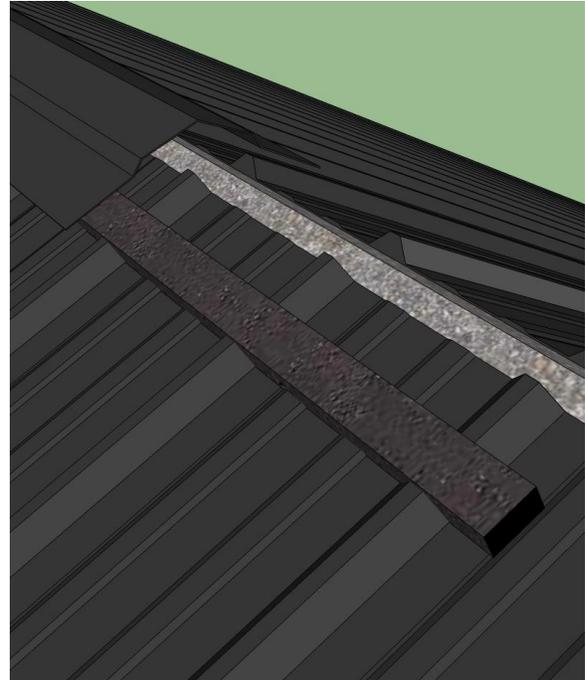


Figure 14

vii. Ridge Cap with Multi-

Vent®

Ridge Cap is put on after the panels and the rake trim. Take your first piece of ridge cap and turn it bottom side up. On the end that will be to the end of the roof, measure in from the end of the cap 4-1/2 inches and starting there, apply the Multi-Vent[®] just inside the 1/2 inch hem on both sides of the cap all the way to the other end. Place the cap right side up on the ridge of the roof. Screw the cap to the ridge with 2 inch screws on each side and on each rib in the roofing panels (See Figure 15). You will overlap the next ridge cap at



least 6 inches, maybe more depending on where the rib falls. On your next ridge cap apply Multi-Vent[®] again except where it will overlap and continue to the end of the roof. Some ridge caps end at another plane of the roof or at another ridge cap. In these cases you will need to carefully cut the end of the cap to fit as closely as possible to the other roof or the other cap. You may have to cut several times to get it just right so be sure you have a long enough piece. After fitting it in this way seal it with Solar-Seal[®].

Figure 15

viii. Vent or Perforation Boots

When you have perforations that require a roof boot it's best to cut the roofing panels as close as possible to the object and then seal around the object with Solar-Seal® first. Next cut the boot so that the top opening will fit snugly around the object. (Better too snug than too loose.) Then apply Solar-Seal® to the bottom side of the boot and slide it down over the object. Screw the boot to the roof with one screw on top of and beside each rib that it crosses and about an inch apart the rest of the way around the rim

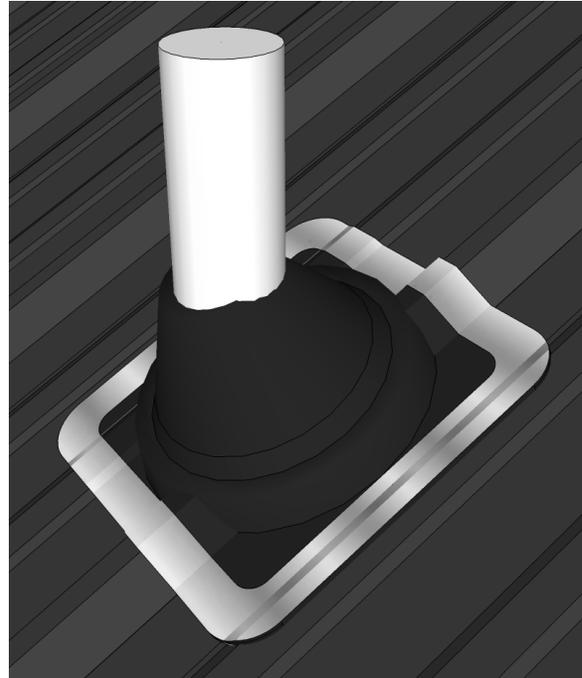


Figure 16

of the boot. Lastly apply Solar-Seal® around the top of the boot to seal it to the object. Just a note about perforations; in general the fewer perforations you have the better. Many roofs, particularly on manufactured homes, have square vents. In most cases these are venting the attic instead of plumbing or appliances. When this is the case it is recommended that you remove the square vents and allow the attic to vent through the ridge cap as described earlier (See Figure 16).

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ix. Snow Guards



Figure 17

There are many different styles of snow guard to choose from and with few exceptions they all work well. Two of the three most popular styles are found in the bottom left corner of Figure 2 on page 4. They are the Snow Guard Strip (See Figure 17) and the Mast Snow Guard (See Figure 18) and they come in 10 ft sections. The other popular style is the individual stainless steel powder coated “bird” (See Figure 19).

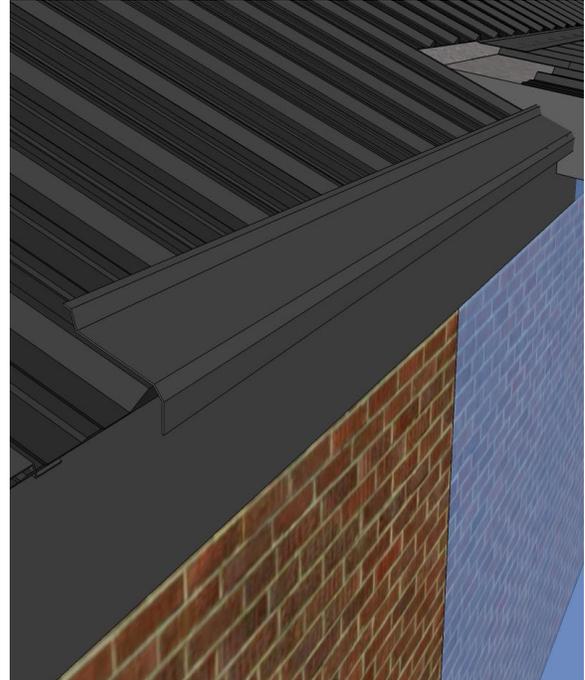


Figure 18

Rule of thumb for how much snow guard protection you need if your roof pitch is 6/12 or less and 20 feet or less from peak to

drip edge, you will only need one row of the Snow Guard Strip or the Mast Snow Guard, or you will need the individual “birds” on **every other** flat spot between the ribs. If the roof is steeper or longer from peak to drip edge, you may need another row half-way up with the long snow guards or a double row of the individuals. In any case, if they are torn off it is considered an act of God that is not covered under warranty and to prevent it from happening again you will need to add more the next time.

If you need to install the individual **snowbirds** on every flat spot because of steepness or length, it is preferred that they be installed “staggered” (See Figure 19).

A word of warning: If you have a lot of trees around that clog up your gutters with needles, seeds and leaves, then the Mast Snow Guard will tend to clog up, as well.

x. Sealant

The final step is to make sure that any doubtful areas such as valley ends, endwall tops,

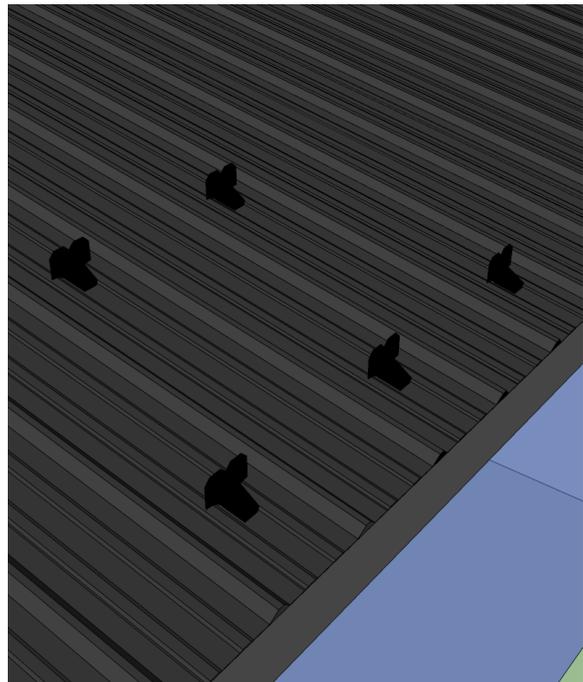


Figure 19

sidewall tops, chimney flashings, roof boots, etc., are sealed with Solar-Seal® as needed.

5. Warranty

We at Wytheville Metals want to specify and confirm some of the information in our Sturdi-Panel™ Limited Warranty.

The Valspar Weather-X™ painted Galvalume Sturdi-Panels™ we sell come with a non-transferrable 40/30 Warranty. They are warranted, to the original purchaser, not to crack, chip, or peel (loose adhesion) for 40 years and not to chalk (in excess of ASTM D-4214-89 method D659 #7 rating), or change color (more than 6.0 Hunter E Units) for 30 years.

Placement of screws, whether in the flat or on the rib, does not void the warranty. The application of touch-up paint to scratches does not void the warranty, however, since touch-up paints are seldom as durable as the factory finish we recommend a small hand-applied brush rather than sprays since the spray will usually turn milky in a very short time and leave obvious large white patches anywhere they are used.

WARNING: This warranty becomes void in the event that:

- *The panels are placed directly on top of an existing roof. (Therefore, a barrier of either 30# felt paper, 30 year Titanium UDL, wooden slats, or insulation is recommended.)*
- *The panels are installed in direct contact with ACQ treated lumber. (Therefore, a barrier of either 30# felt paper, 30 year Titanium UDL, wooden slats, or insulation is recommended.)*
- *The panels are used in direct contact with animals or animal waste.*
- *The panels are cut with an abrasive disk or a blade turned backward on a circular saw.*

Our limited warranty does not apply to circumstances beyond our control, including:

- Fire or other casualty or damage.
- Unusual harmful fumes or foreign substances in the atmosphere, standing water, or salt spray.
- Mishandled products, (including, but not limited to), damage to the product caused by condensation attributable to storage, handling, and/or installation.

The information contained herein is authorized as correct and valid by:



JR Kauffman, Owner
Wytheville Metals
3040 Peppers Ferry Rd
Wytheville, VA 24382
276-228-7070 Phone
276-228-7066 Fax
wythmet@emypeople.net

A complete Valspar Paint Warranty is available upon request



valspar

Manufacturer's Certification

A metal roofing product coated with a Valspar Fluoropon® SR coating or WeatherX® SR coating:

- a) is appropriately pigmented and is specifically and primarily designed to reduce the heat gain of a dwelling unit when installed on the dwelling unit; and,
- b) Meets or exceeds ENERGY STAR® Roofing Products program requirements for steep-slope roofs (as in effect at the time of installation),

in accordance with IRS Notice 2006-26. Furthermore, the roof coating is an "eligible building envelope component that qualifies for the credit allowed under § 25C of the Energy Policy Act of 2005, later amended by the Emergency Economic Stabilization Act of 2008, and then amended under the American Recovery and Reinvestment Act of 2009."

Declaration Statement:

Under penalties of perjury, I declare that I have examined this certification statement, and to the best of my knowledge and belief the facts presented are true, correct and complete.


A. Dunlop, VP Coil and Extrusion Coatings

901 N. Greenwood Avenue
Kankakee, IL 60901