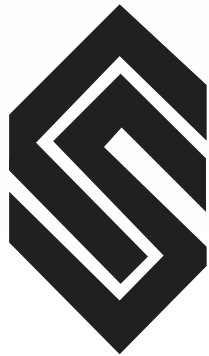


Horizon-Loc™

Concealed Fastener Application Guide



**CENTRAL
STATES**
MANUFACTURING, INC.

Lowell, Arkansas
800-356-2733

Michigan City, Indiana
800-638-2565

Cedar Hill, Texas
800-210-8305

Jasper, Alabama
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www.centralstatesmfg.com

IMPORTANT INFORMATION

This manual contains suggestions and guidelines on how to install Horizon-Loc™ panels. The drawings in this guide are for illustration purposes only and may not apply to all building designs or product applications. The installation details shown are proven methods of construction, but are not intended to cover all instances, building requirements, designs, or codes. It is the responsibility of the designer/installer to ensure that the details meet particular building requirements. The designer/installer must be aware of, and allow for, expansion/contraction of roof panels. The details may require changes or revisions due to each project's conditions.

TIP There are certain minimum live, snow, dead, collateral, and wind loads that a roof must generally be designed to support. Consult local building officials to determine the appropriate building design load requirements. A professional engineer should be consulted for all roof system designs. It is the buyer's responsibility to verify all applicable code requirements, check all

measurements, and determine suitability of product for the job. The buyer is also responsible for determining lengths and quantities needed. Prior to ordering and installing materials, all dimensions should be verified with field measurements. **Implied warranties of merchantability and fitness for a particular purpose are disclaimed.** All Horizon-Loc™ instructions assume that a qualified firm or individual has been contacted regarding application of this product. Failure to comply with stated recommendations relieves the manufacturer of responsibility for any damage or deterioration of the product incurred and voids any applicable warranty.

Central States Manufacturing reserves the right to modify, without notice, information in this guide. If you have questions regarding proper installation of Horizon-Loc™ or information not included in this guide, contact your salesperson.

SAFETY

Each job site presents different hazards; therefore it is the responsibility of the buyer/installer to determine the safest way to install the Horizon-Loc™ roof panel system based on the recommended instructions contained in this guide. Provide crew members working on the roof with required safety railing, netting or safety lines. If you must walk on a metal roof, take great care. Metal panels can become

slippery, so always wear shoes with non-slip soles. Avoid working on metal roofs during wet conditions when the panels can become extremely slippery. Walking or standing on a metal roof which does not have a plywood or other deck beneath it is not recommended. However, if you must do so, always walk on the purlins, never between. Horizon-Loc™ is designed to be installed over solid plywood decking.

OSHA safety regulations should be complied with at all times.



Always wear heavy gloves when working with steel panels to avoid cuts from sharp edges.

When power cutting or drilling steel panels, always wear safety glasses to prevent eye injury from flying metal fragments.



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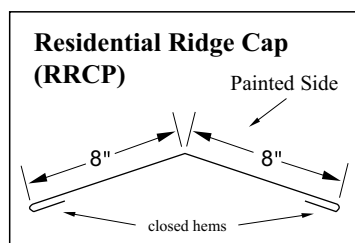
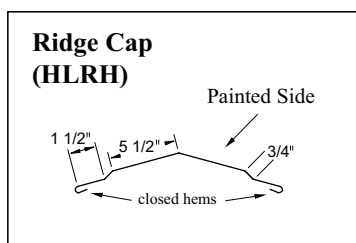
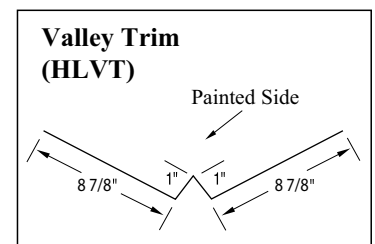
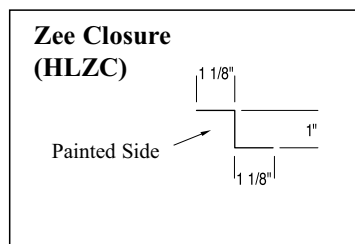
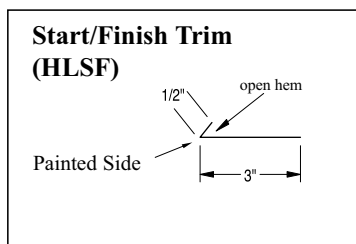
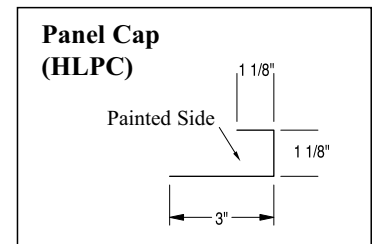
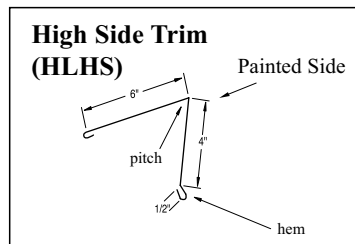
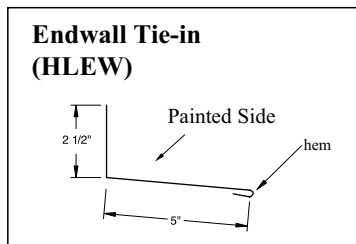
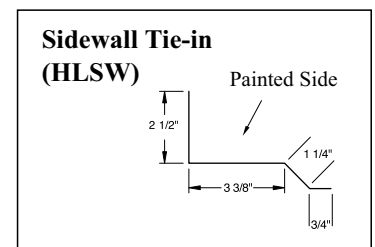
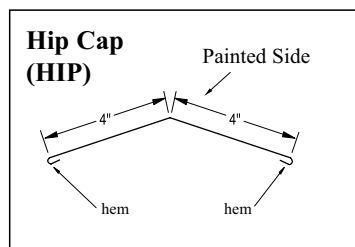
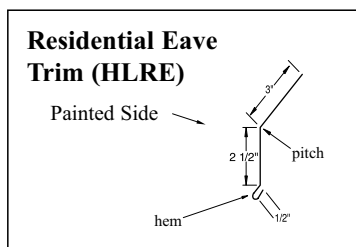
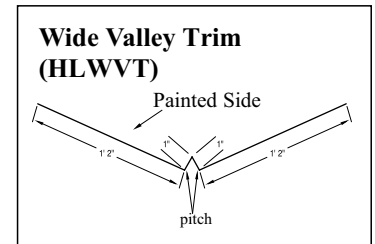
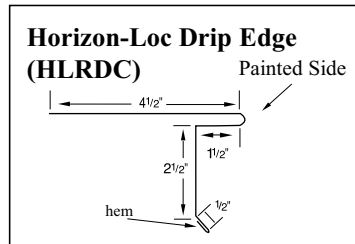
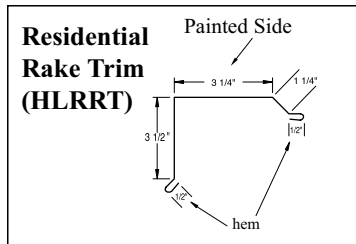
Information in the catalog may vary by plant location.
Please call your salesperson to verify product availability.

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Frequently Used Trims

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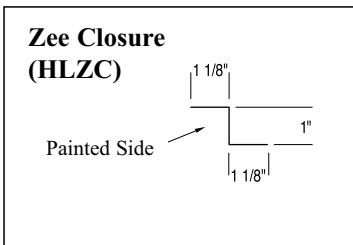
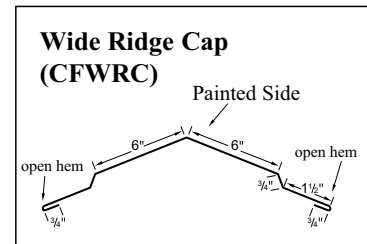
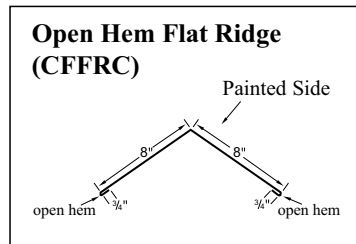
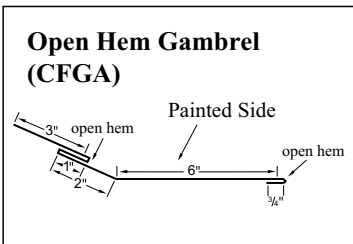
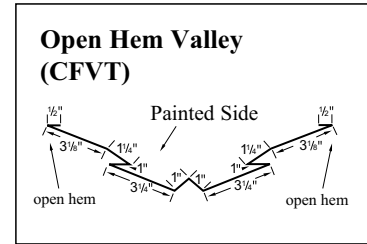
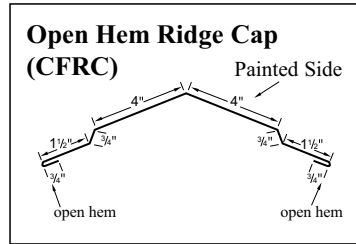
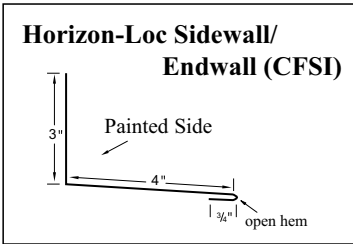
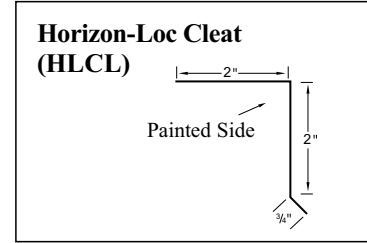
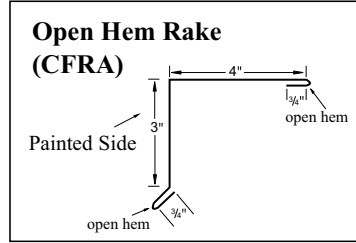
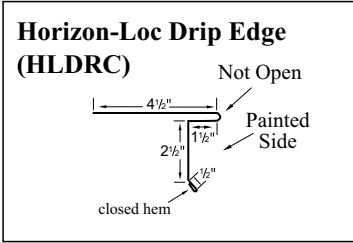
Exposed Fastener Trims



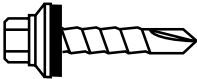
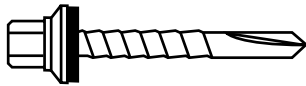
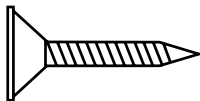
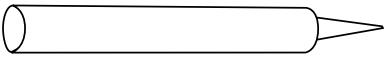
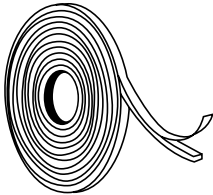
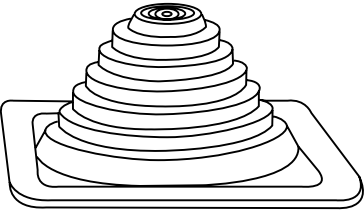
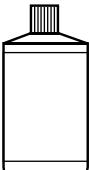
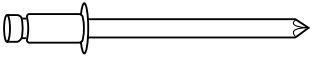
Frequently Used Trims

This section shows all trims referenced in the installation sections throughout this guide.

Concealed Fastener Trims



ACCESSORIES PARTS LIST

PART#	PROFILE	DESCRIPTION
78(color)LAP		5/16" Head Lap Screw
1(color)MW		#10 x 1" Metal to Wood with Neoprene Washer 1/4" Head
SSR1WOOD		#10 x 1" Low Profile Flat Head Screw
GEOC		Clear Urethane Sealant
BTR		Butyl Tape Sealant 3/16" x 7/8" x 40' Roll
MPF MPF2 MPF4 MPF6 MPF7 MPF8 MPF1ZIP MPF2ZIP		Fits 1/2" to 4" pipes Fits 1 1/4" to 3" pipes Fits 3" to 6" pipes Fits 5" to 9" pipes Fits 6" to 11" pipes Fits 7" to 13" pipes Fits 1/2" to 4" pipes (zippered flash) Fits 4 1/4" to 9" pipes (zippered flash)
4(color)SP		Touch-Up Paint .6 oz.
POP(color)		Per bag or individual quantities available

TOOLS AND EQUIPMENT

Cordless Screw Drill
Snips
Tape Measure
Electric Metal Shear*

Caulking Gun
Cordless Drill
Blind Rivet Tool
Chalk Line

"Duckbill" Locking Pliers
Hemming Tool
Gloves
Notcher

*We do not recommend the use of a power circular saw to cut panels. Use of a power saw could:

- Increase the instance of edge rust
- Cause hot metal shavings on panel surface to damage panel finish

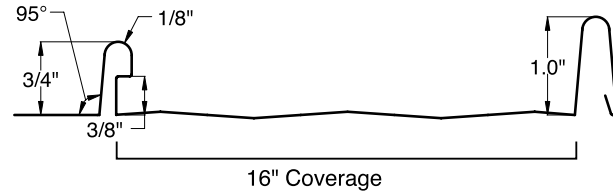
We recommend that the installer have prior experience and knowledge of the listed tools and their uses in working with metal roofing.

INTRODUCTION

The Horizon-Loc™ concealed fastener panel gives you the leak resistance and beauty of a traditional standing seam roof without the expense and installation difficulty of clips. The fastening slots allow the panel to easily expand and contract with temperature changes. The 1" high rib provides a sharp, well-defined look for residential and light commercial applications.

NOTE: Oil canning in the flat area of the panels is common to the industry and does not affect the integrity of the panel. Therefore, oil canning is not a reason for rejection.

It can be used for roofing, mansards, or fascias. The panels must be applied over a solid substrate on roof pitches of 3:12 or greater. With proper handling and installation, Horizon-Loc™ will provide years of outstanding performance and beauty.



SPECIFICATIONS

Colors and Finishes:

Horizon-Loc™ is available in 26 gauge prepainted or or bare Galvalume steel. Our CentralGuard™ siliconized polyester paint system carries a 40-year limited warranty for your protection, and a 20-year limited substrate warranty on all panels. See concealed fastener color chart for available colors.

Widths:

The Horizon-Loc™ panel provides 16" coverage. The 1/16" striations provide strength and reduce the incidence of oil canning in the panel.

Lengths:

The Horizon-Loc™ panel is custom cut to the half-inch, in lengths from 3' to 40'. Longer lengths require additional handling, packaging, and shipping considerations. An extra handling charge may apply to panels over 40'. Horizon-Loc™ panels cannot be end-lapped. You must order full length panels to avoid end laps.

Rib Height:

Horizon-Loc™ has a 1" high rib, making it an excellent choice for residential and light commercial applications.

DELIVERY AND PACKAGING

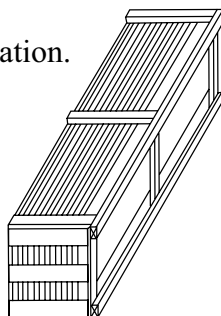
Lead Time:

Contact your salesperson for lead times. Orders will be shipped LTL, and a charge will be applied to all job site deliveries (call distributor for current job site delivery pricing).

Packaging:

Horizon-Loc™ panels are packed in wooden crates to protect them during shipping. An example of the packaging is illustrated below. A crating charge will be applied to all orders.

Horizon-Loc™ packaging illustration.



CALCULATIONS FOR DETERMINING PANEL LENGTH

One of the trickiest parts of installing a steel roof is ordering the materials correctly. Central States precuts each piece according to your order, to the nearest 1/2" (from 3' to 40'), so you must first figure out exactly how many pieces you'll need and how long each piece must be.

To figure the length of each section, measure from the top edge of the sheathing (where the roofing will end) to the bottom edge and then add an inch so that the roofing extends over the gutter. If the roof will include a ridge vent, the plywood decking and panels should be held 2" back from the ridge.

Trim and flashing are available to match the color of the roofing. Each type of trim and flashing must be anticipated and included in the order. Trim pieces come in 10'2" lengths. Adding the total footage and dividing by 10'2" might force you to use short pieces to finish a run, so it's better to order the number of 10'2" pieces needed to complete each separate run.

The roofing order should also include painted self-tapping screws with gaskets. Painted screws are used for the trim and wherever a screw has to be left exposed to the weather. The screws that secure the roofing panels are hidden, so 1" low profile pancake head screws are used.

Peak, Ridge, Endwall, Hip:

Panels should be started 1" down from edge or peak (length of run minus 1"). If ridge or peak is ventilated, start sheet down 2" from edge or peak. This could vary depending on the type of ventilation being used. Consult the ventilation manufacturer for recommendations.

INSULATION AND VENTILATION

Proper design and installation of ventilation systems are important to prevent condensation and the resulting problems of moisture damage and loss of insulation efficiency.

Condensation occurs when moisture-laden air comes in contact with a surface temperature equal to or below the dew point of the air. This phenomenon creates problems that are not unique with metal buildings; they are common to all types of construction.

In addition to providing resistance to heat transfer, insulation can also protect against condensation forming on cold surfaces, either inside the building or within the wall/roof system cavity. The arrangement of the building's insulation system and vapor retarder is the responsibility of the building designer. These are some basic guidelines to help control condensation in a metal building:

- The insulation should have a vapor retarder face on the "warm" side of the insulation. For most buildings, this means that the vapor retarder is on the inside surface (toward the building's interior).

- The thickness of the insulation must be designed to maintain the temperature of the vapor retarder above the interior dew point, using the worst-case expected outside temperature.
- All perimeter conditions, seams, and penetrations of the vapor retarder must be adequately sealed in order to provide a continuous membrane to resist the passage of water vapor.
- Building ventilation, whether by gravity ridge vent, power-operated fans, or other means, contributes significantly to reduced condensation. The movement of air to the outside of the building reduces the interior level of vapor pressure.

On buildings that have an attic space or are being retrofitted with a metal roofing system, proper ventilation needs to be used in order to prevent a buildup of moisture (humidity) in the attic space.

TIP Contact your local building code officials or an engineer on proper ventilation practices for your area.

SUBSTRATE PREPARATION

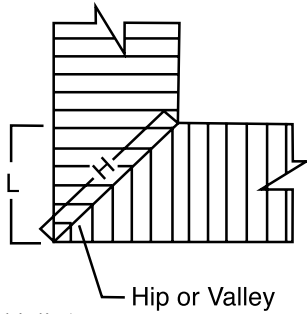
TIP In warm weather and tropical climates red rosin paper should be applied over the felt paper to prevent the felt paper from sticking to the panels and tearing the vapor retarder. The red rosin paper will allow for better thermal expansion.

In cold weather climates, it is recommended that you use an Ice and Weather Shield at the valley and eave. This needs to be applied over the substrate before the felt paper is installed.

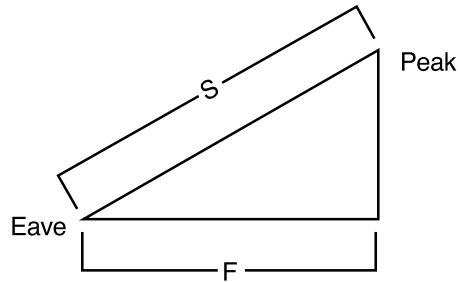
Use this chart when quoting Horizon-Loc™ panels and trims.

ROOF SLOPE FACTOR CHART					
SLOPE	SLOPE FACTOR	HIP/VALLEY MULTIPLIER	SLOPE	SLOPE FACTOR	HIP/VALLEY MULTIPLIER
3:12	1.0308	1.4362	9:12	1.2500	1.6008
4:12	1.0541	1.4530	10:12	1.3017	1.6415
5:12	1.0833	1.4743	11:12	1.3566	1.6853
6:12	1.1180	1.5000	12:12	1.4142	1.7320

NOTE: This chart to be used as a quoting guide only. Central States Manufacturing recommends field measuring all lengths before placing order.



$$(L) \times (\text{Hip Valley Multiplier}) = H$$



$$(F) \times (\text{Slope Factor}) = S$$

STORAGE AND HANDLING

STORAGE

Bare Galvalume and painted panels can be expected to give many years of rust-free service when precautions are taken during storage.

If metal is not to be used immediately, store inside a well-ventilated, dry location. Any outdoor storage is at the customer's own risk. At time of delivery, inspect panels for moisture. If moisture has formed, the panels should be unbundled, wiped dry, and allowed to dry completely. Failure to remove the entrapped moisture between the stacked sheets immediately will affect the service life of the metal. Extended storage of panels in a bundle is not recommended. Under no circumstances should the sheets be stored near or come in contact with salt water, corrosive chemicals, ash, or fumes generated or released inside the building or nearby plants, foundries, plating works, kilns, fertilizer, and wet or green lumber.

If panel bundles are stored outside, the following list of requirements should be adhered to:

- The storage area should be reasonably level, and should be located so as to minimize handling of bundles during the construction process.

- Store bundles at least 12" above ground level to allow air circulation beneath the bundle, and to prevent rising water from entering the bundle.
- When stored on bare ground, place a plastic ground cover under the bundles to minimize condensation on the panels from moisture in the soil.
- Elevate one end of the bundle slightly to permit runoff of moisture from the top of the bundle or from between nested panels. A waterproof cover should be placed over the bundles, with allowance for air circulation under the cover.
- Inspect stored bundles daily and repair any tears or punctures to your waterproof cover with a compatible waterproof tape.
- Re-cover opened bundles at the end of each day to prevent entry of moisture.

Never cover the metal with plastic, as this will cause condensation to form.

STORAGE ON ROOF

To facilitate the handling of Horizon-Loc™ panel bundles can be lifted and placed on the roof. Bundles need to be placed parallel to the framing members and the slope of the roof. Load capabilities of the structure must be checked prior to placing bundles on the roof.

When lifting packaged sheets, make certain they are adequately supported. Panels less than 20' in length can normally be lifted with a forklift; however, when lifting panels in excess of 20', it is recommended that a spreader bar and slings be used. When lifting, no more than 1/3 of the length of the panel should be left unsupported.

Make a plan for bundle placement by determining how much area a bundle of panels will cover. Bundles should be placed on the roof in accordance with the direction the panel will be installed. Consider where the string line is to run at the eave to set the roof panels by. Roof bundles should not interfere with this string line.

RECEIVING MATERIALS

It is the responsibility of the purchasing party to unload material from the delivery truck. The purchaser shall be responsible for providing suitable equipment for unloading of material from the delivery truck.

After receiving material, check the condition of the material, and review the shipment against the shipping list to ensure all materials are accounted for. If damages or shortages are discovered, it should be noted on the shipping copy at time of delivery. If material is delivered by common carrier, a claim must be made with the carrier as soon as possible.

If replacement material is required, you must contact Central States Manufacturing immediately to place the order.

NOTE: Oil canning in the flat area of the panels is common to the industry and does not affect the integrity of the panel. Therefore, oil canning is not a reason for rejection.



Improper loading and unloading of bundles and crates may result in bodily harm and/or material damage. Central States is not responsible for bodily injuries and/or material damages resulting from improper loading and unloading.

GENERAL HANDLING

Each bundle should be handled carefully to avoid being damaged. Care should be taken to prevent bending of the panel or abrasion to finish. Whenever possible, the bundle should remain crated until it is located in its place of storage. If bundles must be opened, we recommend you re-crate them before lifting. To avoid damage, please lift the bundle at its center of gravity.

Proper care is required in unloading and handling panel bundles in order to prevent panel damage.

- Bundles should remain crated during any handling, and until the individual panels in each crate are ready to be installed.
- Lift each bundle as close as possible to its center of gravity.
- If the panel bundles are to be lifted with a crane, use a spreader bar of appropriate length and nylon band slings. (Do not use wire rope slings, as they will damage the panels.)

- Depending on panel length, some bundles may be lifted by a forklift. When using a forklift, the forks should be spread apart to their maximum spacing, and the load must be centered on the forks.
- After panel bundles are opened, individual panels must also be handled carefully to prevent panel buckling or damage to the panel coating. When removing a panel from a bundle, it should never be allowed to slide over another panel.
- The individual panels should be “rolled” off the top of the bundle to prevent scratching the next panel. A panel should never be picked up by its ends. Instead, lift the panel along its longitudinal edge and carry in a vertical (not flat) position three feet in from both edges, to prevent buckling. For panels over 10’ long, two or more people should lift the panel along the same edge.
- Soft gloves must be worn when handling panels.

MECHANICAL HANDLING

Forklift:

A forklift may be used for bundles up to 20' long. Please make sure the forks are at their maximum separation. Do not transport open bundles. When transporting bundles across rough terrain, or over a long distance, some means of supporting the panel load must be used.

Crane:

A crane should be used when lifting bundles with lengths greater than 20'. Please be sure to utilize a spreader bar to ensure the even distribution of the weight to the pick up points. As a rule when lifting panels, no more than 1/3 of the length of the panel should be left unsupported. Canvas or nylon slings should be used to pick up panels. DO NOT use cable or chains because this will damage the panels.

FOOT TRAFFIC

Care of metal panels and flashings must be exercised throughout erection. Foot traffic can cause distortion of panel and damage to finish. Traffic over the installed system must be kept to an absolute minimum. If continuous foot traffic is necessary for maintenance over certain areas of the roof, then a permanent walkway should be installed. If continuous foot traffic is necessary during installation, provide walking platforms to avoid any panel damage, or leave panels off where there is easiest access to roof until projects is almost complete. Then install panels in this area.

When walking on the roof panels is unavoidable, walk only in the flats of the panel. Walking on the ribs can cause damage to the panels



All applicable safety regulations, including OSHA regulations, should be complied with during the panel installation process.

PANEL INSTALLATION

ROOF PREPARATION

Reminders:

- Horizon-Loc™ is designed to be installed over solid decking. We recommend a minimum 1/2" plywood sheathing
- Make sure any existing decking is smooth, level and in good condition. Replace any decking not meeting those requirements.
- If there is an existing asphalt shingle roof, check local building codes to determine whether existing roof must be removed.
- Make sure the roof is clear of any debris that might interfere with installation.
- Use minimum 30 lb. felt underlayment.
- Use an alignment or “chalk” line where the first panel is installed. Central States recommends that this line be vertical and 1/4" from the rake edge of the roof deck and square with the eave. Other methods of confirming the squareness can also be used.

FIELD CUTTING

There are a number of ways to cut sheet metal quickly and accurately. Tin snips or a “nibbler” type electric tool are recommended for field cutting Horizon-Loc™ panels. Cutting over a trash barrel will help catch the tiny metal shavings that the machine produces.

Although CSMI discourages it, if a power saw is used, the blade will generate slivers of metal chips. These slivers and metal chips must be immediately

removed from the Horizon-Loc™ panels because they will damage the finish and shorten the life of the product. One method of preventing this problem is to flip the panels over when cutting. This allows the slivers and metal chips to be brushed from the back side and avoids damaging the paint on the top side of the panels. Make sure that stacks of panels are away from the cutting area so shavings do not blow onto other panels.



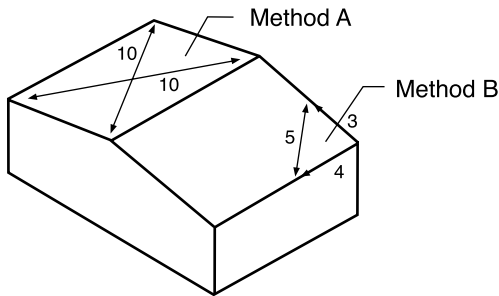
All product surfaces should be free of debris at all times. Installed surfaces should be wiped clean at the end of each work period. Never cut panels over metal surfaces. Metal shavings will rust on the surface, voiding the warranty. When cutting metal panels, goggles must be worn for eye protection.

CONDITION OF SUBSTRUCTURE

Panel distortion may occur if not applied over properly aligned and uniform substructure.

The installer should check the roof deck for squareness before installing Horizon-Loc™ panels. Several methods can be used to verify squareness of the structure for proper installation of the panels.

Method A – One method for checking the roof for squareness is to measure diagonally across one slope of the roof from similar points at the ridge and eave and obtain the same dimension.



Method B – The 3-4-5 triangle system may also be used. To use this system, measure a point from the corner along the edge of the roof at a module of three (3). Measure a point from the same corner along another edge at a module of four (4). Then, by measuring diagonally between the two points established, the dimension should be exactly a module of five (5) to have a square corner. Multiple uses of this system may be required to determine building squareness. If the endwall cannot be made square the roof system cannot be installed as shown in these instructions.

GENERAL INSTALLATION

Familiarize yourself with all installation instructions before starting work. Before beginning installation, you should examine the substrate or framing to ensure that all supporting members are straight, level, and plumb to avoid any panel distortion. Substructures should be designed to meet all necessary code requirements.

Some field cutting and fitting of panels and trims is to be expected by the installer and minor field corrections are a part of normal installation work.

It is the responsibility of the installer to ensure a suitable substrate prior to the application of Horizon-Loc™. Distortion in the panel caused by an uneven substrate, ripples, or laps in the vapor barrier, debris, protruding nails and staples, etc., are not defects in the materials and are not the responsibility of Central States Manufacturing.

All trims, closures, and accessories shown on the installation drawings are available from Central States Manufacturing unless noted otherwise.

Oil canning in the flat area of the panels is common to the industry and does not affect the integrity of the panel. Therefore, oil canning is not a reason for rejection.

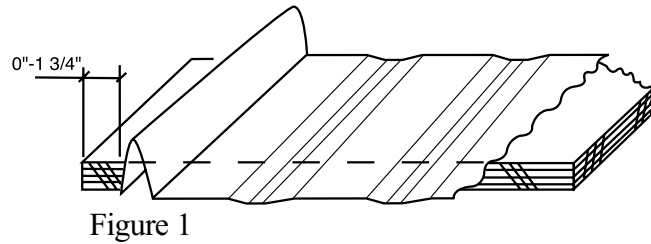
The panels should be installed plumb, straight, and square to the eave. To keep the bottom edge of the roof perfectly straight and even, the panels must be installed square to the bottom edge. Begin by checking the roof for square; if it is square, you may pull the layout marks directly from the edge of the rake.

If the roof isn't perfectly square, install the first panel parallel to your square line, making sure that the first rib does not hang over the gable edge of the roof sheathing. (Any overhang can prevent the gable trim from fitting tight against the rake.)

NOTE: Copper metallic panels must be installed in the same direction! See directional arrows or stickers provided with your metal panel order.

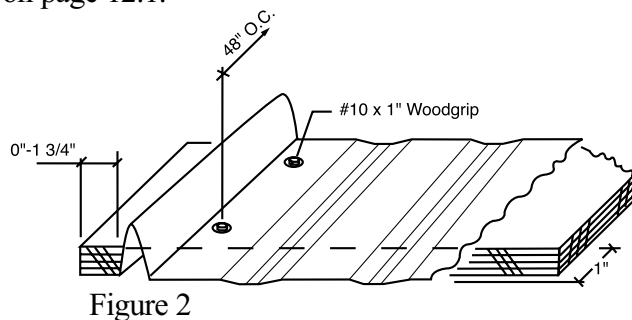
GENERAL INSTALLATION (cont.)

1. Align the female edge of the first panel with the chalk line that was snapped at the rake edge. This line can be 0" – 1 3/4" from the rake. Panel should overhang eave 1". See Figure 1.

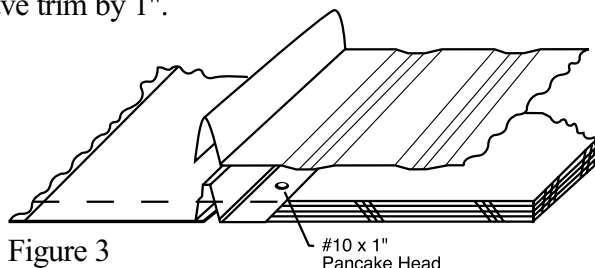


2. Panels should be installed perpendicular to ridge for ridge trim attachment.

3. Check panel alignment. If panel is properly aligned, attach rake edge to roof with a 1" painted neoprene woodgrip spaced at 48" on center. See Figure 2. Then fasten the panel along the male edge fastening flange with 1" low profile pancake head. Special care has to be taken not to overdrive the screws in the male edge fastening flange. The screw flange is slotted to allow for slight panel movement during normal expansion and contraction. To avoid panel distortion and to allow for maximum expansion and contraction of the panel, the screws should be snugged against the flange, but not so snug that the flange deflects under the screw head. To allow for movement of the panel towards the eave or ridge, place the fastener in the middle of the 5/8" slot. See fastener spacing section on page 12.1.



4. Align the second panel female edge with the starter panel male edge. See Figure 3. Panels must be flush to one another. Remember, panels should extend over eave trim by 1".

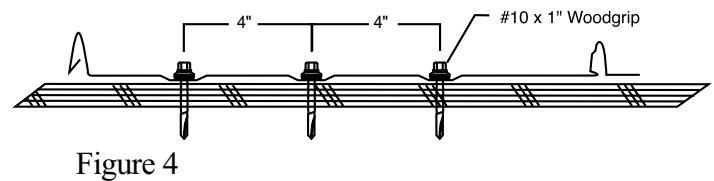


5. Lightly compress and snap panels together at seam. Snap panels from eave to ridge. Screw the second panel in place using 1" low profile pancake head screw in the male edge fastening flange.

6. Continue to apply panels as in steps 4 and 5.

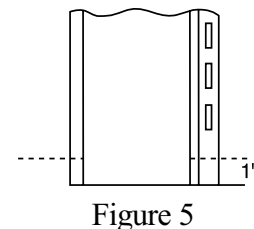
7. Panels at the eave can be terminated in two ways. Each will depend on aesthetic consideration determined by the installer or building owner.

A. Panels can be fastened along the eave with a #10 x 1" painted neoprene woodgrip fastener. Fasten along a line parallel to the eave edge and 3" up from the eave edge. The fasteners can be spaced 4" apart in the minor rib striations as shown in Figure 4.

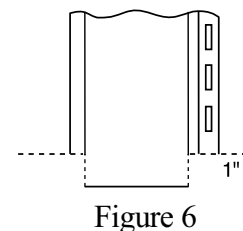


TIP When using the drip edge condition to terminate the eave, panels must be ordered 2 3/4" longer than your eave length to account for the drip edge lip and the panel's hem.

B. Panels can also be terminated with a hemming tool to provide a smoother appearance. Cut through male and female legs/ribs 1" up from panel end as shown in Figure 5.



Then cut on inside of major ribs with metal shears as shown in Figure 6.



GENERAL INSTALLATION (cont.)

Place hemming tool over panel tab. Bend down and under to 180° as shown in Figures 7 and 8.

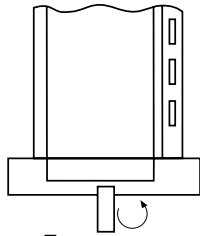


Figure 7

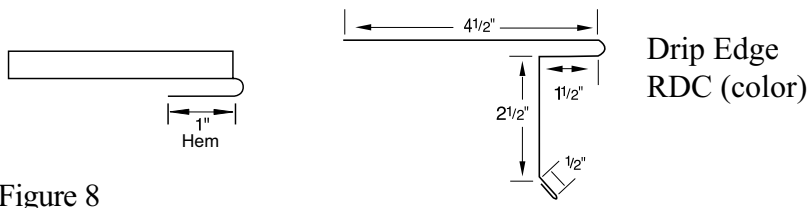


Figure 8

The panel is then ready to be installed over the Drip Edge trim, using the lip on the Drip Edge trim to secure the panel in place at the eave.

*NOTE: When using the drip edge condition, the panel length must be ordered 2 3/4" longer than your eave to account for the drip edge lip and the panel hem.

REMINDER: Copper metallic panels must be installed in the same direction! See directional arrows or stickers provided with your metal panel order.

FASTENER SPACING

Maximum fastener spacing* for 16" wide 26 gauge panels with wind loads up to 80 mph:

Deck Thickness	Spacing
1/2"	18" o.c.
5/8"	21" o.c.
3/4"	24" o.c.

*Slot on leg may not coincide with above chart.

At the other end of the roof, again make sure that the last panel does not stick out past the edge of the barge rafter. If you don't end with a rib along the edge, measure the remaining distance, add an inch and cut the panel to that width. The extra inch of material is bent up with a hand seamer to form a rib.

TRIMS

Screwing down the roof panels always goes quickly. Installing the trim is the more time-consuming part.

On runs of more than 10' 2" that require more than one length of trim, overlap the pieces by 6" or so. The material is thin enough that the overlaps are not noticeable. Trim is attached with gasketed screws; take care to drive the screws enough to flatten the neoprene washer but not enough to deflect the roofing or the trim.

The tricky part is finishing the ends of each trim run. It may take a bit more time, but cutting and folding the ends of the trim will give the roof a more finished look.

TIP When hooking the hem, measure over on hem 3" from end of trim piece. Cut hem 1/8" up from the bend to 3" mark. Cut off back of hem. On lap piece, open up hem with screwdriver. Insert piece. Slide together.

Eave Trim (details page 13.1)

Eave trim must be installed prior to panel installation. Also, panel should overhang the eave 1" minimum. Attach eave trim to roof decking with 1" pancake head fastener. Caulk and lap the trim a minimum of 3", hooking the hem. Install panel and fasten at eave with painted 1" Woodgrip™ fastener.

See Eave Trim Figure 9.

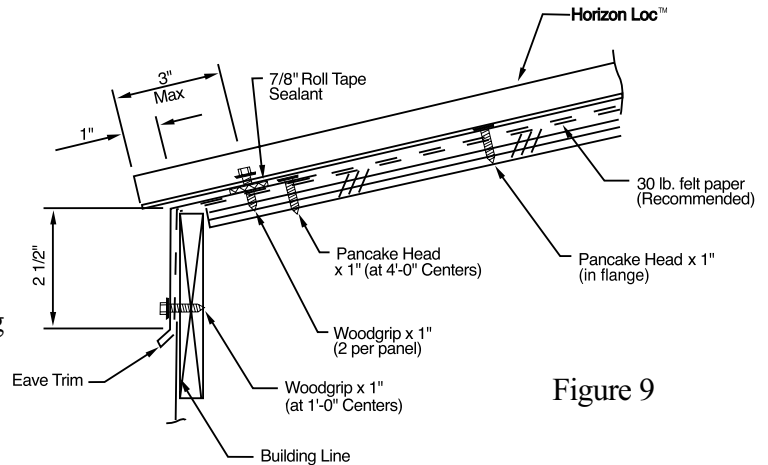
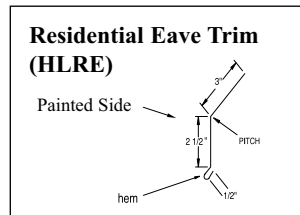
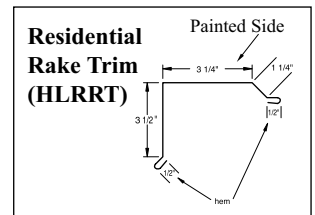


Figure 9

*NOTE: Eave trim will not be used if drip edge condition as described on previous page is used.

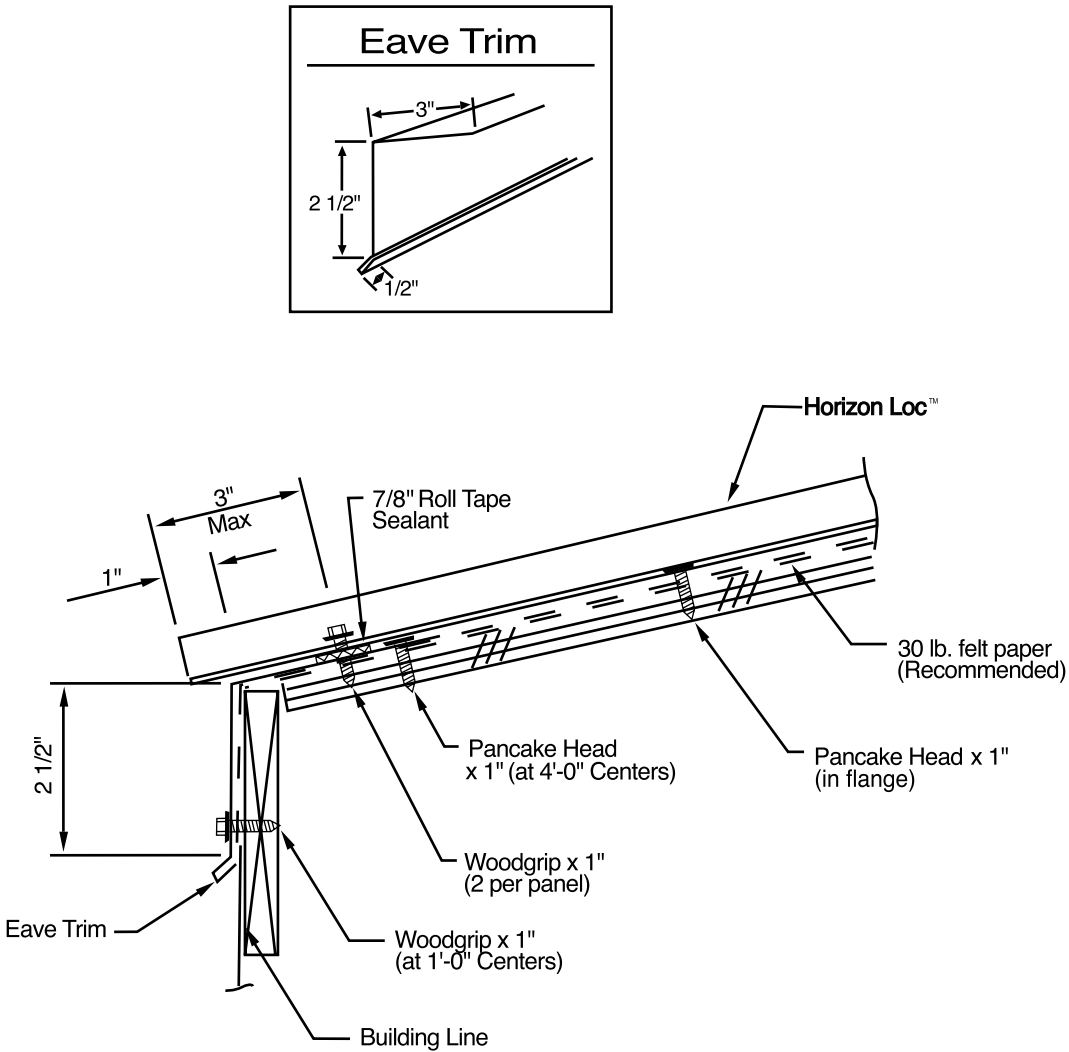
Rake Trim (details page 14.1)

Rake trim should be installed from the bottom of the roof, working up to the peak with each upper piece overlapping the one below. Place butyl tape along the rake trim's flange. Install rake trim over rib. Fasten using 1" painted woodgrips at 12" o.c. Caulk and lap the rake trim at least 3" hooking the hem. Miter cut the rake trim at the peak to join each side at the ridge. Cut and fold the rake at the eave to seal the end. Use painted blind rivets to fasten.



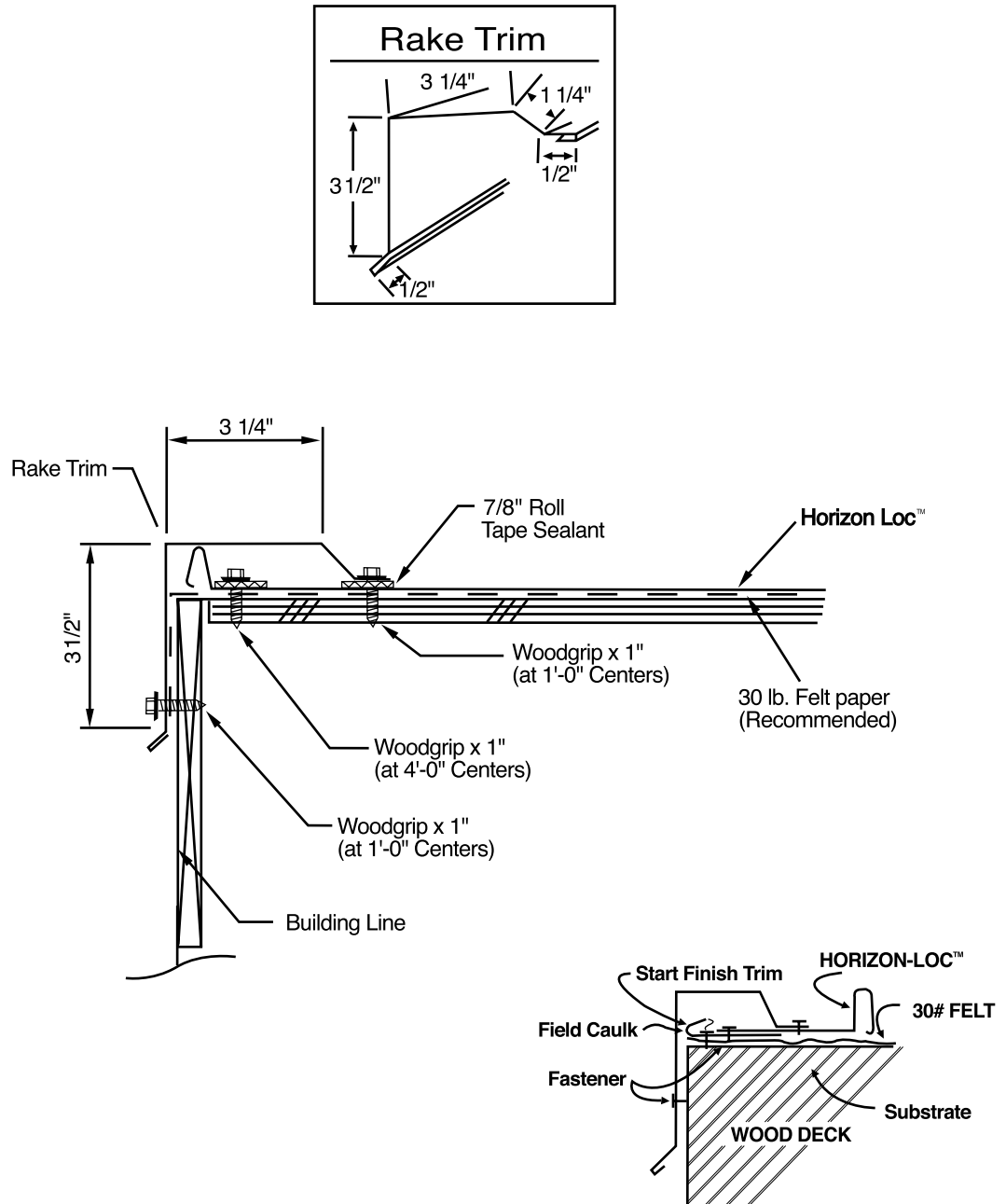
Eave Trim Details – Exposed Fastened

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



Attach eave trim as shown with #10 x 1" low profile pancake fastener. Open the hem of the next trim for approximately 4". Caulk and lap the trim a minimum of 3" hooking the hem. Install panel and fasten at eave with #10 x 1" Woodgrip screw. Additional ice and water shields may be required if climate is extreme.

Rake Trim Details – Exposed Fastened



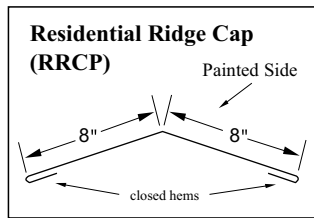
Begin by aligning Horizon-Loc™ panel flush to the gable end of the building and attaching the flange side of the panel with pancake head screws. Assemble the Rake Trim with #10 x 1" washered screws as shown with screws 18" to 24" apart.

Pancake head screws should be placed 12" to 18" on center along the flange at flush depth.

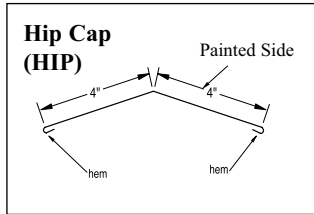
BE SURE FASTENER HEADS ARE FLUSH WITH THE PANEL FLANGE. DO NOT OVERDRIVE SCREW AS IT WILL INCREASE OIL CANNING IN THE PANEL. DO NOT UNDERDRIVE SCREWS OR THEY WILL LEAVE BUMPS ON THE SNAP LOCK EDGE.

Ridge and Hip Caps (details page 15.1)

TIP Rake trim must be installed prior to installing the ridge. Panels must be field cut at hip.

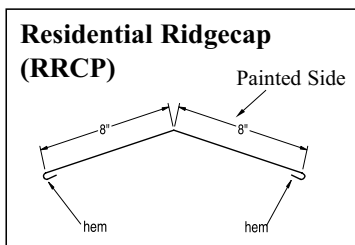
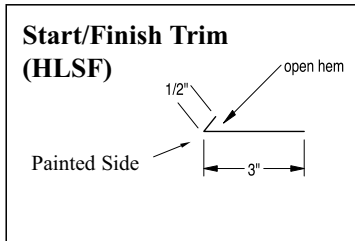
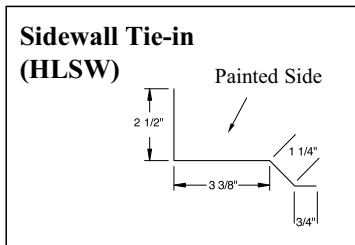
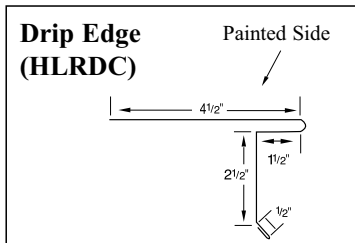


Attach zee closure parallel to closure ridge. Fasten hip/ridge trim to the zee using 7/8" lap screws. Caulk, lap and fasten the subsequent trims.



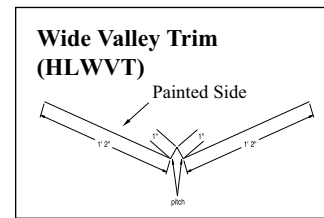
Place a short section of ridge cap on one end of the peak so it lies evenly side to side. Mark the outside edges, then repeat the process at the other end. Snap chalklines between the marks, and set the ridge cap on these lines as it's installed.

Other Available Trims



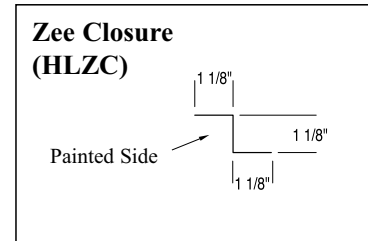
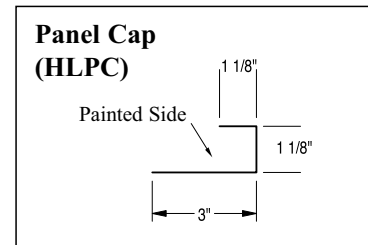
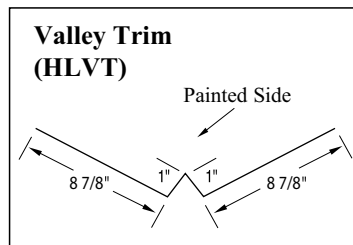
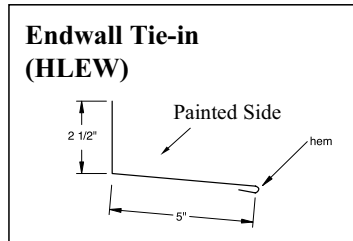
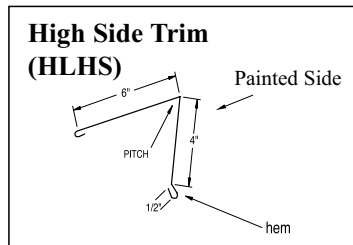
Valley Trim (details page 16.1)

TIP Valley trim must be installed prior to panel installation. Panels must be field cut.



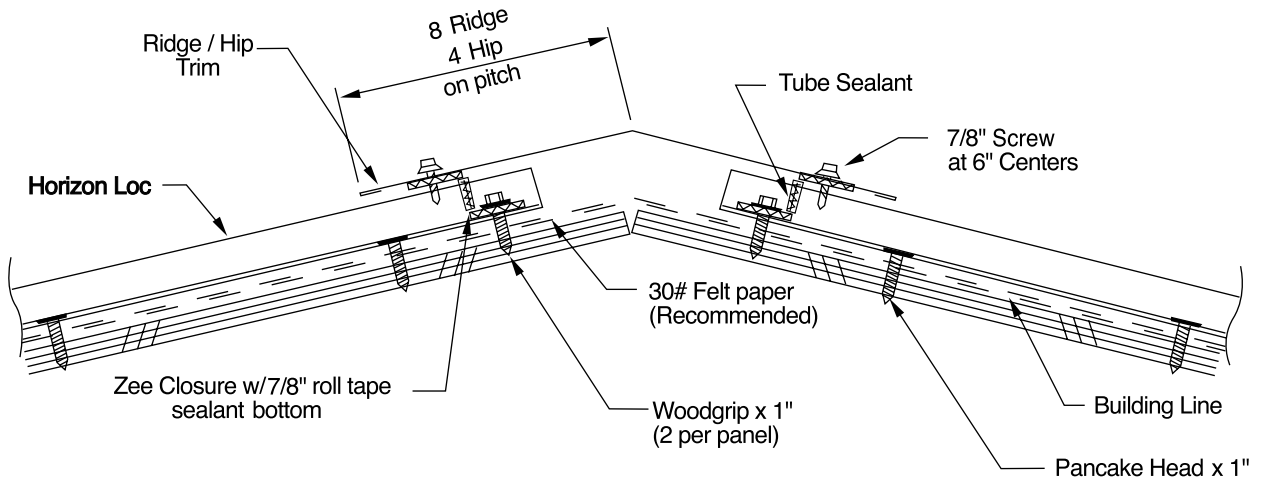
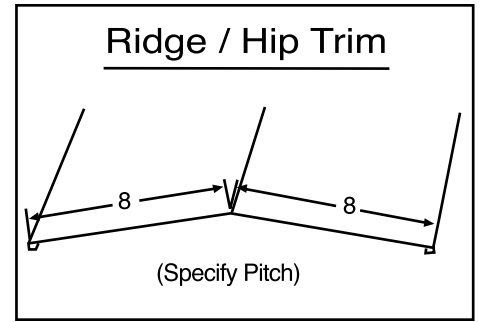
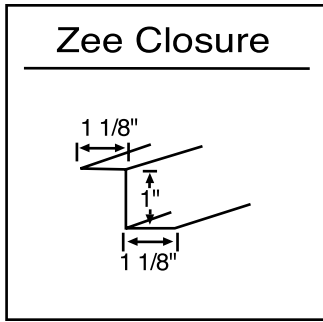
Place another layer of 36" roof felt on valley centerline with 18" of paper on each side of center. Begin placing valley trim at eave with a 1" overhang. Caulk and lap the sequential valley trims a minimum of 6". Parallel to the valley, place butyl tape sealant 6" from valley center. Field cut the panels allowing for overlap with valley trim and hem. Make cuts through male/female rib (depending on side) at the angle required for the specific roof slope. After panels are field cut and attached, fasten along bottom end using four 1" Woodgrips per panel. Make sure fasteners are evenly spaced and penetrate the row of butyl tape. Seal panel end with tube caulking.

After the trim has been installed, the final step is to drive two evenly-spaced gasketed screws along the bottom edge of each panel.



Ridge & Hip Trim Details – Exposed Fastened

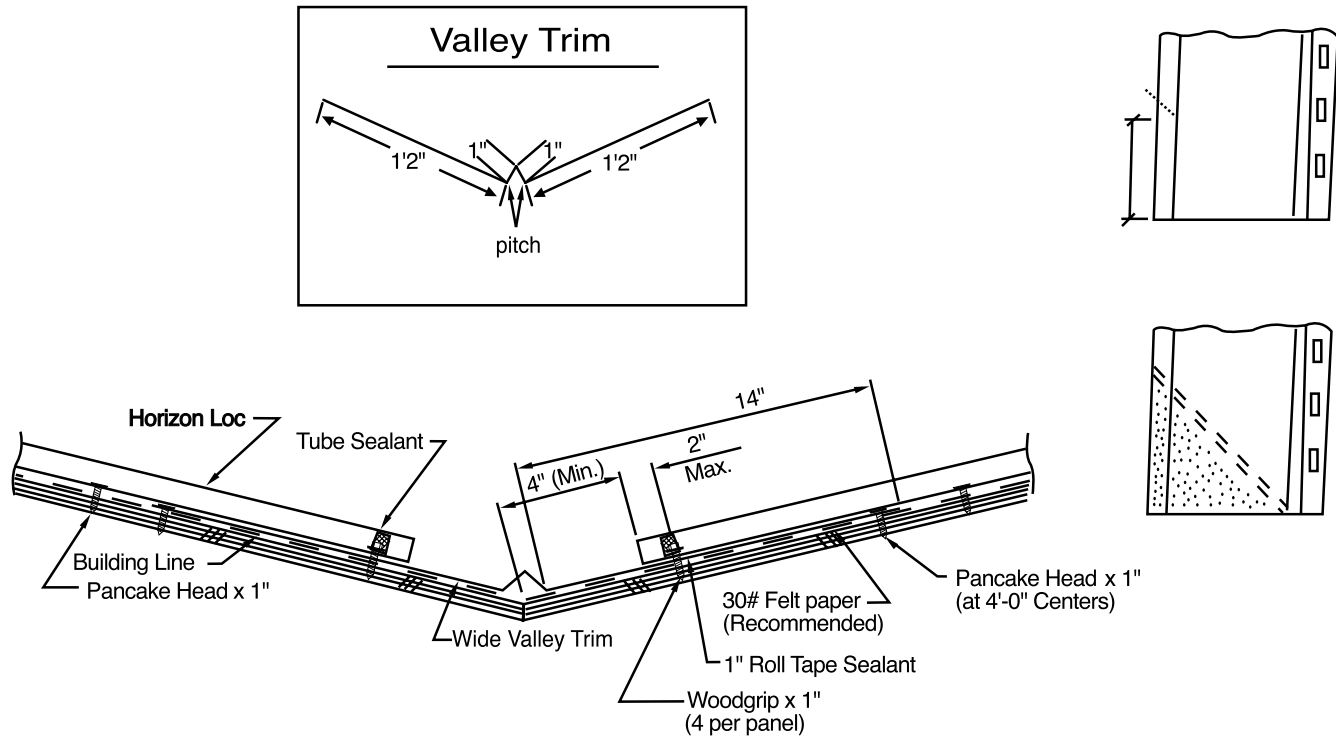
Rake trim must be installed prior to installing the ridge. Panels must be field cut at hip.



Panels should end parallel to the ridge. Attach zee closure parallel to closure ridge. Fasten hip/ridge trim to the zee using #14 x 7/8" Lap/screw. Caulk, lap (minimum of 6" hooking the hem) and fasten the subsequent trims.

Valley Trim Details – Exposed Fastened

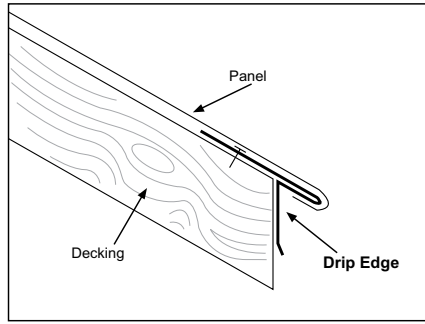
Valley trim must be installed prior to panel installation. Panels must be field cut.



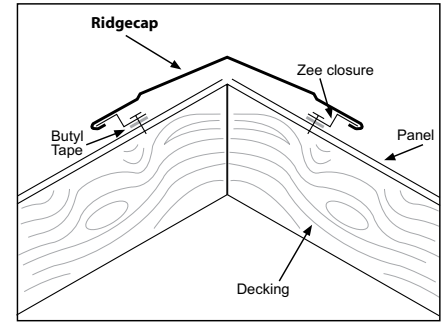
Place another layer of 36" roof felt on valley centerline with 18" of paper on each side of center. Begin placing valley trim at eave with a 1" overhang. Caulk and lap the sequential valley trims a minimum of 6". Parallel to the valley, place tape sealant 6" from valley center as shown. Field cut the panels allowing for overlap with valley trim. Make cuts through male/female rib (depending on side) at the angle required for the specific roof slope. Cut out shaded or marked area with sheet metal shears. After panels are field cut and attached, fasten along bottom end using four (4) #10 x 1" Woodgrips™ per panel. Make sure fasteners are evenly spaced and penetrate the row of tape sealant. Seal panel end with tube caulking. Additional ice and water shields may be required if climate is extreme.

CONCEALED FASTENER TRIMS

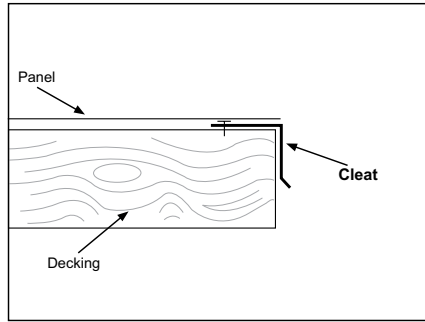
Drip Edge
(HLRDC102)



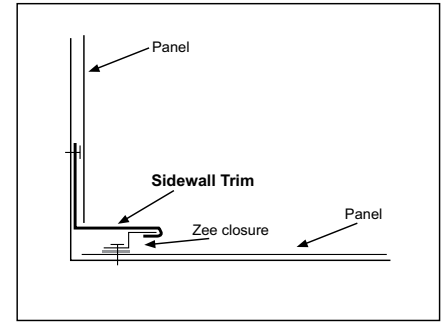
Ridge Cap
(CFRC102)



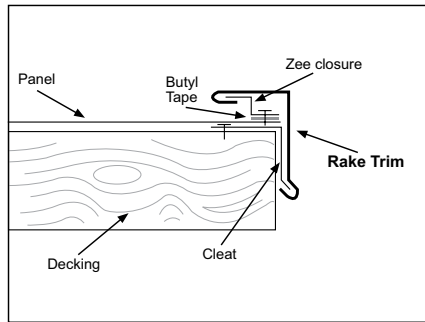
Cleat
(HLCL102)



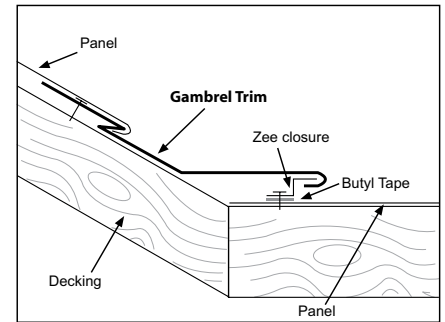
Sidewall
(CFSI102)



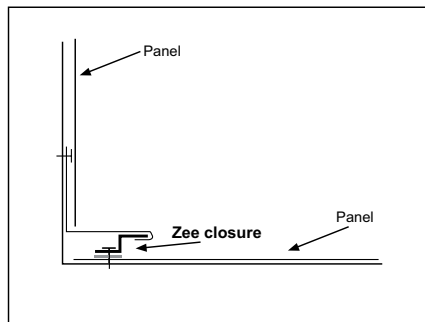
Rake
(CFRA102)



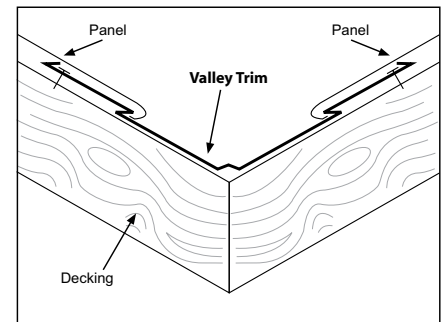
Gambrel
(CFGA102)



Zee Closure
(HLZC102)

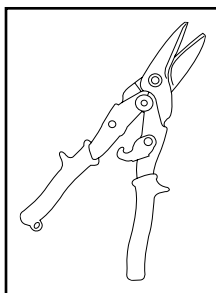


Valley
(CFVT102)

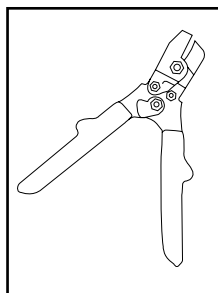


TOOLS

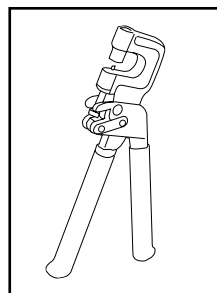
Hand Snips



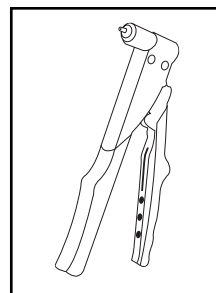
Notchers



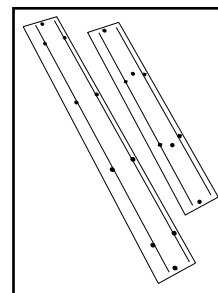
Rivet Hole Punch



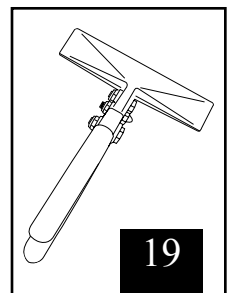
Hand Riveter



Folding Tools



6" Hand Seamer

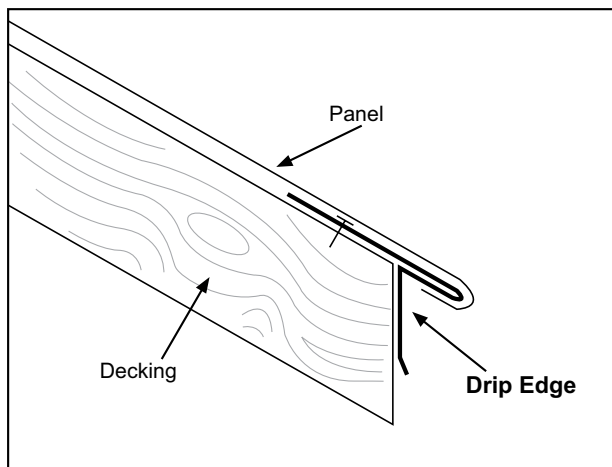
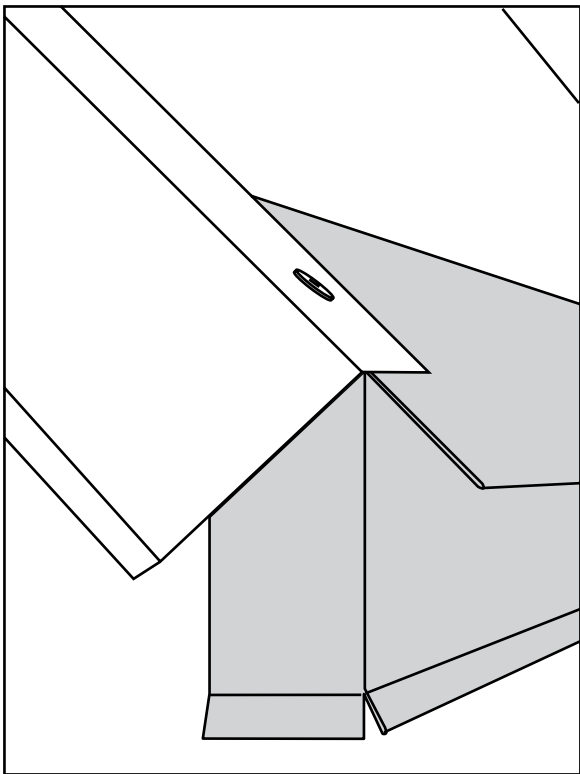


INSTALLATION OF TRIMS

DRIP EDGE

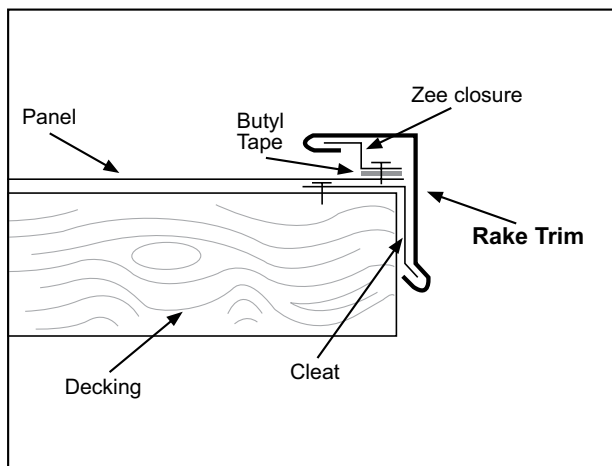
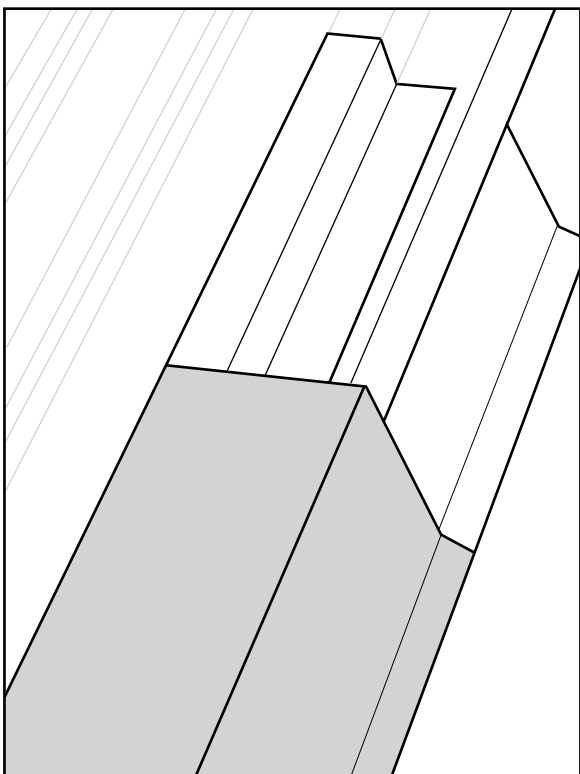
When ordering Horizon-Loc™ panels, be sure to add an extra 2" to the length for hemming over the drip edge. (One inch covers the drip edge and one inch is hemmed under).

1. Screw the drip edge to the decking.
2. Notch the Horizon-Loc™ panels at the rib (1 inch from the end of the panel).
3. Using the Horizon-Loc™ 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 2-4 for each Horizon-Loc panel along the drip edge.

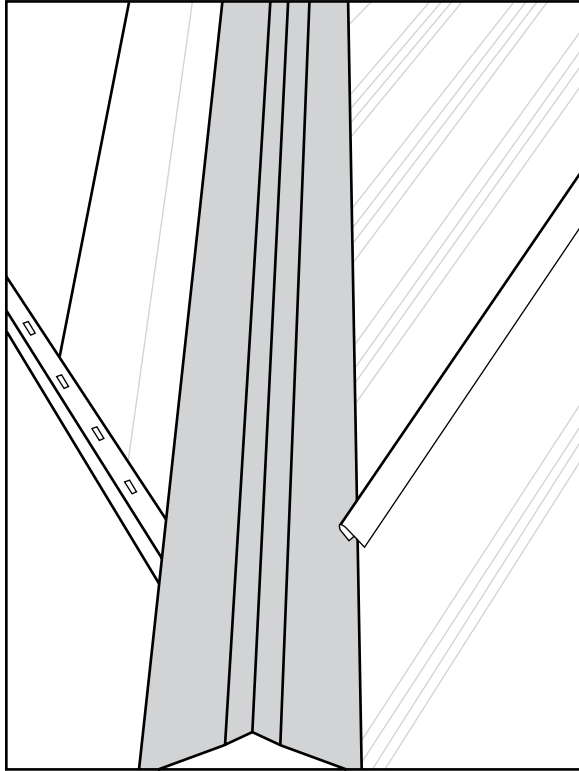


RAKE TRIM

1. Install the cleat along the rake of the roof and install Horizon-Loc panel on top of the cleat. The edge of the panel should meet with the edge of the rake.
 2. Install zee closure on top of the panel. Use butyl tape beneath to ensure proper sealing. Run the zee along the length of the rake and screw down to the panel.
 3. Install the rake trim to the cleat and zee closure by snapping the open hems of the rake trim over the cleat and zee. Pop rivet the rake to the zee along the joints and every 5 feet along the rake.
- Overlap trims a minimum of 3" with butyl tape between laps.*



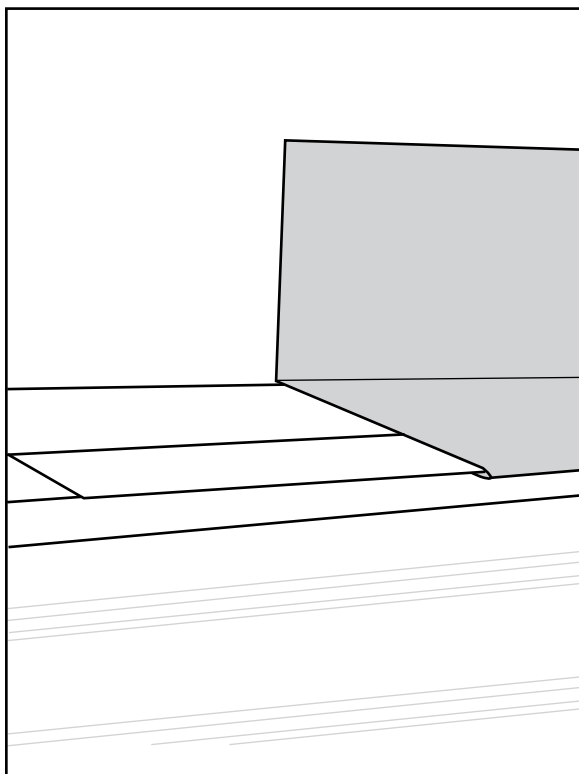
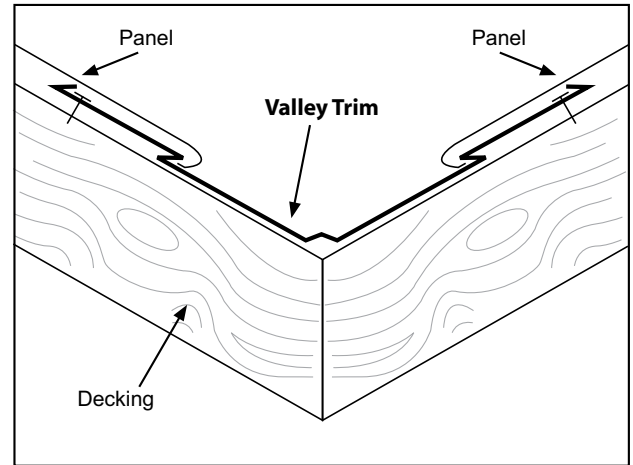
INSTALLATION OF TRIMS



VALLEY TRIM

1. Using the folding tool, hem the end of the valley 1 inch and slide over drip edge (if drip edge is being used).
2. Install valley to decking, placing screws as far up as possible on the 4-7/8" section of the valley.
3. Hem the panel at a 45° angle (or according to the valley pitch) where it meets the valley and slide under the open hem on the valley.
4. Repeat step 3 for each panel as it meets the valley.

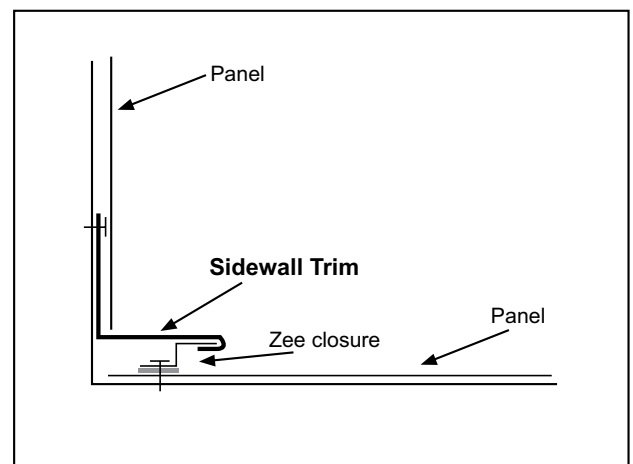
Overlap trims a minimum of 6" with butyl tape between laps.



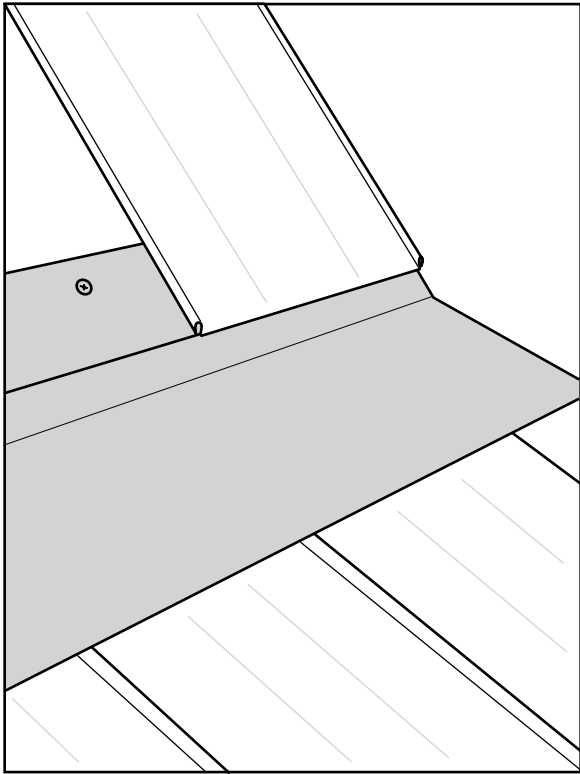
SIDEWALL & ENDWALL TRIM

1. Install Horizon-Loc™ panels up to the sidewall. Install zee closure on top of the panel along the sidewall using butyl tape to ensure proper sealing. For endwall, zee closures will need to be cut in 15-1/2" lengths and screwed to the panel.
2. Slide the open hem of the sidewall trim over the zee and screw into sidewall. Pop rivet the sidewall trim to the zee closure.
3. Repeat steps 1 and 2 for each panel along the sidewall.
4. Install Horizon-Loc panels over the sidewall.

Overlap trims a minimum of 3" with butyl tape between laps.

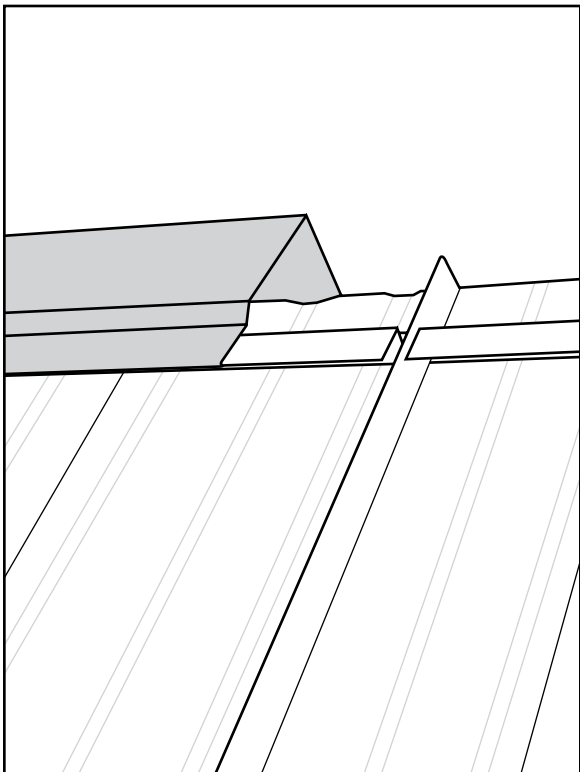
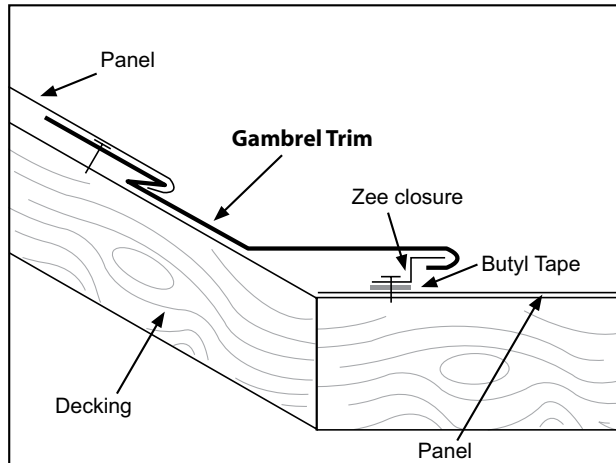


INSTALLATION OF TRIMS



GAMBREL TRIM

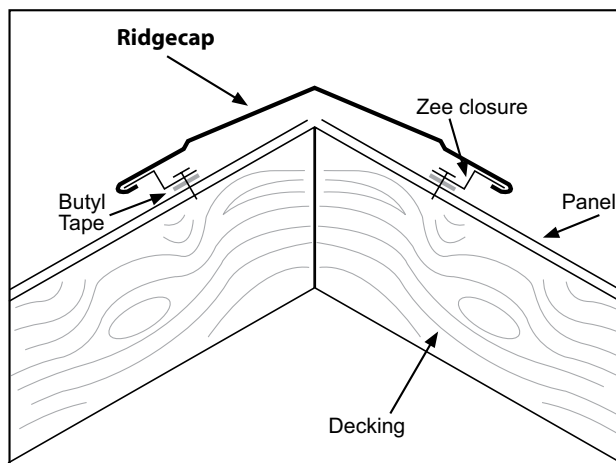
1. Install the bottom Horizon-Loc™ panels and attach zee closures. Zee closures will need to be cut in 15-1/2" lengths and screwed to the panel. Use butyl tape to ensure proper sealing.
 2. Slide the open hem of gambrel trim over zee, and screw gambrel to upper decking.
 3. Notch and hem panel 1" and slide over open hem on gambrel trim. Screw panel to decking.
 4. Repeat steps 1 through 3 for each panel along the transition.
- Overlap trims a minimum of 3" with butyl tape between laps.*



RIDGECAP

1. Install panels on both sides of roof up to the ridge, and install zee closures. Zee closures will need to be cut in 15-1/2" lengths and screwed to the panel. Use butyl tape to ensure proper sealing.
2. Snap ridgecap over zee closures and pop rivet to the zee every 5' and at joints.

When overlapping ridgecap, cut 6" off bottom hem of the underlapping ridgecap and slide upper ridgecap over. Pop rivet with sealant on each lap. Overlap trims a minimum of 6" with butyl tape or sealant between laps.



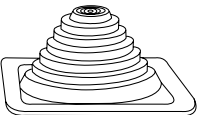
ACCESSORIES

Pipe Flashings

Anything that goes through a metal roof is a potential cause for a leak. 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 boot (EPDM) and a soft flat flexible flange.

Flashing is easier to apply if it falls between the major ribs, but is not necessary. First, caulking or 7/8 butyl tape is applied to the bottom of the flange. Then the flashing is pushed down over the pipe until the flange contacts the roof. Next, drive gasketed screws every inch or so around the perimeter of the flange.

Available Pipe Flashings:

MPF	Fits 1/2" to 4" pipes	
MPF2	Fits 1 1/4" to 3" pipes	
MPF4	Fits 3" to 6" pipes	
MPF6	Fits 5" to 9" pipes	
MPF7	Fits 6" to 11" pipes	
MPF8	Fits 7" to 13" pipes	
MPF1ZIP	Fits 1/2" to 4" pipes (zippered flash)	
MPF2ZIP	Fits 4 1/4" to 9" pipes (zippered flash)	

Maximum temperature
250 Degrees

4SMPF	Fits 3" to 6"
6SMPF	Fits 5" to 9"
8SMPF	Fits 7" to 13"
10SMPF	Fits 13" to 26"

Maximum temperature
500 degrees

Touch-Up Paint

All painted panels and trims have a factory applied baked-on finish. Handling and installing panels may result in some small scratches or nicks to the paint finish. Surface scratches which are not too obvious from a distance of six feet are generally best left untouched, since normal soiling and weathering will mask them.

Touch-up paint is available in matching colors for other small blemishes. Touch-up paint does not have the superior chalk and fade resistance of the factory applied paint finish and will normally discolor at an accelerated rate; therefore, touch-up painting of large areas is not recommended. Periodic touch-up may be required to maintain color match. There is no warranty on touch-up paint in regards to color match because the paint processes are different. Touch-up paint should be used sparingly and only to cover up those areas where paint has been removed. Areas to be touched-up should be wiped with mineral spirits to remove dirt, wax or other contaminants before colored touch-up is applied.

Other Available Accessories:

- Butyl Tape
- Closures (w/adhesive)
- Painted Metal-to-Wood Screws
(1", 1 1/2", 2", 2 1/2", 3")
- Low-Profile Metal-to-Wood Screws (1")
- Ridge Vent
- Tripolymer sealant

GUTTERING

Gutter products not available in Gold, Bare Metal, Hawaiian Blue or Polar White.

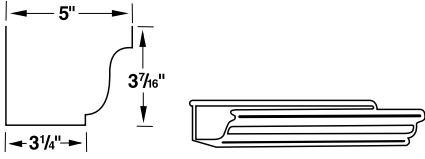
Part Number

Length

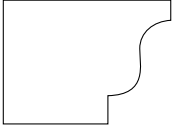
GUTTER

K5G206(color)

20'6"



GUTTER END CAP



K5GECR(color)

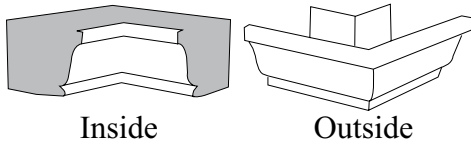
Right hand

K5GECL(color)

Left hand

Specify right or left hand

CORNER BOXES



K5GISQCR

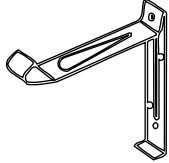
Inside

K5GOSQCR

Outside

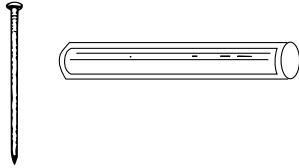
White only

CONCEALED FASCIA BRACKET



K5GCFZ

SPIKES & FERRULES



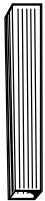
K5GS8

8" Spike

K5GF5

5" Ferrule

DOWNSPOUT



K5GDS10(color)

10'0"

Qty: 15 per box

DOWNSPOUT STRAP



K5GSCB(color)

Qty: 100 per box

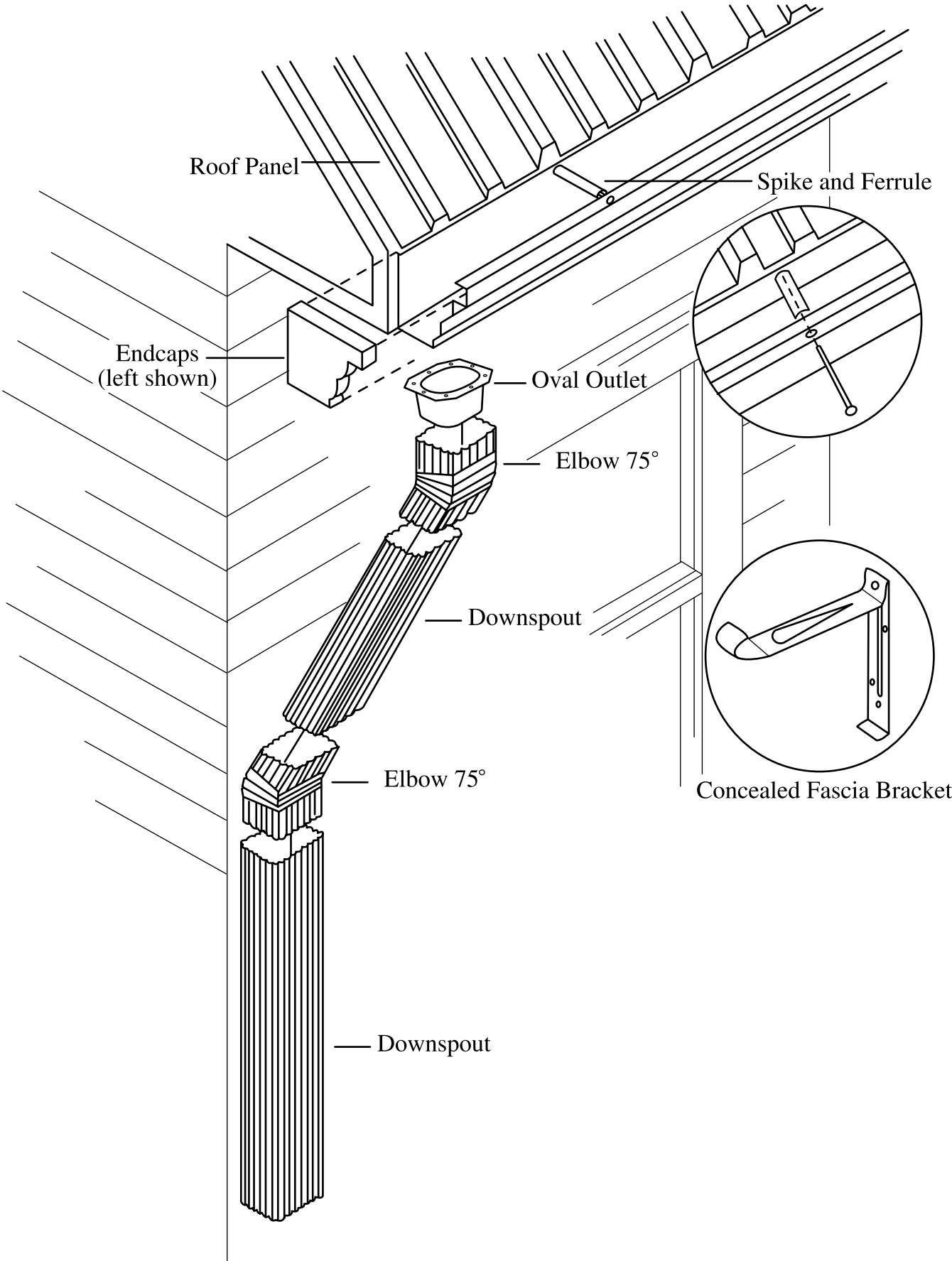
DOWNSPOUT ELBOW



K5GEA(color)

Qty: 20 per box

K5 GUTTER



ADVANTAGES

In addition to its fire resistance, steel roofing is long-lasting, lightweight, easy to install, and easy to maintain. Asphalt shingles degrade when exposed to sun, wind and carpenters' feet. The painted finish on a metal roof will not break down from exposure to wind, rain, sleet, or snow. And because metal roofing is one solid panel from eaves to peak and is screwed to the roof sheathing, it's not likely to blow off in a gale as asphalt shingles often do.

Tile roofing is resistant to fire as well as weather, but its rough surface can collect leaves and debris, especially in roof valleys. Removing debris from a tile roof is complicated by the fact that walking on the tiles can damage them. Walking on a steel roof installed over solid decking will not damage the steel. Also, the smooth painted surface of steel roofing discourages debris from accumulating. And when properly installed, it's just plain tough to beat the crisp, clean, colorful lines of a steel roof.

COST FACTORS

Asphalt-shingle roofs are the most common and up-front the most economical to install. Slate roofs are the most expensive shingle, although the cost varies according to the choice of slate. Cost usually runs about \$500 and up per square for slate roof materials, and labor can be double or triple the material cost. This labor does not include installing a structurally sound

roof deck to support the weight of slate. Tile roof costs may also vary according to the shape of the roof and choice of tile. Steel roofing costs fall somewhere between asphalt and tile. But when you consider the longevity of a steel roof over asphalt shingles or tile, steel becomes a very economical choice.

WARRANTY

Our 26 gauge Galvalume steel roofing carries a 20-year limited warranty on the substrate and a 40-year limited warranty on the Valspar WeatherX™ paint system.

For more details, copies of both warranties are included in this packet.

ECOLOGICAL BENEFITS OF METAL ROOFS

With today's heightened interest in and demand for ecologically-sound building materials, metal roofing rises to the top as the product of choice for all types of construction. The Metal Construction Association ardently supports that metal roofing should be included on all lists of environmentally-friendly or "green" roofing materials.

The ecological benefits of metal roofing include:

- **Sustainability** – Metal roofing's durability can virtually eliminate the need for future raw materials to be used to produce roofing. Other roofing materials are heavily affected by weather extremes. Metal roofing, however, is unaffected by the hot-cold/wet-dry weather cycle that breaks down other materials. In addition, it is known for its ability to hold up against other weather

extremes including windstorms, hail, ice, and snow. No other roofing material has greater ability to withstand a wider range of weather conditions than metal. There are many hand-made metal roofs still in existence that date back to the 1800s. Commercially-produced metal roofing systems have been available since about 1910; numerous profiles and types have been produced since then and there are examples of these roofs across the country. While some metal roofs are quite long lasting and durable with exposed metallic surfaces, modern technology has also brought quality paint systems that beautify metal roofing and are warranted for thirty years. If necessary many years in the future, metal roofs can be repainted for additional life. As America's homes and other structures age, it is imperative that we choose long-term building products; the sustainability of metal roofing fits that role very well.

ECOLOGICAL BENEFITS (cont.)

- **Recycled Content** – As consumers, many of us are careful to collect our recyclable materials and turn them in for collection. In reality, though, we are offered very few consumer products where we can “close the loop” by purchasing products that are high in recycled content. Metal roofing, however, offers that option to consumers by allowing them to choose a significant building product on the basis of its recycled content. Most metal roofs have recycled content ranging from 25% to 30%. This is in stark contrast to conventional roofing shingles that have much shorter lives and use oil-based products as their primary raw material.
- **Recyclability** – While metal roofing is known for its extremely long life, it does have the added benefit of being 100% recyclable if it is ever removed in the future, perhaps as part of a building renovation. Whereas other old roofing materials are disposed of by the ton in landfills across the country each year, the steel used in metal roofing can be recycled in their entirety, potentially even to become another metal roof.
- **Low weight** – In comparison to heavy tile and slate roofing, the weight of metal roofing is minimal. This low weight serves several valuable purposes. First, it puts less weight load on a structure. This helps extend the life of buildings and it also provides invaluable protection against roof cave-in threat in the event of seismic activity. However, with retrofit applications, many metal roofs can be installed over the old roofing material. This has a very positive benefit by preventing the need to remove the old roof and fill up valuable landfill space. Each year, about 20 billion pounds of old composition roofing shingles are dumped into U.S. landfills. Metal roofing is the way to avoid this. Additionally, metal’s low weight and high strength presents an ideal way to cover and encapsulate existing asbestos roofing shingles rather than pose a health risk by removing them and putting them in a landfill. State EPA offices support this practice of asbestos shingle encapsulation.
- **Product Safety** – Metal roofing and the finishes used on it are very inert, safe materials that do not pose a health risk. Of course, one roofing material that has turned out to be very dangerous is the asbestos shingle roofing. This material was used extensively many years ago and now, having realized the health hazards it poses, we’re spending many dollars each year to get rid of. This worry does not exist with metal. The fact that metal roofing has zero “out-gassing” also makes it ideal for consumers with chemical sensitivities. Today’s commercially-produced metal roofing systems are carefully tested on an ongoing basis for performance, wind resistance, fire resistance, and hail resistance. They are listed with various building codes and entities including Underwriters Laboratories, International Congress of Building Officials, Dade County, Florida, Southern Building Code Congress International, and others.
- **Energy Efficiency** – Metal roofing is rapidly gaining acceptance as a very energy efficient material. Property owners have reported energy savings of as high as 20% and even more after installing metal roofing. The reflectivity and subsequent energy efficiency of metal roofing has been confirmed in studies done by Florida Solar Energy Center, Florida Power and Light, Oak Ridge National Laboratory, and other independent organizations. Many available metal roofs are being documented to meet Energy Star requirements. This can have a tremendous impact on energy usage by reducing air conditioning costs and the smog and pollution that are created by the production of that energy. Additionally, the low thermal mass of metal roofing means that it dissipates heat very quickly once the sun goes behind a cloud or sets for the day. Other roofing materials have greater thermal mass and will continue to radiate captured heat into the structures beneath them even when the sun is not shining.

PRACTICAL BENEFITS

Some interesting work has been done and/or is underway. Here are some highlights:

- Florida Power & Light built six identical 1700 S.F. residences in Ft. Meyers. They found painted metal roofs save 23% in energy costs over asphalt shingles.
- A study at a Florida university shows attic temperatures to be 30° F lower with prepainted metal roofs vs. asphalt shingles.

- Calculations indicate a large city converting to prepainted metal roofing could reduce energy costs by \$1,000,000. Due to less power demand, there would be significantly reduced air pollution and its associated health benefits.
- Maintenance – The only recommended maintenance is a routine washing with clean water.

MAINTENANCE

With a little care and attention during service, a prepainted Galvalume® sheet will provide an extended service life. While durable, factory-applied finishes for metal building panels will last many years longer than ordinary paints; they should be cleaned thoroughly on a routine basis whenever the finish is not washed by rain. Applications where the paint finish is automatically washed by rain, such as roofing, do not require this maintenance.

Cleaning restores the appearance of the building, making repainting unnecessary, and maintains a pleasing appearance, as well as removing the buildup of corrosive materials. Applications requiring maintenance cleaning include soffits, siding under eaves, garage doors and the undersides of eave gutters.

Cleaning

In many cases, washing the painted surface with clean water from a garden hose will remove most of the dirt and accumulated deposits. Ideally, washing should be done at least every six months and more frequently in coastal areas where marine salt spray is prevalent or where high levels of industrial fallout occur. In cases where spray washing is ineffective in cleaning stubborn dirt, mild detergents or household ammonia solutions can be used as described below. In all cases, test a small unobtrusive area for color-fastness before cleaning large areas.

- Use one cup of Tide® (or other common detergent containing less than 0.5% phosphate) dissolved in five gallons of warm water. NOTE: Detergents containing greater than 0.5% phosphate are not recommended for use in general cleaning of building panels.
- OR use one cup of household ammonia dissolved in five gallons of water at room temperature. Never mix ammonia with any kind of bleach.
- Never blend cleaners and bleach yourself. If bleach and detergent are required, use detergents containing bleach.

Using either solution, work from the top to the bottom of panels with a well-soaked soft cloth, sponge, brush with very soft bristles, or low-pressure spray washer to clean the surface. Washing from the top down avoids streaking. Application should be gentle to prevent shiny spots. Scouring powders or industrial solvents are not recommended, since they may damage the paint film. Solvent-containing cleaners such as Fantastik® are very effective and can be used.

If mildew or other fungal growth is a problem and cannot be removed as described above, detergent containing bleach, such as Tide® with Bleach, is recommended. The surface should be thoroughly rinsed with water after cleaning to remove traces of detergent.

GALVALUME 20 YEAR WARRANTY

Central States Manufacturing (CSM) warrants that hot-dipped aluminum-zinc alloy coated Galvalume steel sheets sold as Panel-Loc, Panel-Loc Plus, M-Loc, Horizon-Loc, R-Loc, Central-Loc or Central Seam Plus, for use as steel building roofing and siding panels, if erected in the United States, WILL NOT rupture, fail structurally or perforate within a period of twenty (20) years after shipment due to exposure to normal atmospheric corrosion.

This warranty DOES NOT APPLY to sheets exposed at any time to corrosive or aggressive atmospheric conditions, including but not limited to:

- Areas subject to salt water marine atmospheres or to constant spraying of either salt or fresh water.
- Areas subject to fallout or exposure to corrosive chemicals, ash or fumes.
- Areas subject to water run-off from lead or copper flashings or areas in metallic contact with lead or copper.
- Conditions/circumstances where corrosive fumes or condensates are generated or released inside the building.

This warranty DOES NOT APPLY in the event of:

- Mechanical, chemical or other damage sustained during shipment, storage, erection, or after erection.
- Failure to provide free drainage of water, including internal condensation from overlaps and all other surfaces of the sheets or panels.
- Failure to remove debris from overlaps and all other surfaces of the sheets or panels.
- Damage caused to the metallic coating by improper scouring or cleaning procedures.
- Deterioration of the panels caused by contact with green or wet lumber, or storage stain caused by water damage or condensation.
- Presence of damp insulation or other corrosive materials in contact with or close proximity to the panel.
- Deterioration of the panels caused directly or indirectly by panel contact with concrete, asphalt, gravel, dirt, mulch, or any corrosive material.
- Deterioration of the panels caused directly or indirectly by panel contact with fasteners. Selection of suitable long-lasting fasteners to be used with Galvalume roofing and siding panels rests solely with the Buyer.
- A degree of bending less than 2T for sheet gauges up to 0.030 in. and degree of bending less than 4T for sheet gauges 0.031 in. and thicker.
- Slopes of roof or sections of the roof flatter than 1/4:12.

This warranty shall be subject to the stipulations, limitations and conditions hereinafter set forth.

The remedy for any claims on steel roofing and siding panels shall be at the discretion of Central States Manufacturing and shall be limited to refinishing or replacing the defective panels.

CENTRAL STATES MANUFACTURING SHALL NOT BE LIABLE FOR ANY LOSSES, DAMAGES OR EXPENSES WHETHER DIRECT, INCIDENTAL OR CONSEQUENTIAL, CAUSED BY OR RESULTING FROM THE USE OF DEFECTIVE OR NON-CONFORMING STEEL ROOFING AND SIDING PANELS OR FOR ANY OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES. CENTRAL STATES

MANUFACTURING'S TOTAL LIABILITY IS EXPRESSLY LIMITED TO THE PURCHASE PRICE OF THE STEEL ROOFING AND SIDING PANELS.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so this limitation or exclusion may not apply in your state. This warranty provides specific legal rights and other rights which vary from state to state that may apply.

Central States Manufacturing's liability for breach of this warranty shall be limited exclusively to the cost of either repairing non-conforming, rupturing, perforating or structurally failing panels, or at CSM's sole option, of furnishing FOB Buyer's plant sufficient sheet product to enable Buyer to fabricate replacement panels for the non-conforming, rupturing, perforating or structurally failing panels. CSM shall not in any event be liable for the cost of labor expended by others on any non-conforming, rupturing, perforating or structurally failing sheet or for any special, indirect, or consequential loss of profits or any other incidental, general, special or compensatory damages to anyone by reason of the fact that such panels shall have been non-conforming, rupturing, perforating, or structurally failing.

Claims under this warranty must be made in writing to Central States Manufacturing at the address set forth below within 30 days after discovery of the defect. CSM shall have an additional 30 days to inspect the steel roofing and siding panels before any further action shall be taken. Adequate identification of material involved in the claim, including date of installation, order number, invoice number and date of shipment must be established by the Buyer.

Buyer shall exercise diligence in inspection of sheets as received from CSM so as to mitigate repair or replacement. CSM extends this warranty solely to the original owner of any structure where the material is installed. This warranty is not transferable and non-assignable. CSM reserves the right to terminate this warranty at any time (except as to orders already accepted) upon the giving of written notice thereof.

The Law of the State of Arkansas shall govern the rights and duties of the parties under this agreement and jurisdiction and venue is fixed in Benton County, Arkansas.

CENTRAL STATES MANUFACTURING MAKES NO GUARANTEES, EITHER EXPRESSED OR IMPLIED BEYOND THE FACE HEREOF, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF FITNESS AND MERCHANTABILITY, AND SHALL HAVE NO OTHER LIABILITY WITH RESPECT THERETO.

302 Jane Place
Lowell, Arkansas 72745

660 Grigsby Way
Cedar Hill, Texas 75104

2051 Tryon Road
Michigan City, Indiana 46360

3402 Industrial Drive
Jasper, Alabama 35501

PRIME 40 YEAR LIMITED WARRANTY

FOR CENTRAL STATES MANUFACTURING (CSM) PANEL-LOC, PANEL-LOC PLUS, R-LOC, HORIZON-LOC, M-LOC, CENTRAL-LOC AND CENTRAL SEAM PLUS STEEL ROOFING AND SIDING PANELS. THIS WARRANTY COVERS PRIME MATERIAL ONLY. THRIFTY MATERIAL IS COVERED BY A SEPARATE WARRANTY.

CSM warrants that the color-coated finish applied to its steel roofing and siding panels will not, within a period of forty years after installation or forty years and one month after the date of shipment (whichever comes first), crack, check, peel or lose adhesion. This does NOT include minute fracturing, which may occur in proper fabrication of the building parts. Failure due to substrate corrosion is excluded.

CSM also warrants that the color-coated finish applied to its steel roofing and siding panels will not, within a period of thirty years after installation or a period of thirty years and one month after the date of shipment (whichever comes first), chalk or lose color according to the following grids. Additionally, chalk ratings are measured in accordance with the standard procedures specified in ASTM-D-4214-98 method D659. Color (fade) ratings are measured in accordance with the standard procedures specified in ASTM-D-2244-02. Color change shall be measured on an exposed painted surface that has been cleaned of surface soils and chalk, and the corresponding values measured on the original or unexposed painted surface. It is understood that fading or color changes may not be uniform if the surfaces are not equally exposed to the sun and elements.

Sidewall		Roof	
Color	Chalk	Color	Chalk
5	8	6	7

(Exception: Gallery Blue - Sidewall: Color: 8/Chalk: 6, Roof: Color: 10/Chalk: 5)

1) **DISCLAIMER OF WARRANTY.** THE EXPRESS WARRANTY STATED HEREIN IS THE EXCLUSIVE WARRANTY APPLICABLE TO CSM PANEL-LOC, PANEL-LOC PLUS, R-LOC, HORIZON-LOC, M-LOC, CENTRAL-LOC AND CENTRAL SEAM PLUS PRIME PAINTED MATERIAL ONLY, ROOFING AND SIDING PANELS. CSM MAKES NO WARRANTIES OR GUARANTIES, EITHER EXPRESSED OR IMPLIED, BEYOND THE FACE HEREOF INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. CSM SHALL HAVE NO OTHER LIABILITY WITH RESPECT THERETO. This warranty will apply to those panels refinished or replaced but only for the period of time left on the original warranty. No employee or representative of CSM is authorized to change this limited warranty in any way or grant any other warranty regarding the product.

2) **LIMITATION OF LIABILITY.** THE EXCLUSIVE REMEDY FOR ANY AND ALL CLAIMS ARISING FROM THIS LIMITED WARRANTY SHALL BE LIMITED TO CSM REFINISHING OR REPLACING DEFECTIVE PANELS OR REFUNDING THE PURCHASE PRICE OF SUCH PANELS AS CSM SHALL ELECT. CSM SHALL NOT BE LIABLE FOR ANY LOSSES, DAMAGES, OR EXPENSES, WHETHER DIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES. IF OUR CENTRALGUARD™ SILICONIZED POLYESTER COATINGS FAIL TO COMPLY WITH OUR LIMITED WARRANTY, WE WILL PAY FOR THE LABOR AND THE MATERIALS REASONABLY NECESSARY TO REPAINT, REPAIR OR REPLACE, AT OUR OPTION, THE

BUILDING PART SHOWING THE FAILURE. CSM'S TOTAL LIABILITY IS EXPRESSLY LIMITED TO

THE PURCHASE PRICE OF THE CSM STEEL ROOFING AND SIDING PANELS.

3) Claims under this warranty must be made in writing to CSM at the address set forth below within 30 days after the discovery of the defect. The notice to CSM shall include adequate identification of the material involved, nature of the claimed defect, date of the installation, date of shipment and order number. Failure of the claimant to provide such information in the time provided shall be deemed as a waiver of the claimant's rights herein. CSM shall have an additional 30 days to inspect the CSM steel roofing and siding panels before any further action shall be taken.

4) CSM does not warrant or guarantee the interior or reversed side finish or prepainted materials used for interior application.

5) CSM does not warrant or guarantee claims arising from damage to panels due to exposure to salt and salt water, water spray, corrosive or harmful chemicals (whether solids, liquids or gases), airborne contaminants, hail or other agents of a similar nature.

6) CSM does not warrant or guarantee claims arising from the following:

- a) Damage or defects caused by acts of God, falling objects, external forces, explosion, fire, riots, civil commotion, acts of war, excessive radiation, or other similar or dissimilar occurrences beyond CSM's control.
- b) Minor hairline cracking of the paint finish.
- c) Defects or damages to the painted steel roofing and siding panels caused by handling, shipping, transit, processing, storage or installation; damage due to failure of the substrate.
- d) Damage caused by moisture or other contamination prior to installation.
- e) Steel shavings or minute iron particles from sawing sparks that come in contact with the painted surface.
- f) Non-vertical panels that don't have an adequate degree of pitch so as not to allow any free standing or accumulation of standing water.
- g) Stored or installed in a way that allows for contact with animals or animal waste.
- h) Deterioration to the panels caused directly or indirectly by panel contact with fasteners. The selection of suitable fasteners rests solely with the buyer.
- i) Weather uniformity under non-uniform conditions.
- j) Unusual harmful fumes, chemically aggressive environment, foreign substances in the atmosphere, standing water or direct salt spray.
- k) Damage due to green, wet or treated lumber.

7) The warranty applies to panels installed in the continental United States, Alaska, and Canada.

8) CSM extends this warranty solely to the buyer. This warranty is not transferable and non-assignable. Further, it is applicable only to the original owner of any structure where the material is installed.

302 Jane Place
Lowell, Arkansas 72745

660 Grigsby Way
Cedar Hill, Texas 75104

2051 Tryon Road
Michigan City, Indiana 46360

3402 Industrial Drive
Jasper, Alabama 35501

Effective April 1, 2006.

SELECT 40 YEAR LIMITED WARRANTY

LIMITED WARRANTY AND LIMITATION OF LIABILITY FOR CENTRAL STATES MANUFACTURING (CSM) PANEL-LOC, PANEL-LOC PLUS, R-LOC, HORIZON-LOC, M-LOC, CENTRAL-LOC AND CENTRAL SEAM PLUS STEEL ROOFING AND SIDING PANELS. THIS WARRANTY COVERS SELECT MATERIAL ONLY. PRIME AND THRIFTY MATERIAL ARE COVERED BY SEPARATE WARRANTIES.

CSM is please to present you with our 40-year Select limited warranty.

For forty (40) years from the date of installation, the color coated finish WILL NOT crack, check or peel (lose adhesion). This does not include minute fracturing, which may occur in proper fabrication of the building parts. **Failure due to substrate corrosion is excluded.**

SIDEWALL PANELS (for thirty (30) years from installation or thirty and one half (30-1/2) years from coating application)

- a) WILL NOT ch xcess of ASTM-D-4214-98 method A D659 number nine (9) rating.
- b) WILL NOT change color more than five (5.0) Hunter ΔE units as determined by ASTM method D-2244-02. Color change shall be measured on an exposed painted surface that has been cleaned of surface soils and chalk, and the corresponding values measured on the original or unexposed painted surface. It is understood that fading or color changes may not be uniform if the surfaces are not equally exposed to the sun and elements.

ROOFING PANELS (for thirty (30) years from installation or thirty and one half (30-1/2) years from coating application)

- a) WILL NOT chalk in excess of ASTM D-4214-98 method A D659 number eight (8) rating.
- b) WILL NOT change color more than six (6.0) Hunter ΔE units as determined by ASTM method D-2244-02. Color change shall be measured on an exposed painted surface that has been cleaned of surface soils and chalk, and the corresponding values measured on the original or unexposed painted surface. It is understood that fading or color changes may not be uniform if the surfaces are not equally exposed to the sun and elements.

In case of a complaint, you will provide access to us and assist us as necessary in determining the exact cause of the failure. ASTM and NCCA testing procedures will be used.

If our Select coatings fail to comply with our limited warranty, we will pay for the labor and material reasonably necessary to repaint, repair or replace, at our option, the building part showing the failure. In order for the warranty to be effective, however, you must notify us in writing of the failure within thirty (30) days of the discovery of such problem and provide any documentation we may require. If we repaint, we will use normal painting practices using the same paint system or other suitable alternatives. This warranty also applies to the part we repaint, repair, or replace, but only for the unexpired portion of the warranty period applicable to the original part.

Our LIMITED WARRANTY DOES NOT APPLY to circumstances which we do not control, including:

- Acts of God, falling objects, explosions, fire or other such similar or dissimilar occurrences beyond CSM's control;
- Unusual harmful fumes, foreign substances in the

- atmosphere, standing water, or salt spray;
- Improper treatment of or defects in the metal or in the fabrication;
- Stored or installed in a way that allows for poor air circulation;
- Stored or installed in a way that allows for contact with animals or animal waste;
- Mishandled Products, e.g., ANY PRODUCT THAT HAS BEEN ABUSED, ALTERED, MODIFIED, USED IN A MANNER NOT ORIGINALLY INTENDED, OR STORED CONTRARY TO OUR INSTRUCTIONS. Including a) damage to the product occasioned by condensation attributable to improper packaging, handling, shipping, processing and/or installation; b) damage due to failure of the substrate.

This warranty will apply only to metal which is coated with Fluropon and used on property located within the continental United States, Alaska, and Canada.

Some colors may not meet our high standards. The warranty applies only to colors that are on our approved color list. Metallics are not color measurable and are not applicable to section 1b.

For our warranty to apply, you must maintain certain records necessary to identify the Select panels involved in a complaint. You need to make them available to us for inspection and copying.

This is our only warranty concerning the Select products color coated finish. We have no other obligations concerning them. Please read and understand the following;

Except for this warranty, we make NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, WITH RESPECT TO OUR SELECT PRODUCTS COLOR COATED FINISH. IMPLIED WARRANTIES OR FITNESS AND MERCHANTABILITY ARE EXCLUDED. Further, we have no other liability with respect to our Select products color coated finish, whether based on warranty, negligence or any other legal theory. For example, we have no liability for consequential damages.

That is our complete warranty. It sets out all of our obligations regarding our Select product coil coatings. It is only for your benefit and is not assignable. Such things as your purchase order forms or our acceptance forms cannot change it. But it can be changed if CSM agrees in writing.

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