



METAL ROOFING INSTALLATION GUIDE

STANDING SEAM ROOFING PANELS

Horizon 16 and Climaguard 16



Regardless of whether your roofing project is a new installation or a re-roof, and whether your building is residential, commercial or agricultural, our metal roofing panels and paint systems have been created to exceed your requirements and expectations. Great care has been taken to ensure complete satisfaction with your purchase. In the unlikely event that there are any missing or damaged parts, or if you just need technical assistance, please call our **TOLL FREE number, 877 833-3237**, and your questions will be addressed promptly.

• Thank You for Choosing Absolute Steel •

IMPORTANT NOTES

- ◆ This booklet provides guidelines and instructions for installing metal roofing products offered by Absolute Steel. The booklet's material was current at the time it was written, and we strive to keep both its text and its illustrations up to date, reflecting changes in building codes, manufacturers' design and specification changes and so on.
- ◆ We reserve the right to make changes in the specifications and other details offered at any time, and without incurring any liability or obligation by doing so.
- ◆ Instructions and illustrations are intended as examples only, representing the usual procedures for most locations and circumstances. They may not be appropriate in all environmental circumstances, nor for all structures' designs and materials. Any roofing project's planning, engineering and installation should be appropriate to the specific circumstances of the job, and in conformation with all applicable building codes and regulations, as well as current industry practices.
- ◆ To make certain you have the very latest information available, please contact us – we'll be happy to answer any questions, and provide any known details or updates that may not yet have been included in this booklet.
- ◆ Your panels may exhibit a slightly wavy appearance. This is known as "oil-canning" and is a characteristic resulting from the process used to form the panels. It is not a defect and in no way affects the strength or integrity of the panel. Oil-canning will not be accepted as a cause for rejection or replacement of panels.
- ◆ In regions where high snow and ice accumulations are common, devices known as snow guards or snow blocks may need to be installed on your roof, to help prevent accumulated ice or snow from sliding off the roof and causing injury to persons below, or damage to roof surfaces, trim or other objects below. Information on use of snow guards in your area can be obtained from roofing contractors or local building authorities.

GENERAL INSTRUCTIONS AND TIPS

Panel Storage

- * If your metal panels will not be installed immediately upon delivery, they should be stored indoors, in a dry and well-ventilated location.
- * Steps must be taken to prevent moisture (such as from rain, or condensation) from becoming trapped between panels, as it could cause water stains and in some cases corrosion, damaging the appearance of the panels and potentially shortening their service life.
- * If outdoor storage is unavoidable, it is done at the owner's risk. In such a case, the panels should be covered with canvas or waterproof paper. **Plastic should NOT be used to cover panels, since it will cause condensation.**

Safety Precautions

- * When working with metal panels, always wear protective gloves to prevent cuts from sharp edges.
- * Always wear safety goggles or glasses when cutting or drilling metal panels. When a cut has been completed, gently sweep away any metal shavings or bits, to prevent injury and potential damage to panel surfaces.
- * If it is necessary to walk on a metal roof, wear shoes with non-slip soles and be extremely careful – panels can become slippery.
- * Never use unsecured or partially-installed panels as a working platform, and do not walk on a panel until it has been fully installed, with all fasteners in place.

General Installation Tips

- * It is a very good idea to read through this entire booklet before you begin installation work. This will familiarize you with the overall process, and may alert you to steps or cautions you might not otherwise expect. This read-through step can be very helpful even if you have installed roofing before – there may be new or different steps you won't be familiar with.
- * Before beginning installation, make certain the structure is square. If it is not, panels will not meet properly edge to edge, and a tight seal will not be created between panels. Instructions for square installation of the panels themselves can be found on pages 7 and 8.
- * Wet or green lumber should not be used in a roof's supporting structure. It warps as it dries, potentially creating leaks and damage. It may also release moisture, damaging panels. Fasteners driven into green lumber may not be held securely.
- * Routinely brush away any bits of metal or other debris. Sharp metal bits can damage panel surfaces, opening the way to corrosion. Hot bits of metal produced during cutting or drilling can also embed themselves in panel surfaces, and eventually rust, causing rust streaks or stains.
- * Horizon 16 and Climaguard 16 roofing may only be applied to roofs sloped at a pitch of 3:12 or greater (3 inches rise for each 12 inches of horizontal distance).

Roofing - General (continued)

Installation over Existing Roofing

In many cases, standing seam roofing panels may be installed over existing roofing, without the need to strip off the old roofing material. Specific requirements for your area can be obtained from your local building authorities.

In any case, standing seam roofing should be applied only over a fairly smooth, flat surface. Application over a rough and uneven surface is not recommended. This means that if your existing roof surface is not smooth and flat, the old roofing material should be stripped off before proceeding.

If you are not certain whether your existing roof surface is suitable for installation of Horizon 16 or Climaguard 16 panels, please contact us at 877-833-3237; we will be happy to help you in determining the best way to proceed.

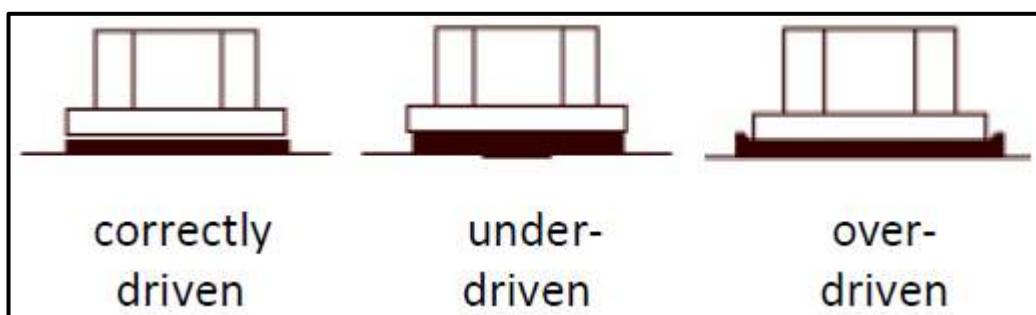
If you will be installing your new standing seam panels over existing roofing, the following preparatory steps are recommended:

1. Remove any ridge caps and hip caps.
2. Inspect the roof for damage; make any necessary repairs. This includes securing any loose roofing, and securing or replacing any warped roofing.
3. Inspect the roof surface carefully, removing all debris, and removing any nails or other objects that might damage the new underlayment or roofing panels.
4. Cut off any overhanging roofing flush with the roof deck.
5. If installing over existing shingles, it is recommended that you first install synthetic underlayment or 30-pound felt, as an added moisture barrier and to protect the undersurface of the steel panels from being scratched by the rough shingles.

Horizon 16

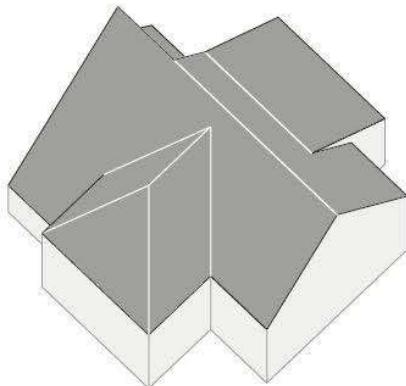


Correctly Driving Rubber-Washed Fasteners



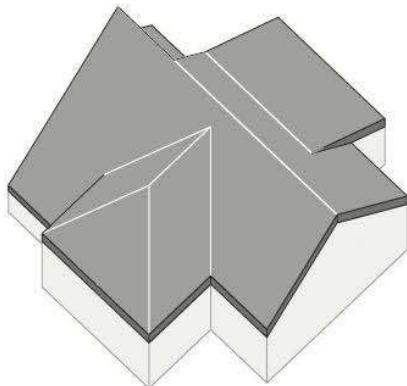
Roof Panel and Trim Installation Sequence

The illustrations that follow show the sequence that would be followed in installing standing seam panels on a particular roof. A relatively complicated roof is shown, to allow for the many types of trim and roof plans. The best sequence may be different, depending on your roof plan, but the illustrations should help you work out how to proceed. You are also always welcome to contact our metal roofing experts for assistance and advice with your roof installation: 1-877-833-3237. Detailed instructions and illustrations for installing panels and each of the different types of trim are included in later sections of this booklet.



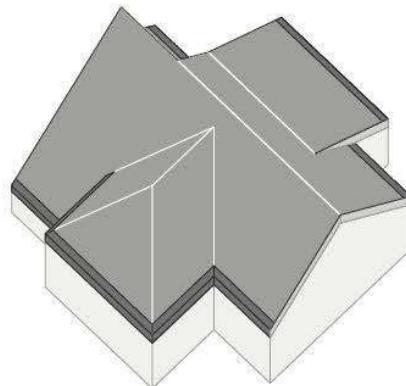
1. Moisture Barrier

Install synthetic underlayment or other moisture barrier, following manufacturer's instructions.



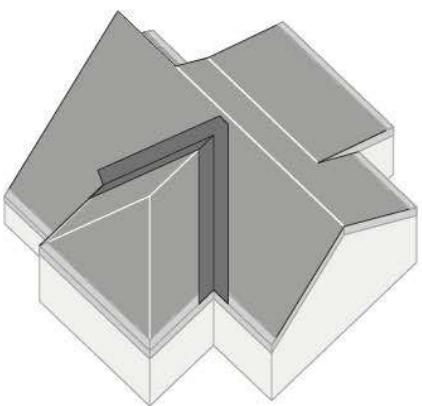
2. Fascia Trim (Optional)

Install fascia trim along all eaves and gables (rakes).



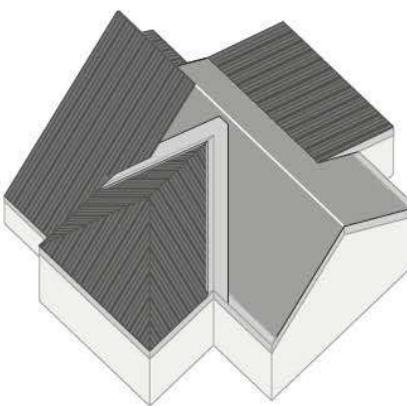
3. Eave Trim

Install eave trim along all eaves. Lap eave trim over any fascia trim.



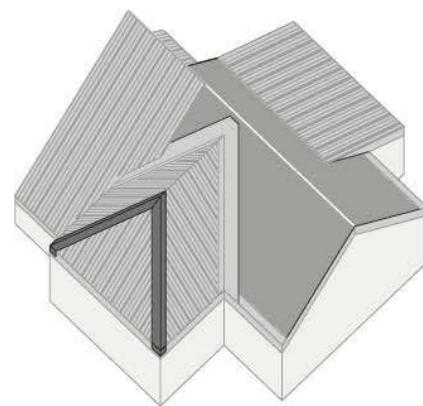
4. Valley Trim

Install valley trim in any valleys. Begin at the eave; lap over eave trim and work upward.



5. Standing Seam Panels

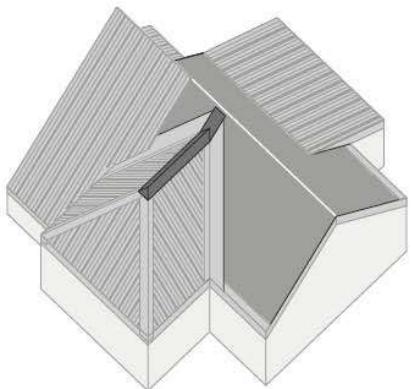
Install panels, overlapping eave and valley trim. Do not fasten down panels along the ridge, if ridge trim is to be overlapped by the panels.



6. Hip Trim

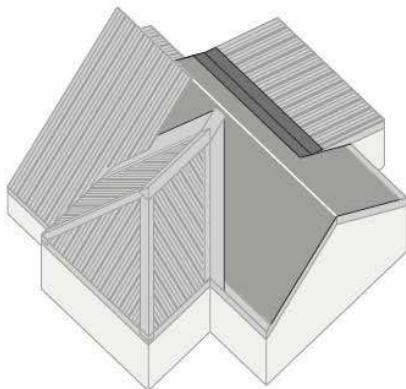
Install hip trim over panel edges at each hip.

Roof Panel and Trim Installation Sequence (continued)



7. Ridge Trim on Hips and at Hip/Valley Intersections

Install ridge trim over the hip trim, hip ridges and hip/valley intersections.



8. Transition Trim

Install transition trim along any transitions, overlapping lower-slope panels and upper-slope moisture barrier.



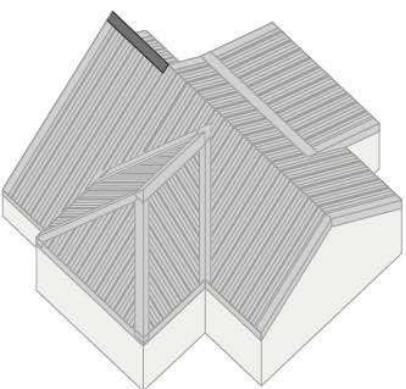
9. Standing Seam Panels

Install panels on high slopes (overlapping transition trim) and in any other un-paneled areas remaining.



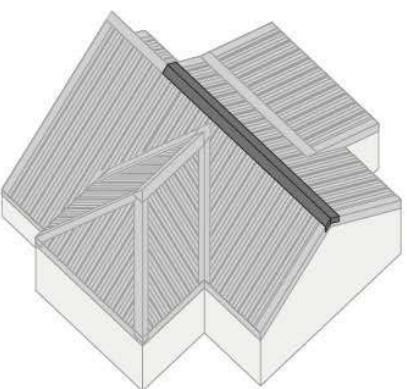
10. Gable/Rake Trim

Install gable trim (rake trim) along all gable (rake) edges, overlapping panels.



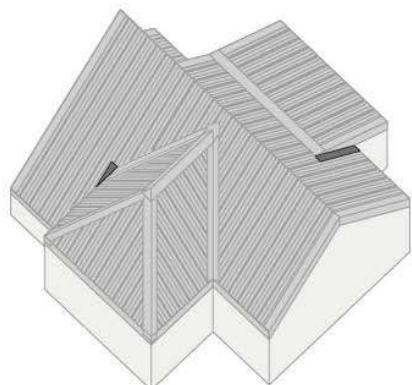
11. High Side Peak Trim

Install trim along any high side peaks, overlapping panels.



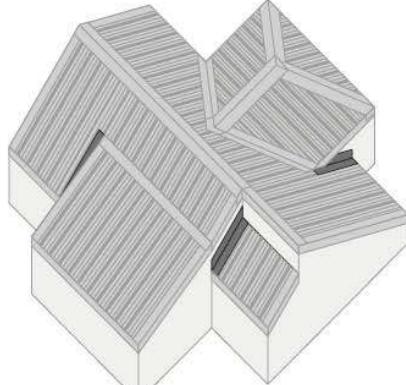
12. Final Ridge Trim

Install ridge trim along any remaining exposed ridges, overlapping panels.



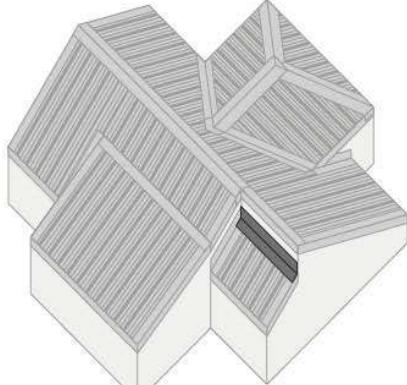
13. Side Wall Trim

Install side wall trim along any side-wall / roof junctions, overlapping panels.



14. Side Wall Trim (Rear View)

(Same as #13.)



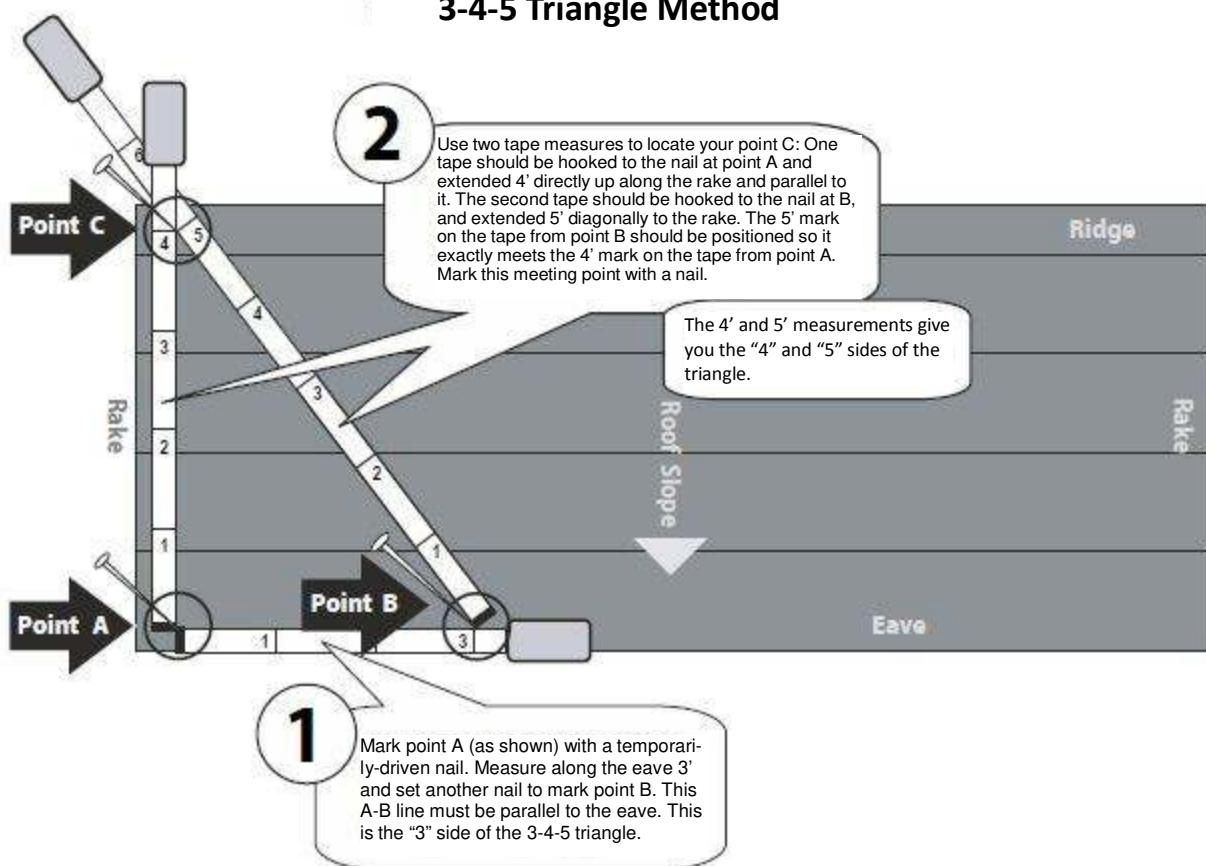
15. End Wall Trim

Install end wall trim along any end-wall/roof junctions, overlapping panels.

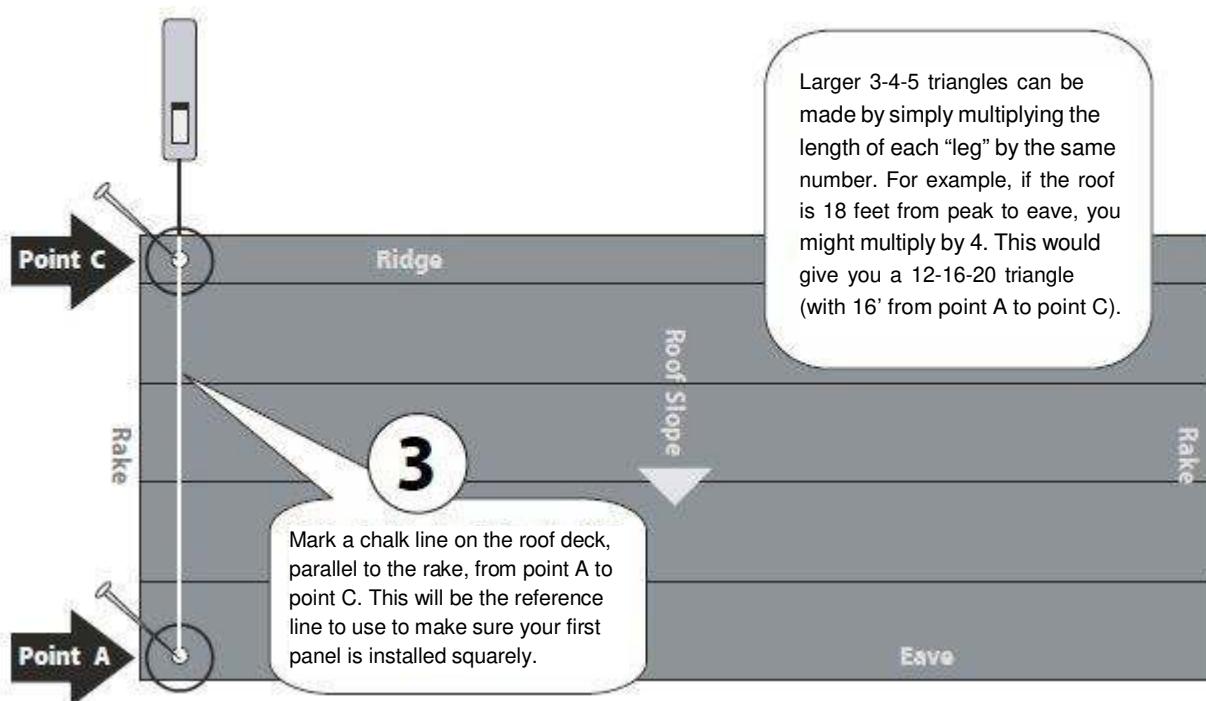
NOTE: The illustrations on the next two pages demonstrate one recommended method for ensuring your standing seam panels are installed squarely - the “3-4-5 Triangle Method.”

Roofing - General (continued)

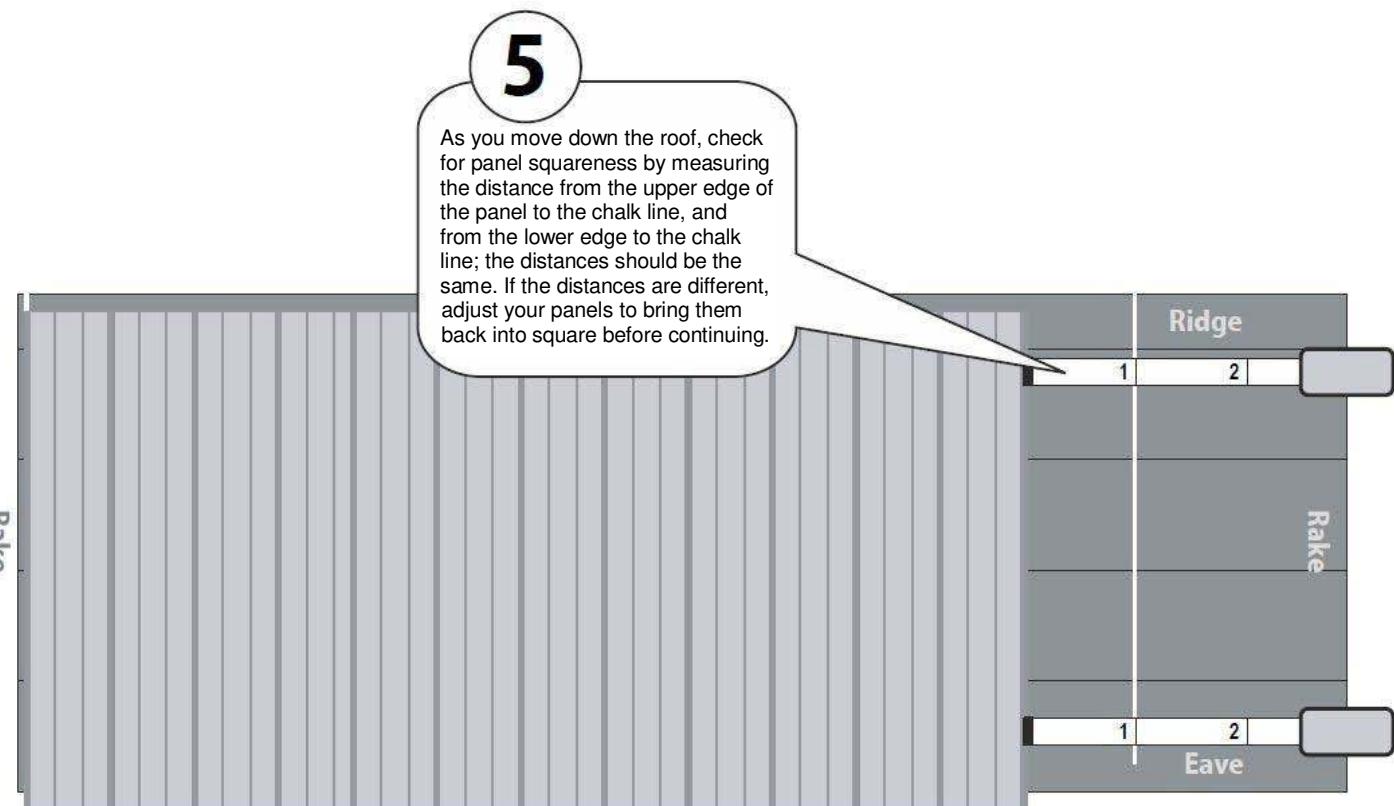
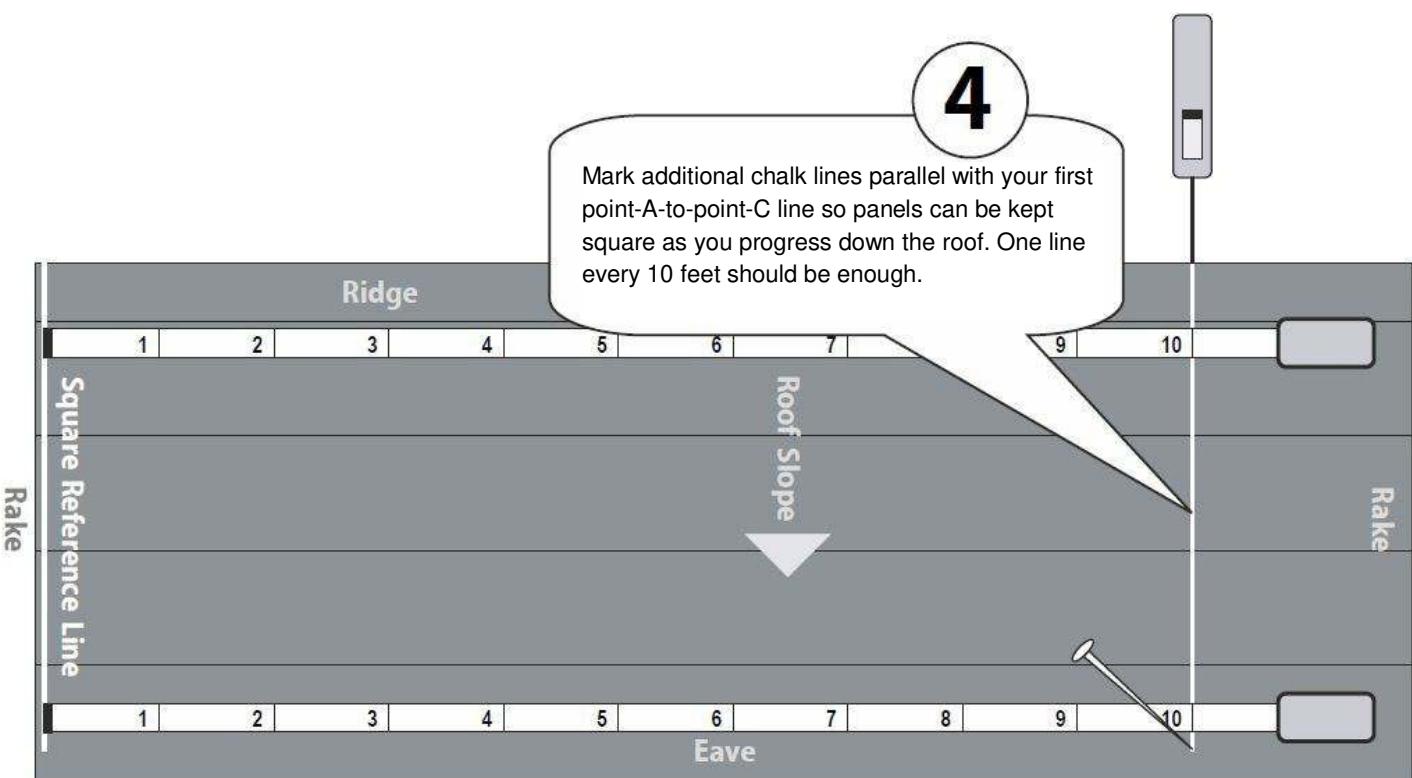
Squaring up Panels with the 3-4-5 Triangle Method



NOTE: The chalk line from Point A to Point C in the illustration below should be between 1/4" and 1 3/4" from the rake.



Roofing - General (continued)



PANEL INSTALLATION

Note: Eave, rake and valley trim must be installed before installing panels.

1. Align the female edge of the first panel with the chalk line that was snapped at the rake edge. This line can be $\frac{1}{4}$ " to $1\frac{3}{4}$ " from the rake. Panel should overhang the eave by 1".

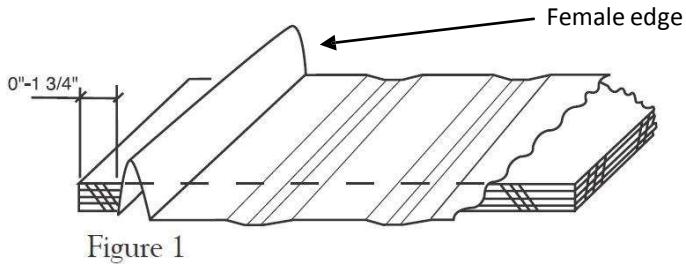


Figure 1

2. When the panel is properly aligned (parallel to chalk line along rake, and perpendicular to the ridge), fasten the panel edge along the rake with #10 x 1" woodgrip screws, spaced at 48" on center.

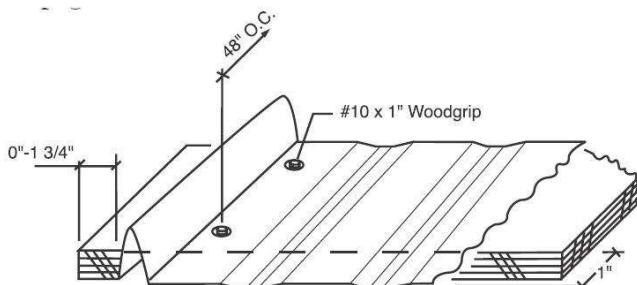


Figure 2

3. Fasten the panel along the male edge, using 1" low-profile pancake head screws driven through the flange. The flange is slotted to allow for slight panel movement during normal expansion and contraction due to changes in temperature. To avoid panel distortion, screws should be tightened snugly against the panel, but not so tight that the panel is dented. Screws should also be positioned in the middle of the 5/8" slots.

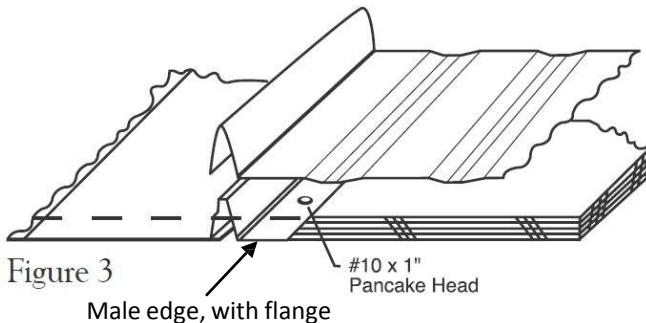


Figure 3

Male edge, with flange

4. Line up the next panel's female edge with the first panel's male edge (Figure 3) and extending 1" beyond eave trim.

5. Snap panels together along the seam, working from eave to ridge. Fasten the second panel using 1" pancake-head screws, driven through the male edge flange. Continue installing panels as in steps 4 and 5.

6. When you reach the far edge of the roof, the last panel may need to be trimmed so it does not extend beyond the rake. Measure the distance from the next-to-last panel to the rake edge, add 1", and cut the final panel to that width. Use a hand seamer to bend the extra inch of panel into a rib.

PANEL INSTALLATION

7. Panels can be finished at the eave in two different ways, depending on your preferences.
- 7a: Panels can be fastened along the eave using #10 x 1" woodgrip screws. Place screws 3" up from the eave edge, and 4" apart (in the minor ribs).

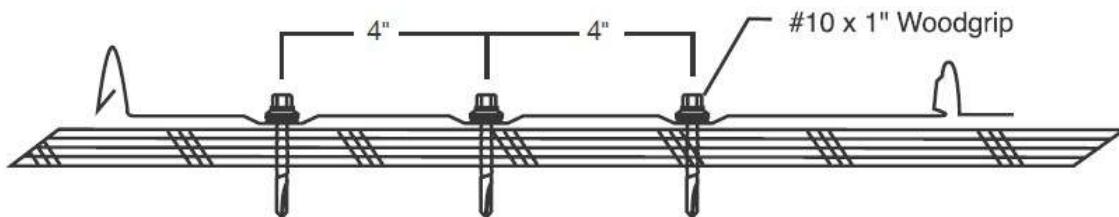


Figure 4

- 7b. For a smoother and neater look, panels can also be finished with a hemming tool. Cut through the ribs on both male and female sides, about 1" up from the panel's end, then along the inside of the ribs - see Figures 5 and 6.

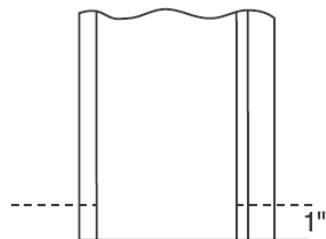


Figure 5

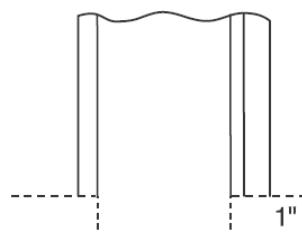


Figure 6

8. Using the hemming tool, bend the tab you've just made down and under, as shown in figures 7 and 8. If you are using extended eave trim, the hem can be slipped over the trim's lip.

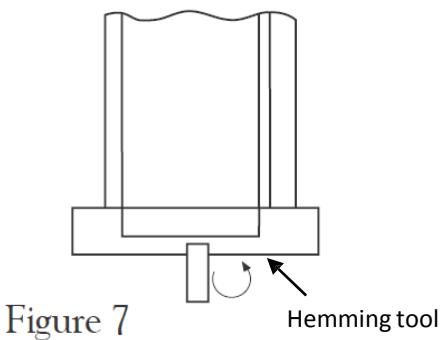


Figure 7



Figure 8

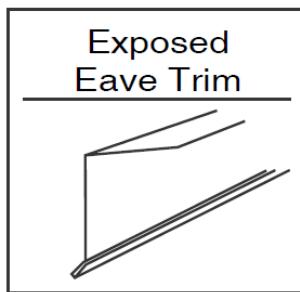
FASTENER SPACING TABLE

For wind loads up to 80 mph

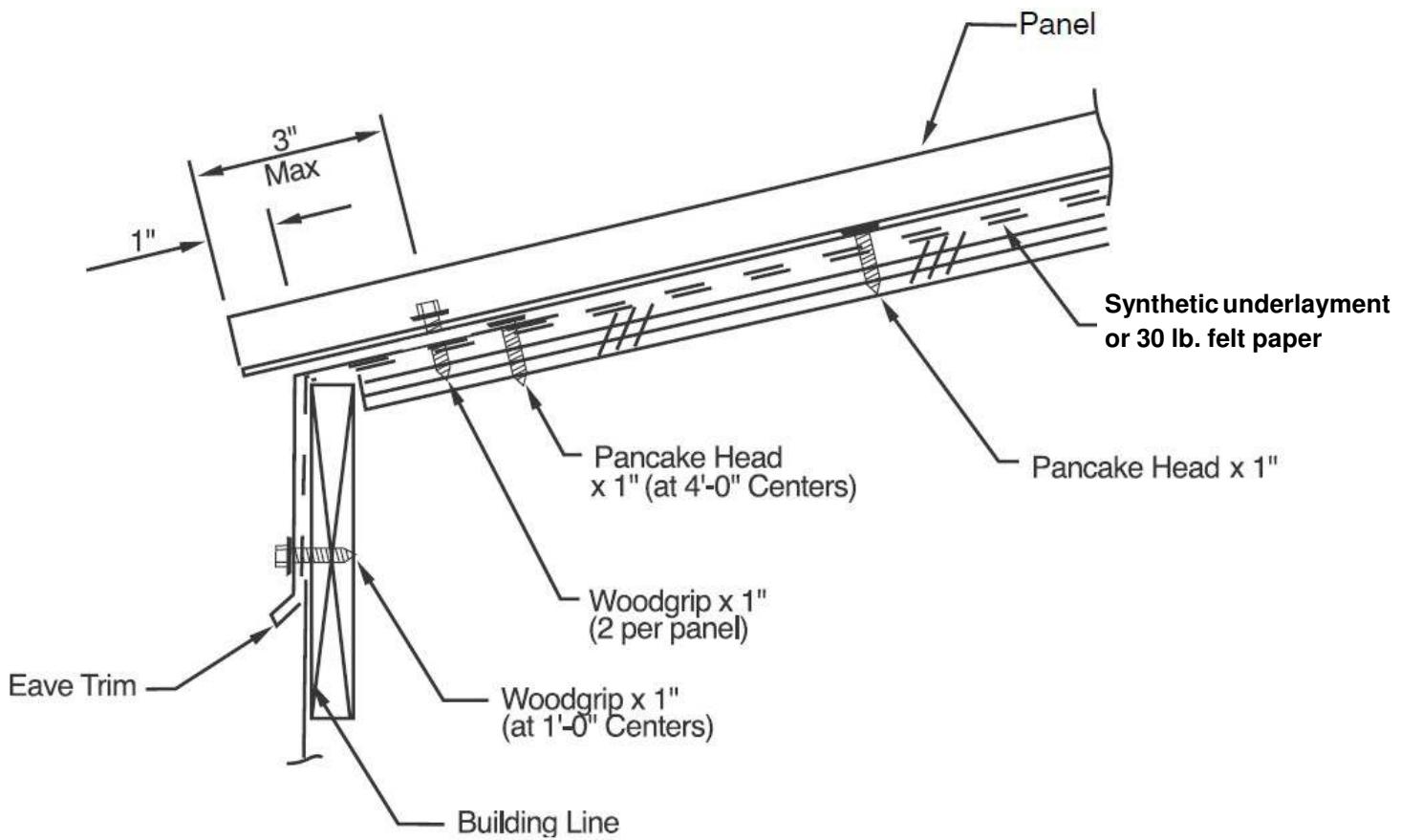
Decking thickness	Fastener spacing
1/2"	12-18" on center
5/8"	21" on center
3/4"	24" on center

TRIM INSTALLATION - Exposed Fastener Eave Trim

** NOTE: Instructions for concealed fastener trims begin on page 15. **



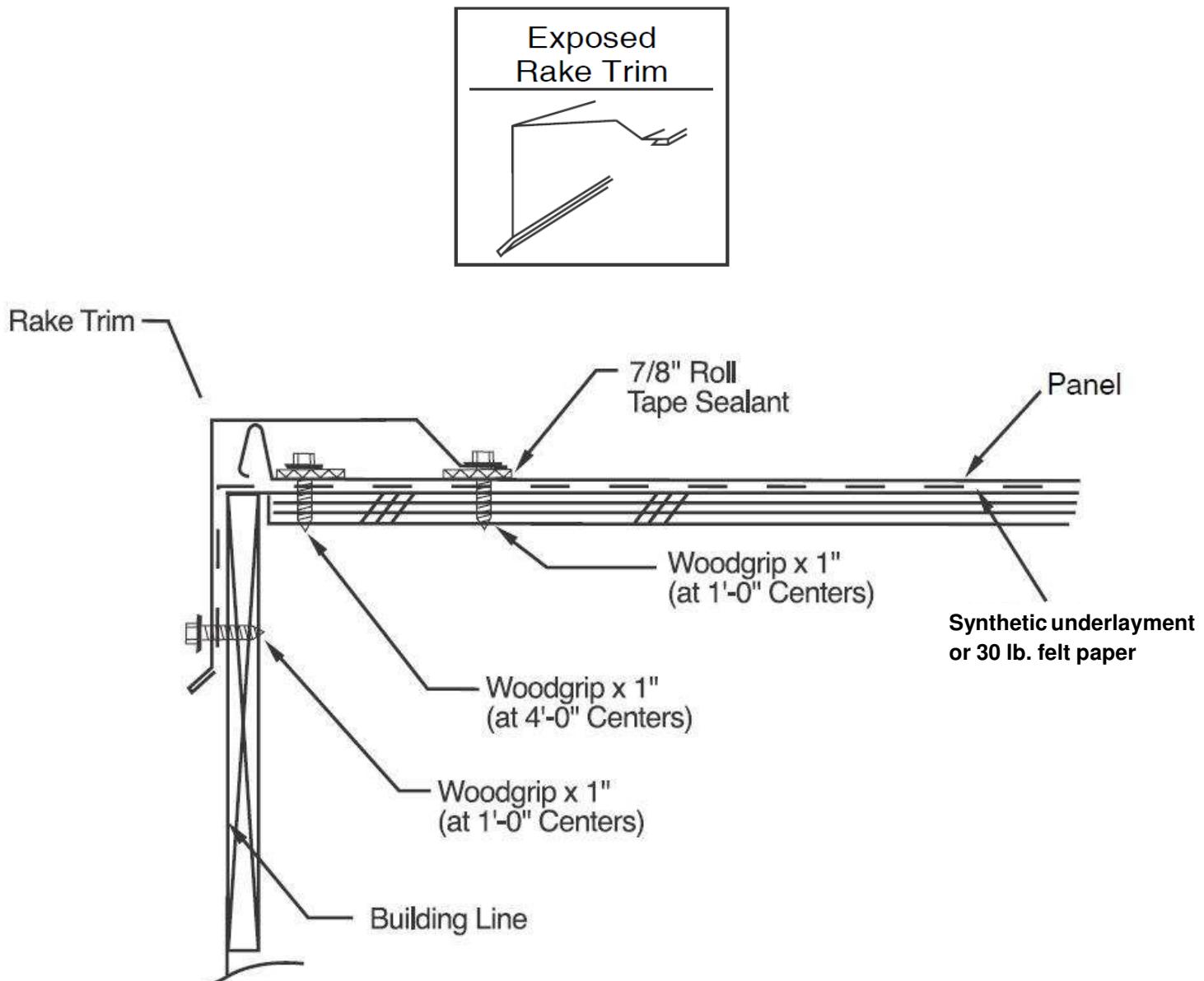
Extended eave trim must be installed prior to panel installation. Also, panel should overhang the eave 1" minimum.



Attach eave trim using # 10 x 1" low-profile pancake screws. After installing the first piece, open about 4" of the next trim piece's hem. Apply caulk and then lap the second piece over the first a minimum of 3" and hook the hem.

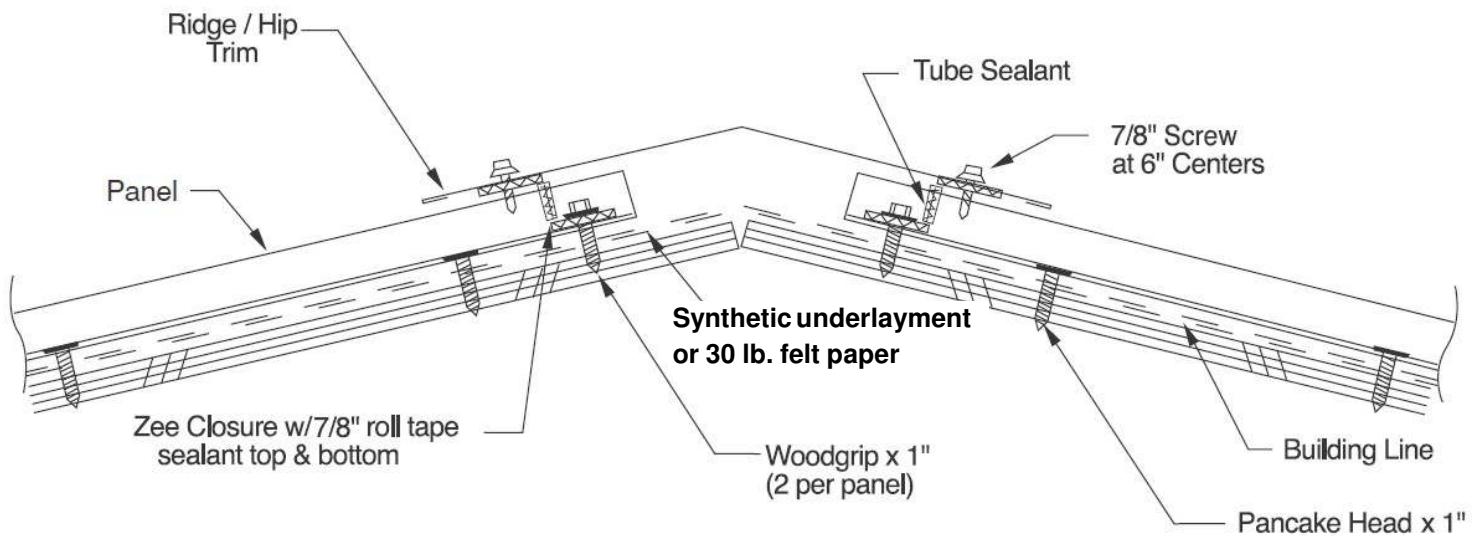
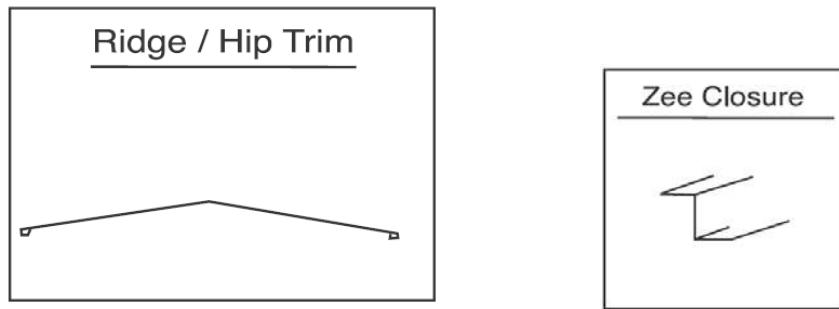
After standing seam panels are installed, they should be fastened at eave with # 10 x 1" woodgrip screws. Additional ice and water shields may be required, if the climate in your area is extreme.

TRIM INSTALLATION - Exposed Fastener Rake Trim



1. Once standing seam panel has been installed along the rake (following earlier instructions), put rake trim in position and mark the location of its outer edge on the panel surface.
2. Remove the rake trim and install a strip of butyl sealant tape so that when the rake trim is in place, its flange will be resting on top of the sealant.
3. Put rake trim back in place and fasten to rake with # 10 x 1" woodgrip screws, spaced 18 - 24" apart.
4. Fasten rake trim to roof panels with # 10 x 1" woodgrip screws, placed 12" to 18" on center along the rake trim's flange. Take care not to over-drive or under-drive screws. Screw heads should be driven flush with the flange, taking care not to over-drive or under-drive (see illustration at bottom of page 4).

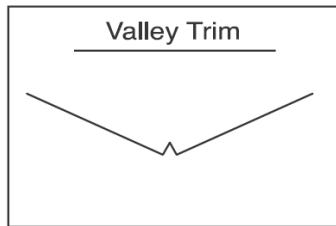
TRIM INSTALLATION - Exposed Fastener Ridge or Hip Trim



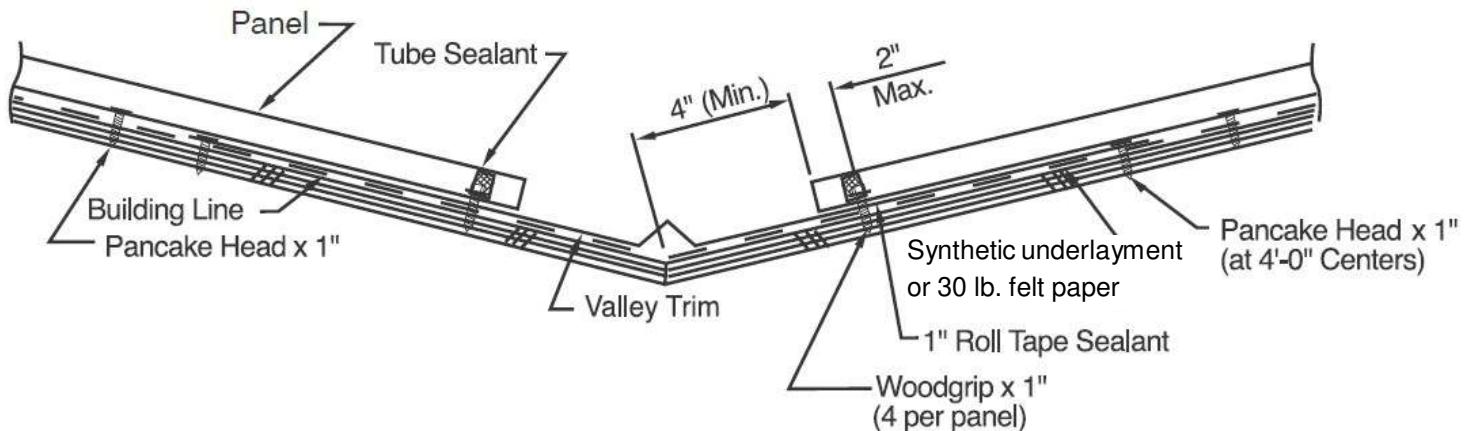
NOTE: Rake trim must be installed prior to installing ridge or hip trim.

1. Place a short section of exposed fastener ridge/hip trim at one end of the peak, centering it so that it extends equally down each side. Use a pencil or marker to mark the outside edges of the trim. Repeat this process at the other end of the ridge.
2. Snap chalk lines between the marks, to use in positioning ridge/hip trim as it's installed.
3. Cut 15 1/2" pieces of zee closure - one for each panel. Run a line of butyl sealant tape along the top and bottom surfaces of each piece of zee closure. Set the closure pieces in place, along the top edge of the roof panel. Continue installing zee closures in this way along the full length of the ridge.
4. Use tube sealant to seal the points where zee closures meet ribs in the roof panels.
5. Begin at one end of ridge and install a length of ridge/hip trim, fastening it to the zee closure using #14 x 7/8" lap screws.
6. Install the next length of ridge/hip trim, overlapping the first length by at least 6", hooking the hems and using tube sealant to seal off the overlap.
7. Continue installing ridge/hip trim along the full length of the ridge or hip.

TRIM INSTALLATION - Exposed Fastener Valley Trim



Note: Exposed fastener valley trim must be installed before standing seam panels.

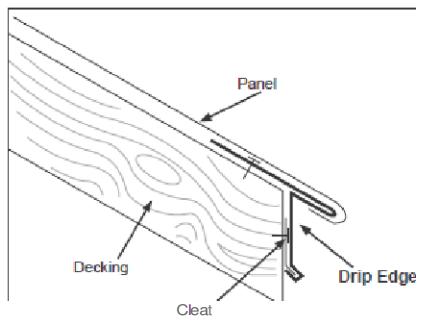


1. Place a layer of synthetic underlayment or roof felt along the valley centerline, with 18" of material on each side of the valley's center.
2. Beginning at the eave, install the first piece of exposed fastener valley trim. Be sure to overhang the eave by 1". Fasten to the roof deck using 1" pancake head screws, 4' on center.
3. Continue placing lengths of valley trim, caulking between each pair of pieces and overlapping by at least 6".
4. Run two lines of tape sealant up from eave to ridge, one on each side of the valley's center and 6" above it.
5. Field cut your standing seam panels so that their edges will be parallel to the valley's center and at least 4" above it. Sheet metal shears are recommended for this task.
6. Install standing seam panels.
7. Once panels are installed, fasten them along their lower edges using four # 10 x 1" woodgrip screws per panel, evenly spaced and driven through the sealant tape beneath.
8. Seal openings at panel ends using tube caulking.

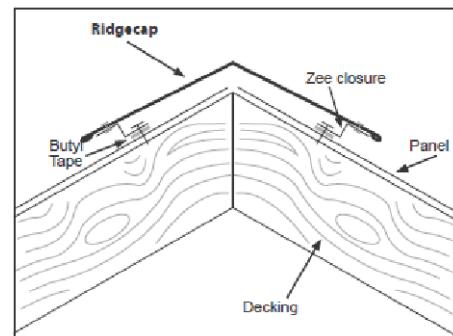
Additional ice and water shields may be required in areas with extreme climates.

CONCEALED FASTENER TRIMS

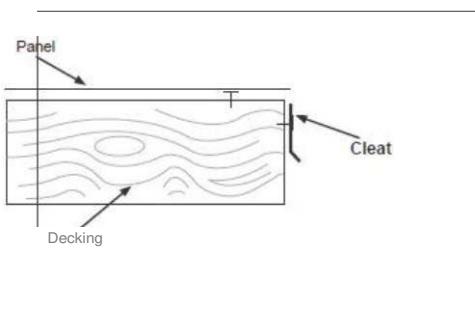
Extended Eave Trim



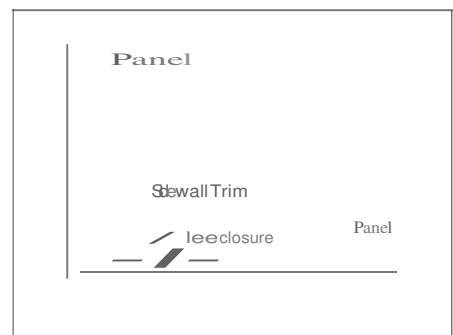
Ridge Cap



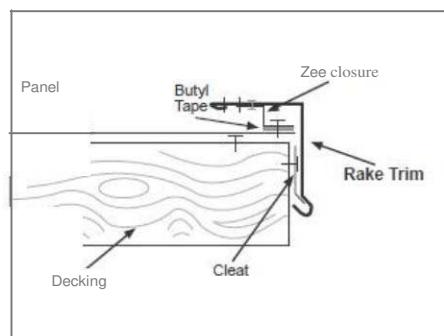
Cleat



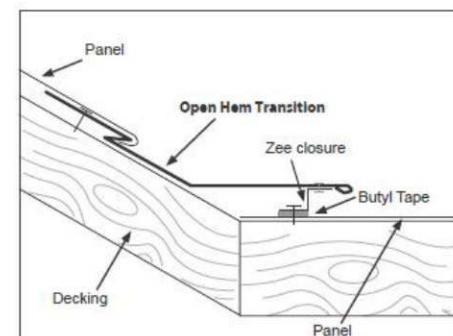
Sidewall



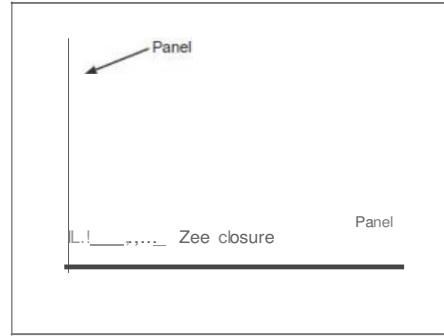
Rake Trim



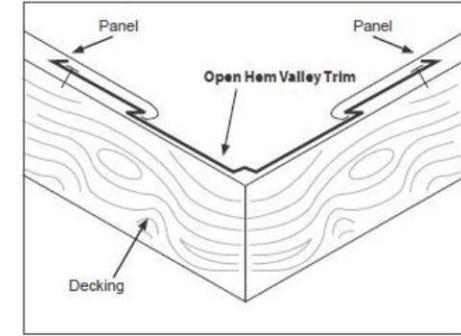
Transition



Zee Closure



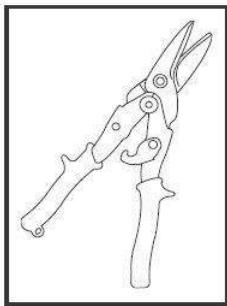
Valley



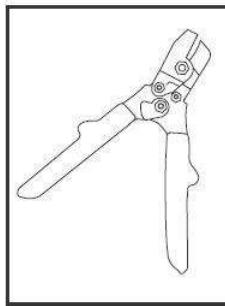
TRIM INSTALLATION - Concealed Fastener Trims

TOOLS

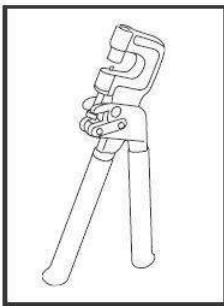
Hand Snips



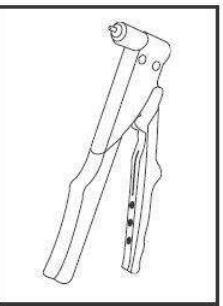
Notchers



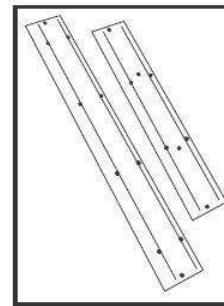
Rivet Hole Punch



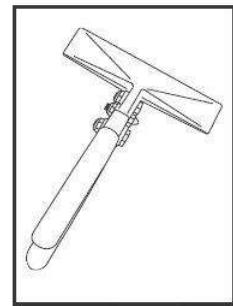
Hand Riveter



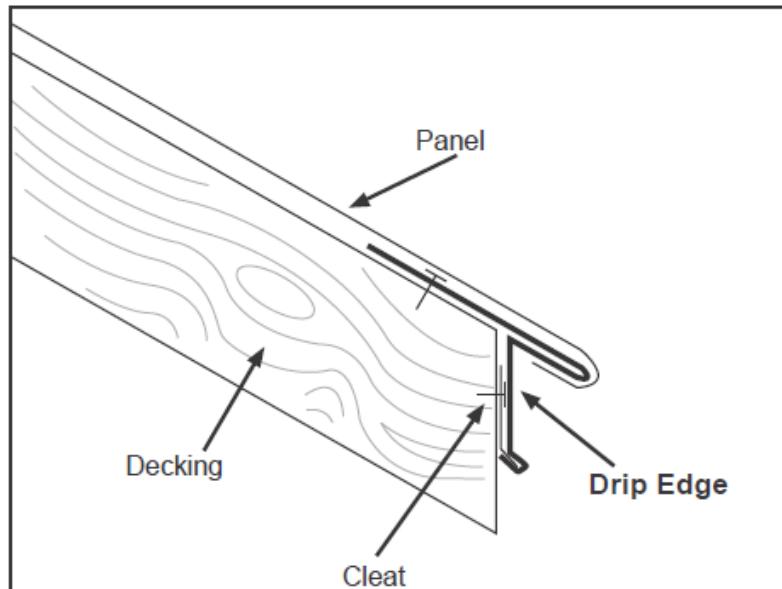
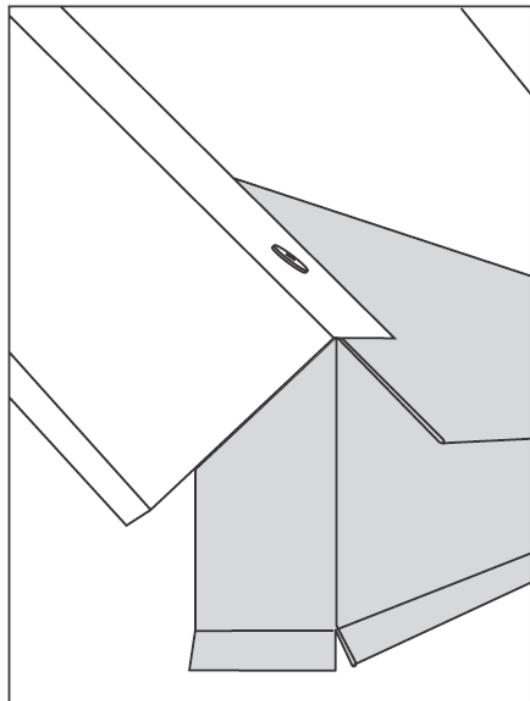
Folding Tools



6" Hand Seamer



CONCEALED FASTENER DRIP EDGE

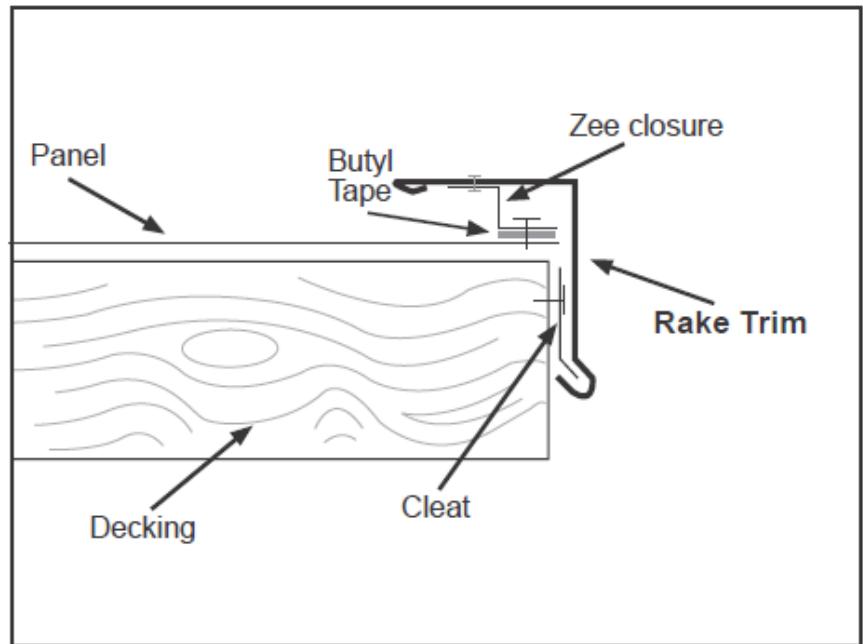
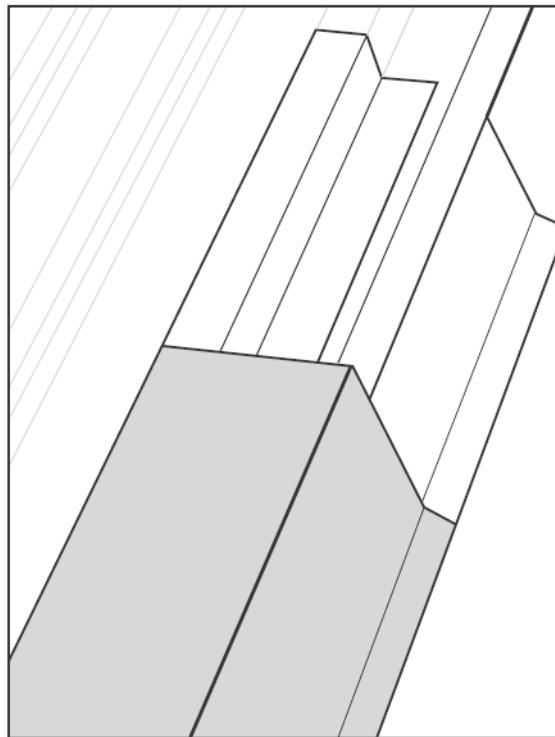


NOTE: Panels should be ordered with an extra 2" of length, for hemming over the drip edge. (One inch covers the drip edge, and one inch is hemmed under.)

1. Screw the drip edge to the decking.
2. Notch the standing seam panels at the rib (1" from the end of the panel).
3. Using the folding tool, fold the panel at the notching so that the unpainted sides of the panel are facing each other.
4. Slide panel over drip edge and screw into decking.
5. Repeat steps 2 to 4 for each standing seam panel, along the drip edge.

TRIM INSTALLATION

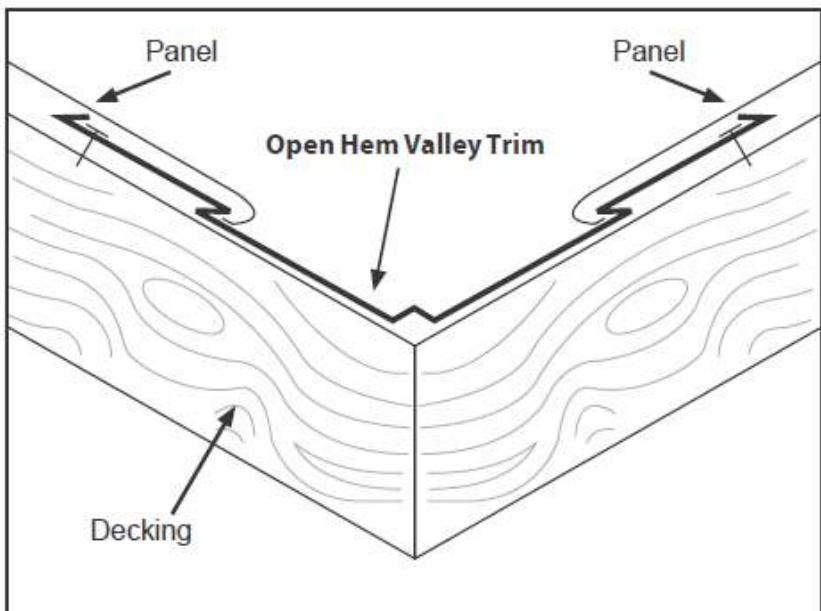
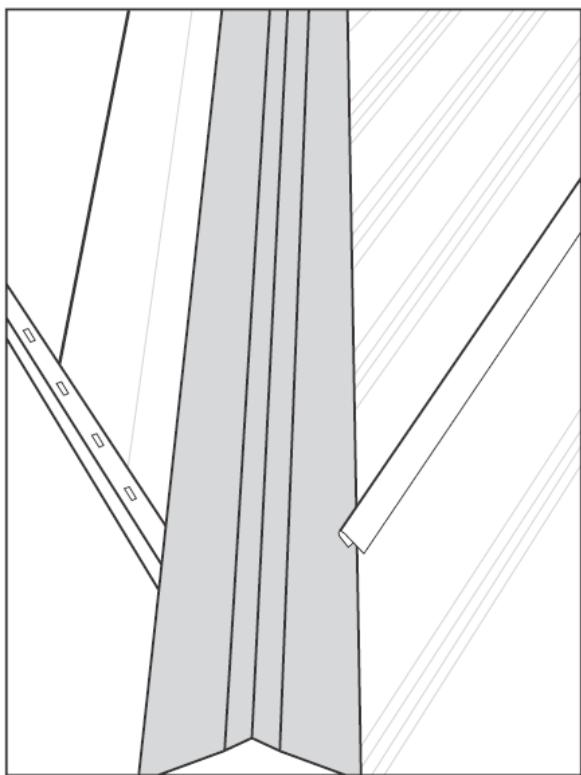
CONCEALED FASTENER RAKE TRIM



1. Install cleat along the rake.
2. Install standing seam panels, following earlier directions. The panel's edge should meet with the edge of the rake.
3. Run a line of butyl sealant tape along the rake edge of the panel.
4. Install zee closure along the rake edge of the panel, directly on top of the butyl sealant tape and with screws passing through the sealant tape.
5. Install the rake trim over the cleat and zee closure. Pop rivet rake trim to zee closure at the joints, and every 1 to 2 feet along the rake. *Overlap lengths of rake trim a minimum of 3", with butyl tape between laps.*

TRIM INSTALLATION

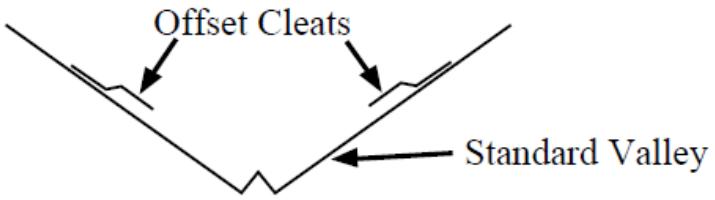
CONCEALED FASTENER VALLEY TRIM



1. Using a folding tool, hem the end of the first piece of valley trim 1". Slide valley trim hem over drip edge (if drip edge is being used).
2. Fasten valley trim to decking, placing screws as far up the side of the trim as possible.
3. Hem the panel where it meets the valley (hem at a 45° angle or according to the valley pitch). Slide hemmed panel over the valley trim's open hem.
4. Repeat step 3 for each panel as it meets the valley.

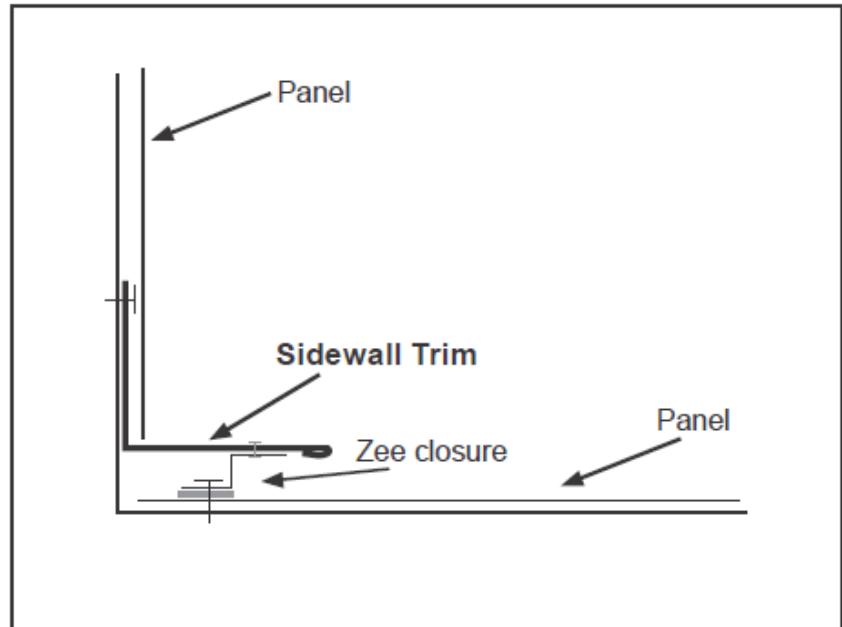
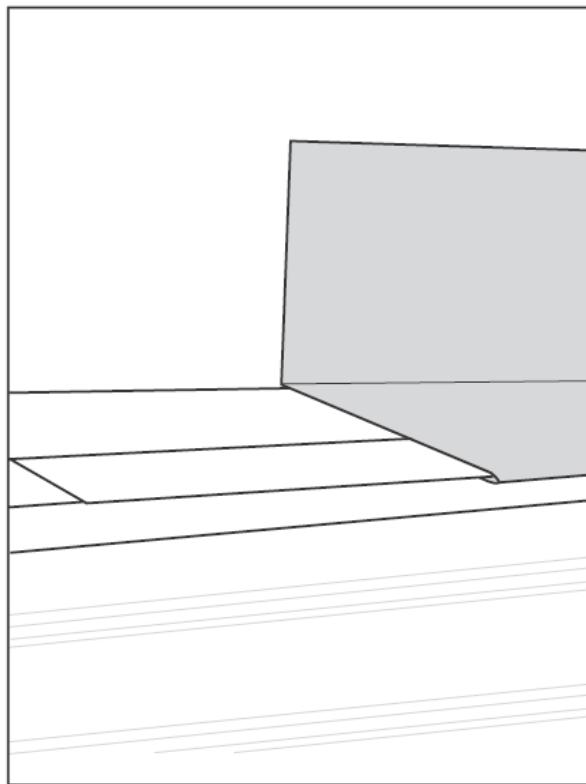
Overlap lengths of valley trim a minimum of 6", with butyl tape between laps.

NOTE: Open-hem valley trim is not available in all areas. In such areas, standard valley trim can be used to create concealed-fastener valleys by adding lengths of offset cleat to each side of the valley trim, as shown.



TRIM INSTALLATION

CONCEALED FASTENER SIDEWALL and ENDWALL TRIM

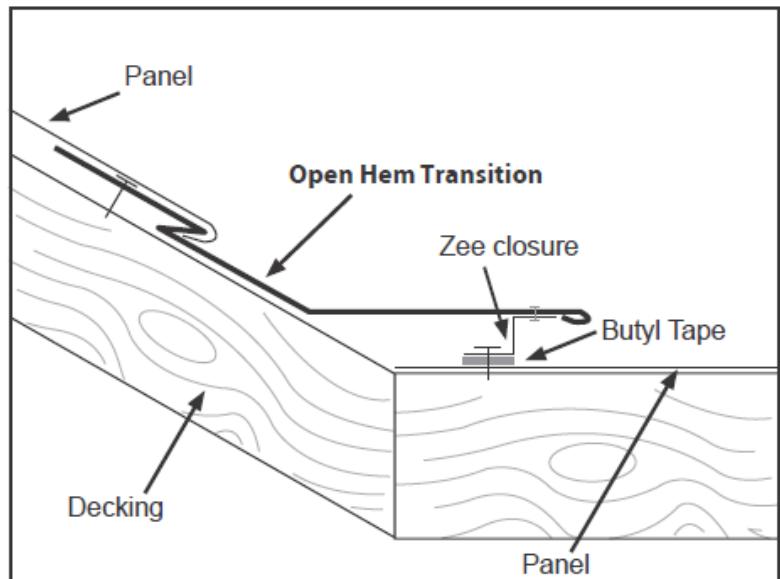
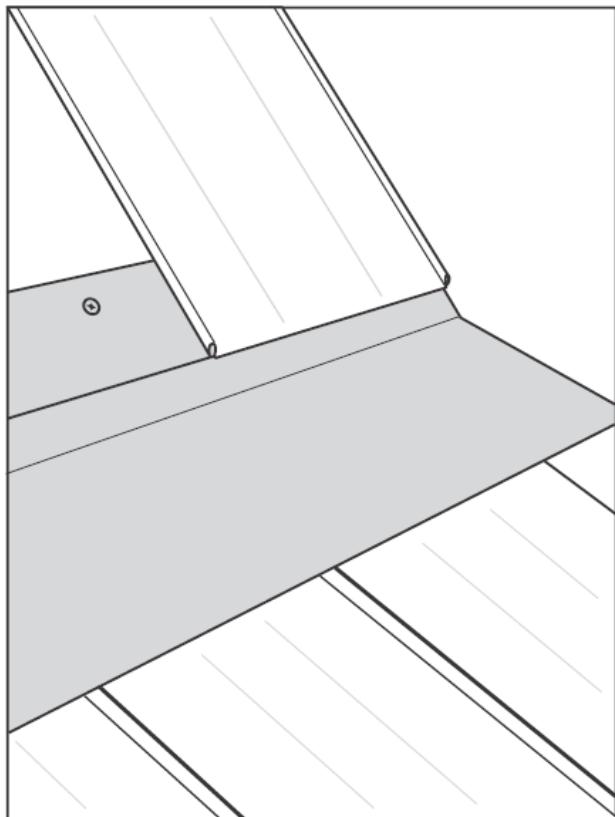


1. Install standing seam panels up to the sidewall or endwall. On the final panel (closest to the wall) run a line of butyl sealant tape along the panel edge, parallel to the wall.
2. Install zee closure on top of the panel, parallel to the wall. For endwalls, zee closure should be cut to 15 ½" in length.
3. Install the sidewall or endwall trim over the zee and screw into wall. Pop rivet the trim to the zee closure.
4. Repeat steps 1 to 3 for each panel along the sidewall or endwall.
5. Install standing seam panels over the sidewall or endwall.

Overlap lengths of sidewall or endwall trim a minimum of 3", with butyl tape between laps.

TRIM INSTALLATION

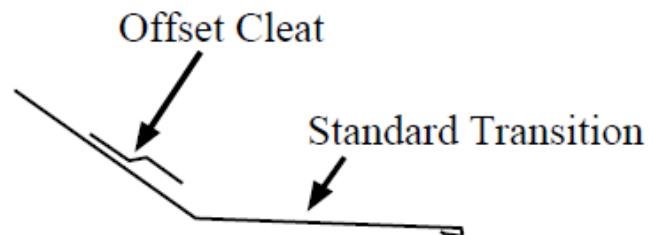
CONCEALED FASTENER TRANSITION TRIM



1. Install standing seam panels on the lower roof surface.
2. Run a line of butyl sealant tape across the upper edge of each standing seam panel.
3. Cut 15½" lengths of zee closure (one for each panel) and fasten along the upper edge of each roof panel. Screws should pass through the butyl tape sealant beneath.
4. Install the transition trim over the zee closure, and then screw the transition's upper edge to the decking of the upper roof surface.
5. Notch and hem an upper roof panel 1", and the slide hem over the open hem on the transition trim. Fasten roofing panel to decking.
6. Repeat step 5 for each panel along the transition.

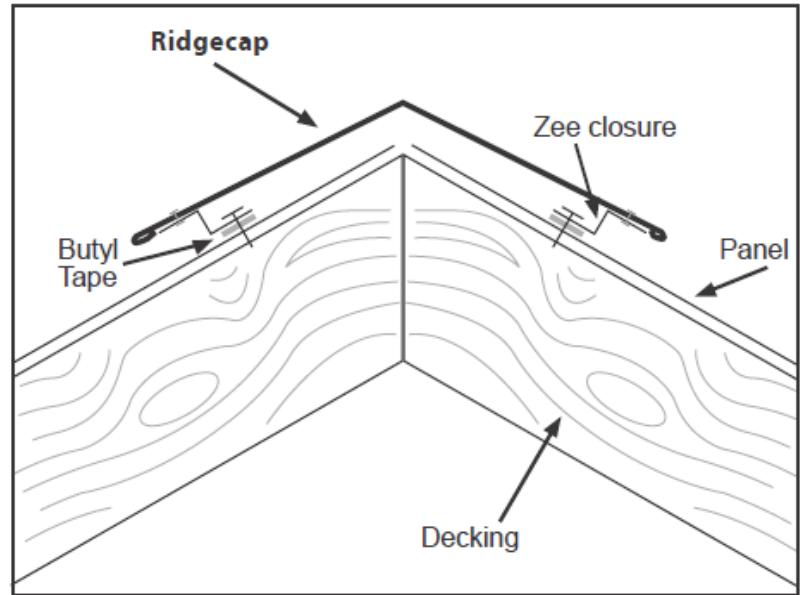
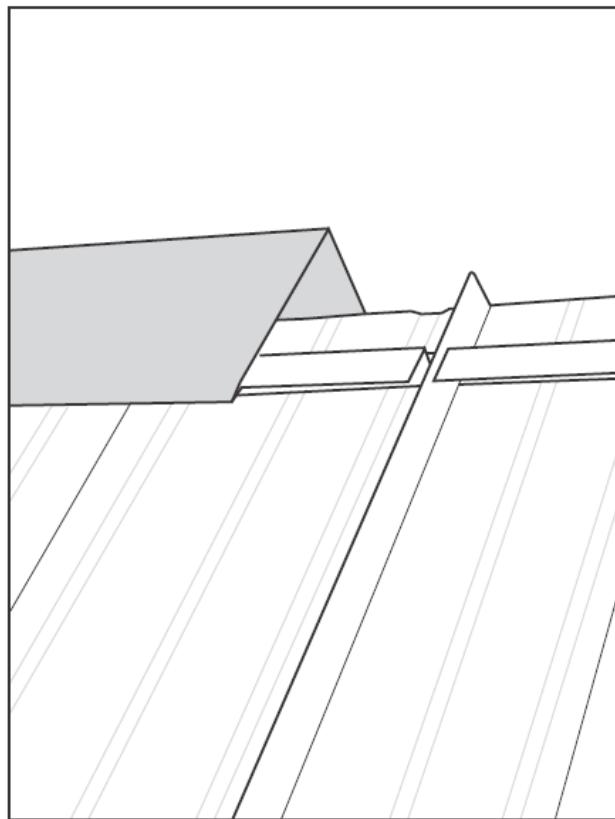
Overlap lengths of transition trim a minimum of 3", with butyl tape between laps.

NOTE: Open-hem transition trim is not available in all areas. In such areas, standard transition trim can be used to create concealed-fastener transitions by adding lengths of offset cleat to the upper side of the transition, as shown.



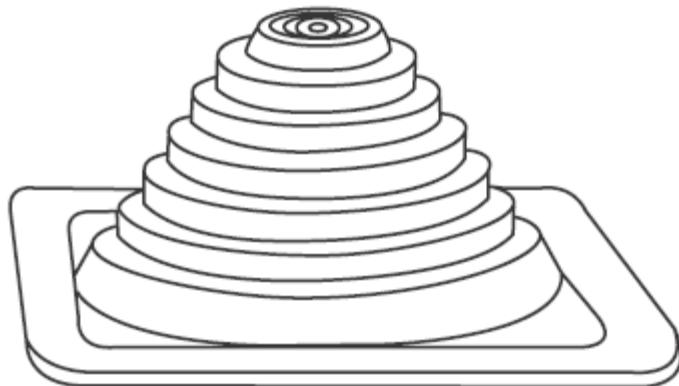
TRIM INSTALLATION

CONCEALED FASTENER RIDGE CAP



1. Install panels on both sides of roof, up to the ridge.
 2. Cut zee closures to 15½" lengths - one for each panel. Run a line of butyl sealant tape along the full length of each zee closure strip, and then fasten a closure across the upper edge of every panel. (Drive screws through sealant tape beneath.) Use tube sealant to caulk each place where zee closures meet panel ribs.
 3. Run a line of butyl sealant tape along the top surface of each zee closure strip.
 4. Install ridge cap over zee closures and pop rivet the zee every foot and at joints. Pop rivets should pass through the sealant tape between zee closure and ridge cap. When overlapping sections of ridge cap, cut 6" off lower-edge hem of the underlapping ridge cap, and then slide on the overlapping piece. Use sealant and a pop rivet at each overlap.
- * Stepped ridge cap are also available, as well as vented ridge cap.
- * When using vented ridge cap, remove zee closure and add vent material and vent clips (two for each panel).

PIPE FLASHINGS



Any point where a pipe or other object passes upward through a metal roof is a potential source of leakage. Small penetrations such as plumbing vents or gas vents are sealed with special flashings made specifically for metal roofing. These flashings consist of a conical rubber boot, and a soft, flat, flexible flange.

Pipe flashings can be installed at any point, though installation is easier if the pipe happens to be located so that the flashing falls between major roof panel ribs.

1. Cut the conical portion of the pipe flashing at the ring which is one size *smaller* than the diameter of the pipe to be sealed. This will allow for a tight fit and good seal.
2. Apply tube sealant or butyl sealant tape all the way around the bottom of the flange.
3. Push the flashing down over the pipe until the flange contacts the roof.
4. Form the flange to the roof panel surface so that it fits snuggly over any ribs.
5. Fasten down the flashing using neoprene-washed screws, spaced 1" apart around the entire flange.
6. Run a generous bead of tube sealant around the place where the pipe meets the flashing's rubber cone, and around the entire flange (where flange and roof panels meet).

Flashings are available to fit pipes from $\frac{1}{2}$ " to 13" in diameter. A "zippered" flashing is also available for use in cases where the flashing cannot be slipped down over the top of the pipe – for example, with electrical service poles which enter through the roof.

Have a question or comment?
Need technical assistance?
Give us a call (toll free) at **877-833-3237**. We'll be glad
to help.

Thank you for choosing

