



# Tuff-Rib Install Guide

800-728-4010  
[bestbuymetals.com](http://bestbuymetals.com)

## **IMPORTANT NOTICE**

**This manual contains suggestions and guidelines on how to install panels and trim details. The contents of this manual include the guidelines that were in effect at the time this publication was originally printed. In an effort to keep pace with the ever-changing code environment, we retain the right to change specifications and / or designs at any time without incurring any obligations. To insure you have the latest information available, please inquire or visit our web site. Application and design details are for illustrative purposes only and may not be appropriate for all environmental conditions and/or building designs. Projects should be engineered and installed to conform to applicable building codes, regulations, and accepted industry practices.**

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## Introduction

The Tuff-Rib® panel is an industry leader in strength and durability. This popular and versatile panel features classic looks and is used in a wide range of applications including residential, commercial, and post-frame buildings. Tuff-Rib® was designed with strong ribs to increase strength and ease handling and installation. In addition, the oversized anti-siphoning channel on the under-lap provides extra leak resistance in the presence of extreme wind and rain loads.

Tuff-Rib® is available in a range of paint colors and in both 26 and 29 gauge steel. It is also available in unpainted Galvalume® or unpainted galvanized. Our paint system carries a 40 year warranty and Galvalume® a 25 year warranty.

The Tuff-Rib® panel is available in 36" coverage. The panel has five major support ribs at 3/4" high that add rigidity and strength to the panel.



Below is a list of all of the Tuff-Rib® panel approvals and certifications.

- Miami-Dade County, Florida Approved - See Approvals for Requirements
- Florida Building Code Approved - See Approvals for Requirements
- Texas Windstorm Certified
- UL 790 Fire Resistance Class A
- UL 2218 Impact Resistance Class 4
- UL 580 Uplift Resistance Class 90

### **Allowable Uniform Loads Per Square Foot**

SPAN (INCHES)	LIVE LOAD (PSF)						WIND LOAD (PSF)					
	18"	24"	30"	36"	48"	54"	18"	24"	30"	36"	48"	54"
29 Gauge	199	112	71	49	28	22	211	118	76	52	29	23
26 Gauge	268	150	96	67	37	29	276	155	99	69	38	30

**NOTES:**

1. Theoretical allowable loads are based on section properties and allowables calculated in accordance with 2001 AISI Specifications.
2. Theoretical allowable loads are based on three or more uniform spans.
3. For roof panels, deduct self weight for actual 'live load' capacity of the panel.
4. These loads are for panel strength. Frames, purlins, decks and fasteners must be designed to resist all loads imposed on the panel.
5. Check local building codes if panel testing is required.

## Panel Installation Guide

### Storage

If metal is not to be used immediately, store inside in a well ventilated, dry location. Condensation or other moisture can form between the sheets during storage causing water stains or white rust which detract from the appearance of the product and may affect the product's useful life. Trapped moisture between sheets of painted metal can cause white rust to form underneath the paint. This can cause the paint to flake off the panel immediately or several years later. To prevent white rust and staining, break the shipping bands on the material. Store the material on end or on an incline of at least 8" with a supporting board underneath to prevent sagging. Fan the sheets slightly at the bottom to allow for air circulation. Keep the sheets off of the ground with an insulator such as wood. Any outdoor storage is at the customer's own risk. If outdoor storage cannot be avoided, protect the metal using a canvas cover or waterproof paper. Never cover the metal with plastic as this will cause condensation to form.

### Some Safety Precautions

Always wear heavy gloves when working with steel panels to avoid cuts from sharp edges. When cutting or drilling steel panels, always wear safety glasses and sweep off any metal shavings immediately to prevent eye injury from flying metal fragments. 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.

### General Installation Information

Insure that the structure is square and true before beginning panel installation. If the structure is not square, the panels will not properly seal at the sidelaps. Start the first panel square to eave by using 3, 4, 5 Triangle Method. Green or damp lumber is not recommended. Moisture released from the damp lumber may damage the metal panels. Nails installed in green or damp lumber may back out. Remove any loose metal shavings left on the roof surface immediately to prevent corrosion. After installing roof, remove any debris such as leaves or dirt to prevent moisture from getting trapped on panels. Do not install in direct contact with chemically treated lumber.

### Fastening

If you wish to predrill fastener holes, use a cover sheet to prevent hot shavings from sticking to panels.

Screws - For best results, use a 1-1/2" double washered wood screw in the flat of the panel as shown in the illustration below. Fasteners should be applied at every purlin. Drive the fastener so that the washer is compressed securely against the metal. Do not over drive the fastener as this will form a dimple that can collect water and cause leakage. Do not leave any loose fasteners that have missed the purlin. Use a #14 stitch screw or caulk to fill the hole.

Figure #1 - Fastening Patterns for Tuff-Rib®

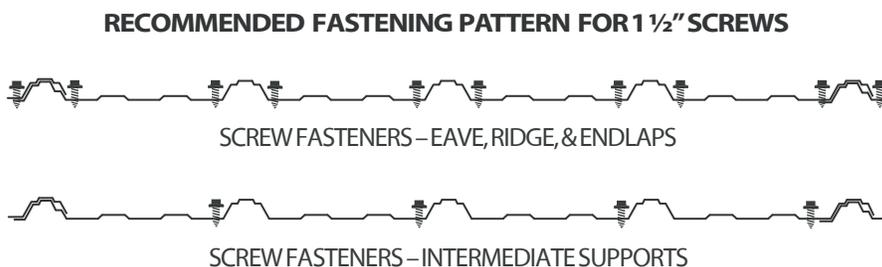
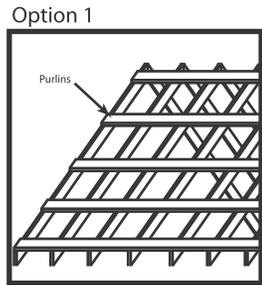


Figure #3

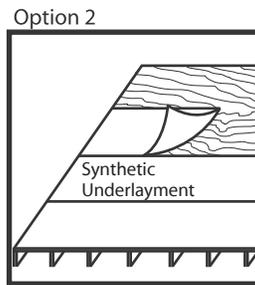


**Roofing Installation Options**



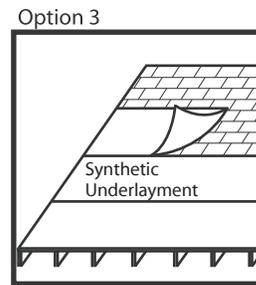
**Install Metal Directly to Wood Frame**

- Use Maximum 2' Purlin Spacing
- Install Metal
- **\*DO NOT USE THIS OPTION FOR HEATED SPACES**



**Install Metal on Solid Deck**

- Lay Plywood Deck
- Apply Synthetic Underlayment or other Moisture Barrier Protection
- Install Metal



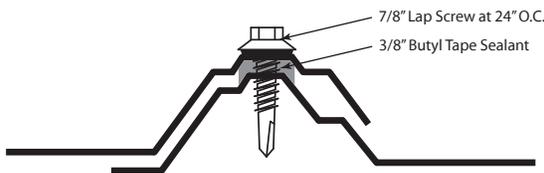
**Install Metal Over Existing Shingles**

- Apply Synthetic Underlayment or other Moisture Barrier Protection
- Install Metal

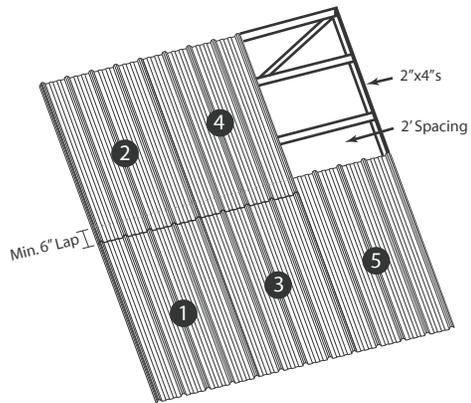
Allow an overhang a minimum of 1" at the eave to provide for a drip edge. Use inside closure at eave to prevent water infiltration, insect or bird infestation at openings. To protect against uplifting winds and to provide a finished appearance, apply rake trim or other standard gable trim. Slopes of less than 2.5:12 aren't recommended. For slopes less than 3:12, apply 3/8" tape sealant as shown in Figure #4 along the top of all lap ribs. Do not block the siphon channel with the tape. For best results, apply a 7/8" lap screw into the crown of the rib to secure the side lap.

End lapping of panels is not common. However, when necessary, for slopes of 3:12 or greater, end lap panels 6". Install panels in the sequence shown in Figure #5.

**Figure #4 - Proper Application of Side Lap Tape**



**Figure #5**



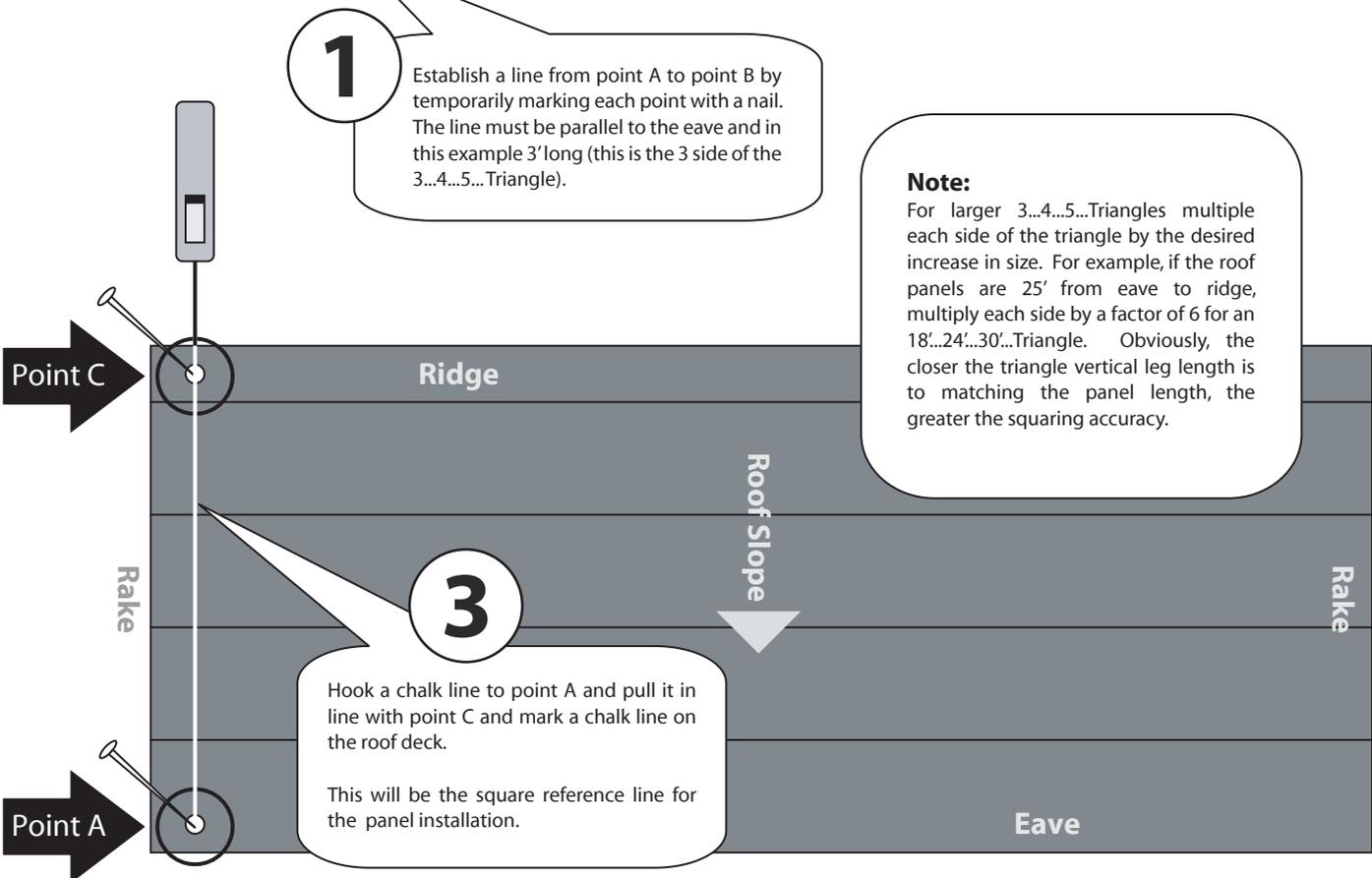
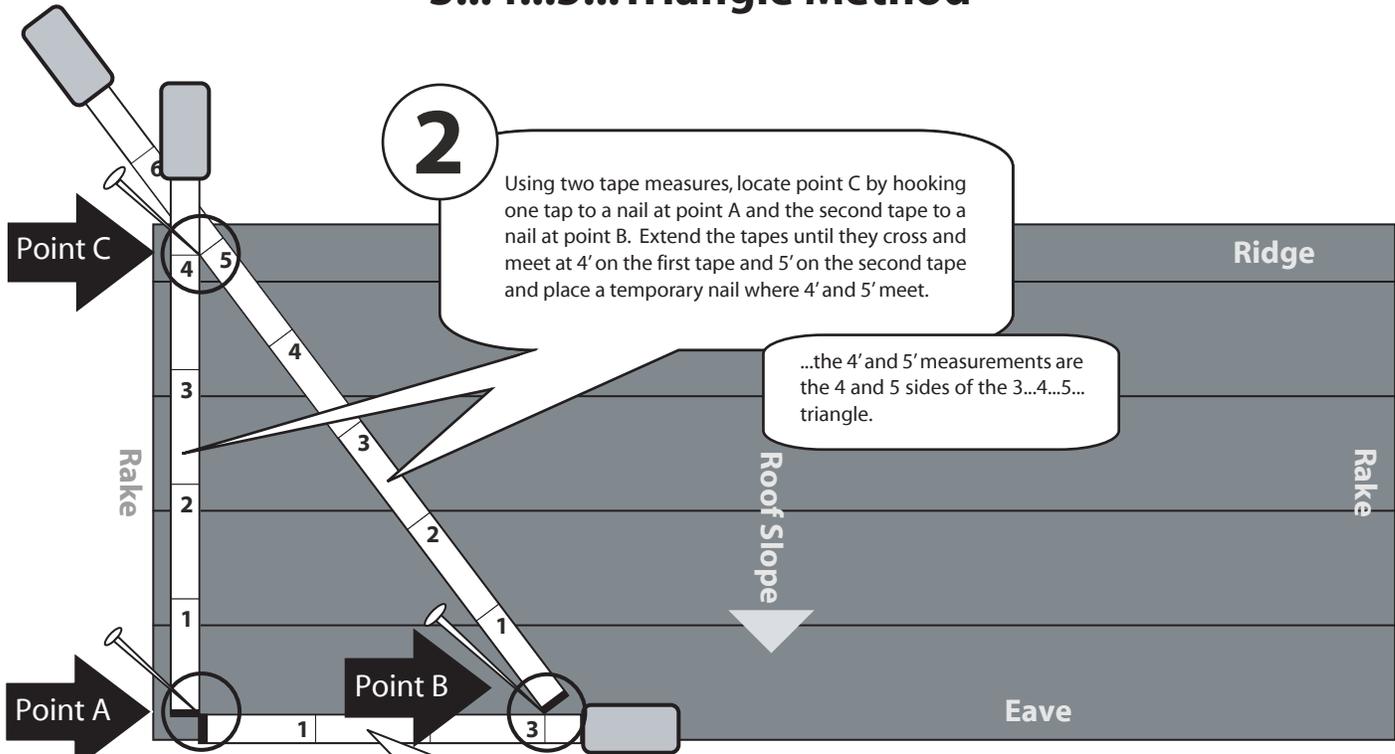
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SPAN (INCHES)	LIVE LOAD (PSF)						WIND LOAD (PSF)					
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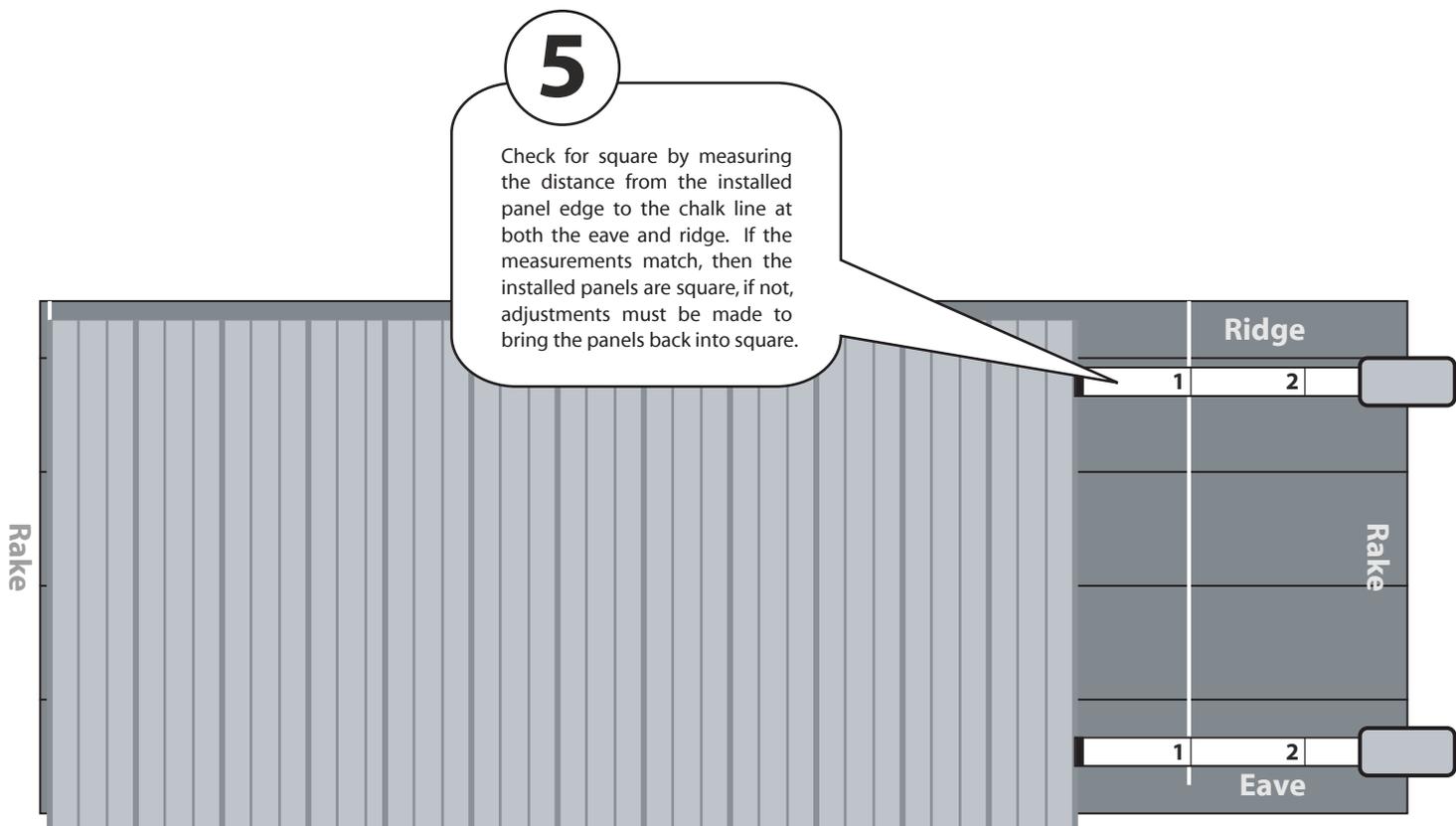
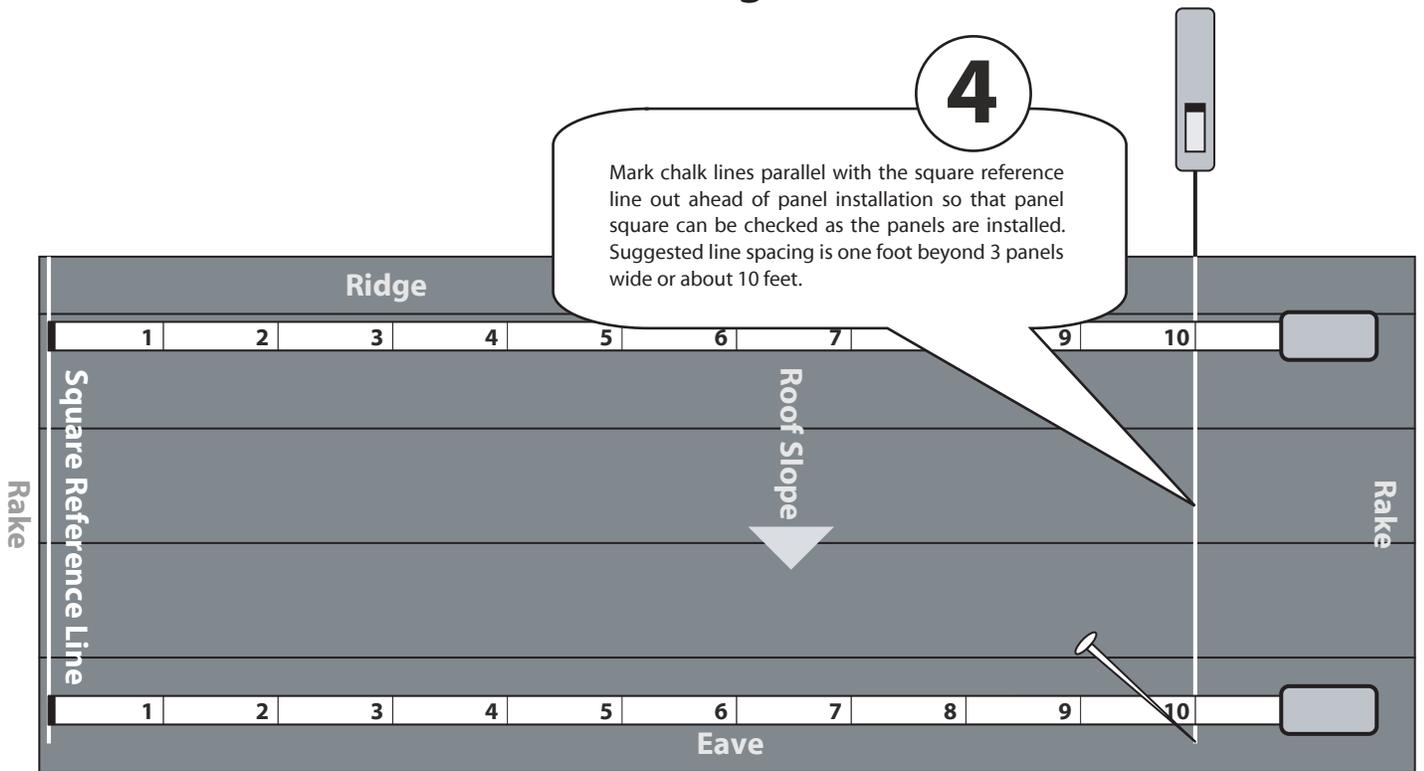
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5. Check local building codes if panel testing is required.

### 3...4...5...Triangle Method



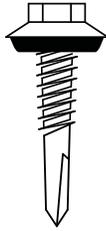
### 3...4...5...Triangle Method



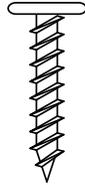
**Accessories**



1", 1-1/2", 2", 2-1/2"  
Hex Head Wood Screw  
Metal-to-Wood



1", 1.25", 1.5"  
Hex Head Self Driller  
Metal-to-Metal



1", 1.5", 2"  
Pancake Head  
Wood Screw



1", 1.5", 2"  
Pancake Head  
Self Driller



Pop Rivet (Stainless)  
(1/8" x 3/16")



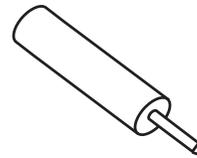
#7/8" Hex Head  
Lap Stitch Screw  
Metal-to-Metal



Emseal Expanding Hip/Valley Closure  
1" x 1" x 19'8"



Flex-O-Vent Ridge Vent Material  
1.5" x 3" x 10'



Tube Sealant



Pipe Boot  
(Various sizes, heat treated & retro fit also available)



Profile Vent Ridge Vent  
3/4" x 3" x 25'



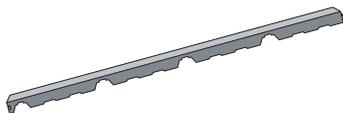
Butyl Tape  
(3/8" x 3/32" x 45')



Double Bead Butyl Tape  
(7/8" x 3/16" x 40' or 25'  
depending on plant)



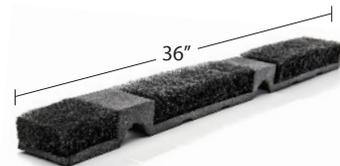
Touch Up Paint



Outside Closure Strip



Inside Closure Strip

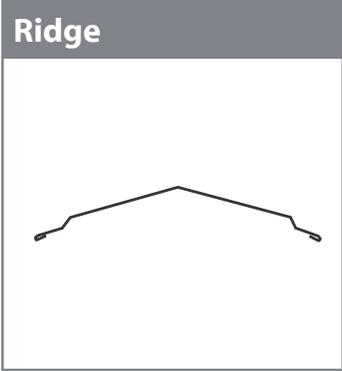
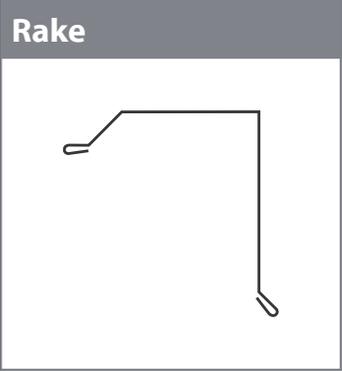
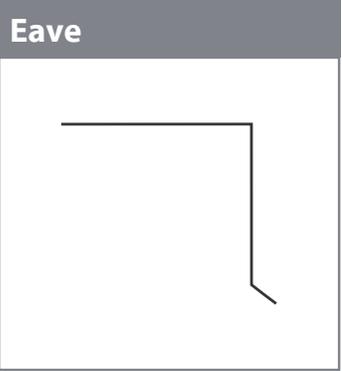
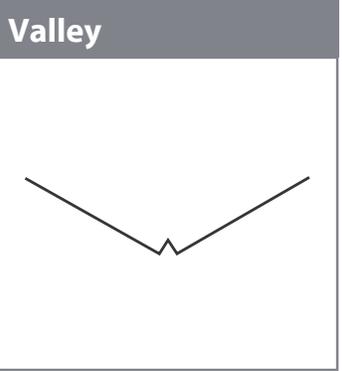
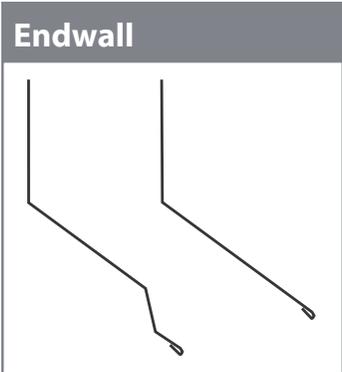
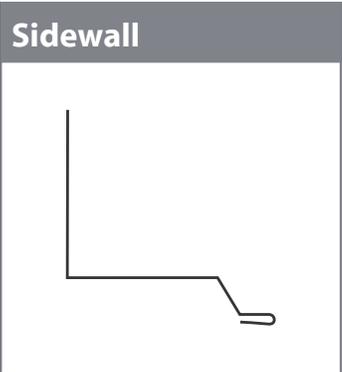
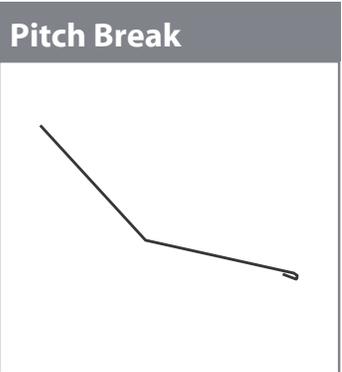
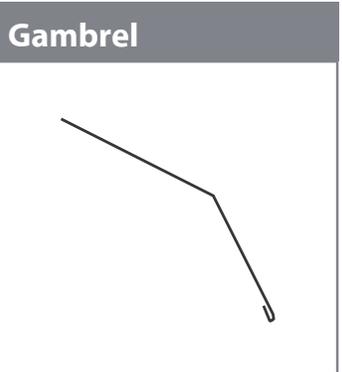
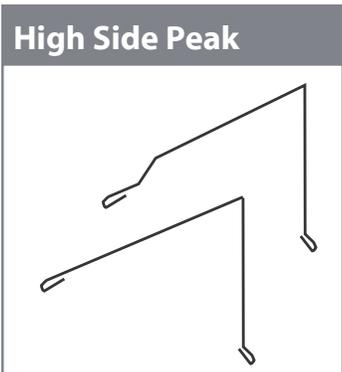
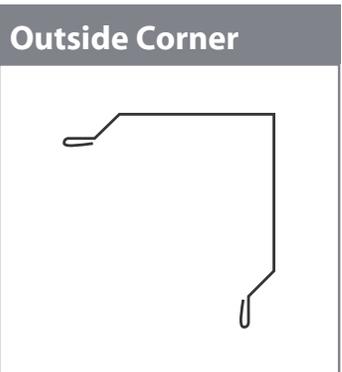
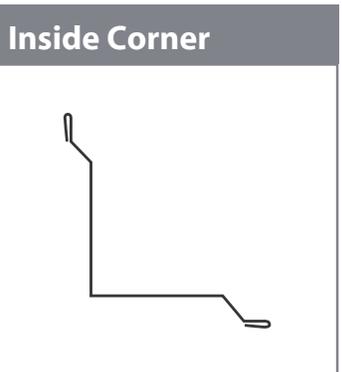
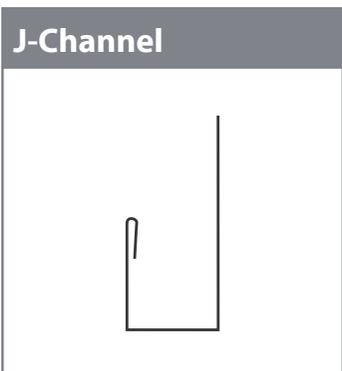
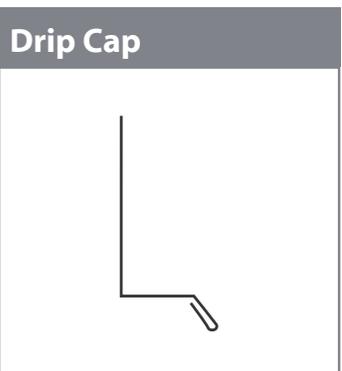
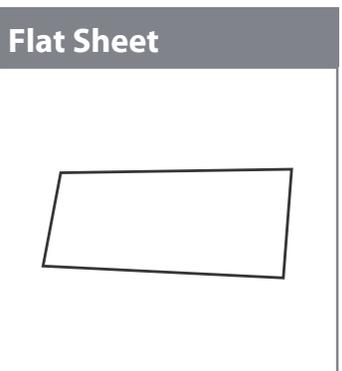


LP2 Vented Ridge Closure



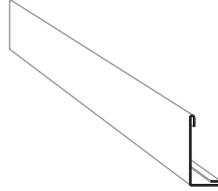
Synthetic Roof Underlayment

## Typical Trim Profiles (size/design vary by plant)

<b>Ridge</b> 	<b>Rake</b> 	<b>Eave</b> 	<b>Valley</b> 
<b>Endwall</b> 	<b>Sidewall</b> 	<b>Pitch Break</b> 	<b>Gambrel</b> 
<b>High Side Peak</b> 	<b>Fascia / Angle</b> 	<b>Outside Corner</b> 	<b>Inside Corner</b> 
<b>J-Channel</b> 	<b>Rat Guard</b> 	<b>Drip Cap</b> 	<b>Flat Sheet</b> 

## Fascia

Numbers indicate suggested trim assembly sequence.



### Roof Substrate

Install the roof substrate according to local building code requirements.

### Moisture Barrier

Install moisture barrier according to the manufacturer's recommended procedure and in compliance with local building code requirements.

### Fascia Trim

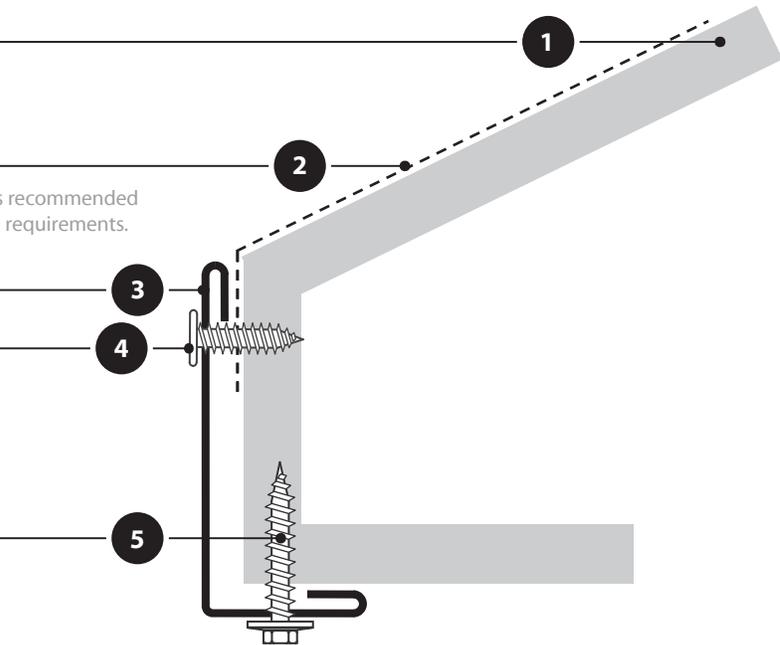
Install the Fascia trim and butt ends.

### Trim Pancake Screw

Fasten trim with Pancake Screws 2' apart along the length of the trim.

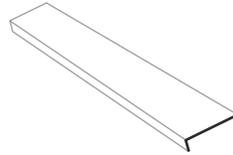
### Trim Wood Screw

Fasten trim with Wood Screws spaced 2' apart along the length of the trim.



## Mini Eave

Numbers indicate suggested trim assembly sequence.



### Moisture Barrier

Install moisture barrier according to the manufacturer's recommended procedure and in compliance with local building code requirements.

### Trim Pancake Screw

Fasten trim with Pancake Screws spaced 12" apart along the length of the trim.

### Optional Butyl Tape

Install continuous along Eave at 1" up from face.

### Mini Trim

Install the Mini Eave and lap ends.

### Roof Substrate

Install the roof substrate according to local building code requirements.

### Tuff-Rib® Panel

Install the panel and overhang the panel a minimum of 1" beyond the Mini Eave edge. See panel squaring method in this manual.

### Optional Tube Sealant

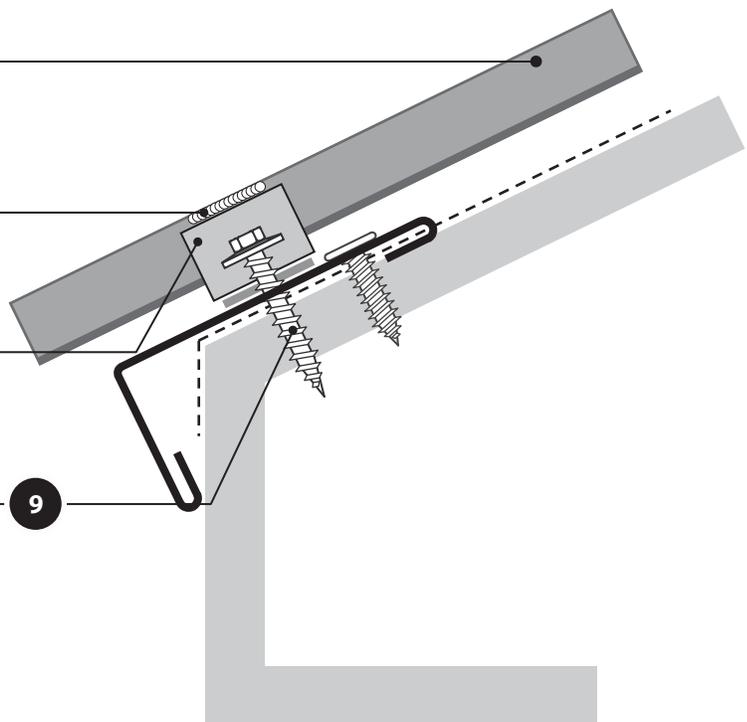
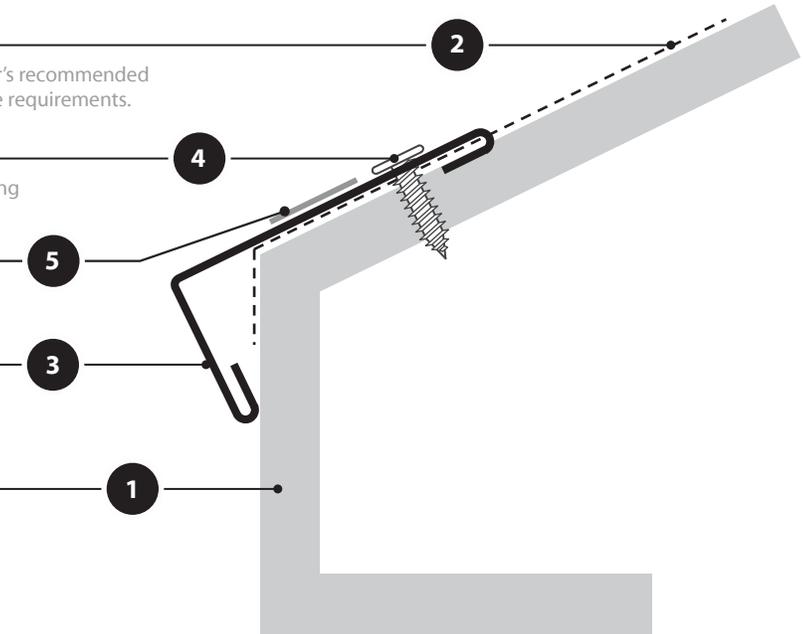
Apply optional Tube Sealant to the top side of the Inside Closure.

### Inside Closure

Place the Inside Closure over the top of the optional Butyl Tape.

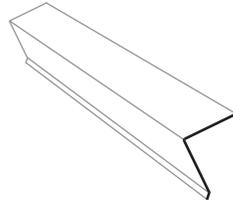
### Panel Wood Screw

Fasten wood screw at the Inside Closure on each side of major ribs.



## Eave Edge

Numbers indicate suggested trim assembly sequence.



### Moisture Barrier

Install moisture barrier according to the manufacturer's recommended procedure and in compliance with local building code requirements.

### Trim Pancake Screw

Fasten trim with Pancake Screws spaced 12" apart along the length of the trim.

### Optional Butyl Tape

Install continuous along eave at 1" up from face.

### Eave Trim

Install the Eave Trim and lap ends.

### Roof Substrate

Install the roof substrate according to local building code requirements.

### Tuff-Rib® Panel

Install the panel and overhang the panel a minimum of 1" beyond the Eave Trim edge. See panel squaring method in this manual.

### Optional Tube Sealant

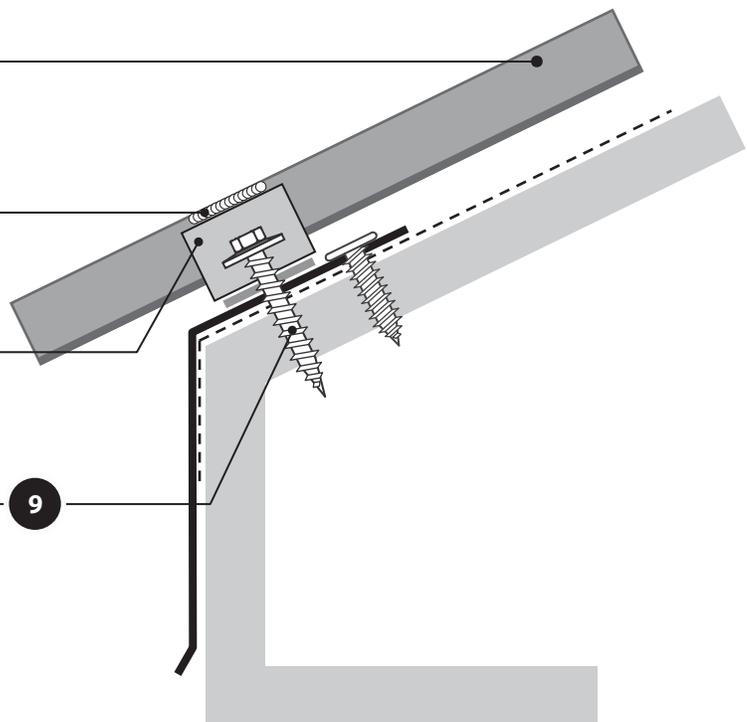
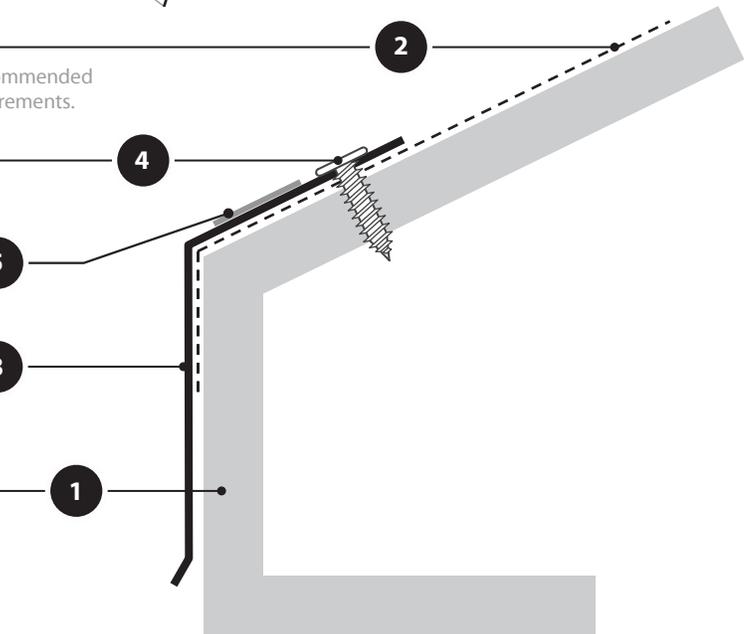
Apply optional Tube Sealant to the top side of the Inside Closure.

### Inside Closure

Place the Inside Closure over the top of the optional Butyl Tape.

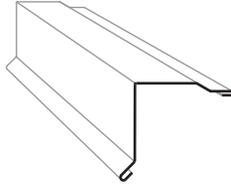
### Panel Wood Screw

Fasten wood screw at the Inside Closure on each side of major ribs.



## Rake

Numbers indicate suggested trim assembly sequence.



### Butyl Tape

Apply Butyl Tape along the length of the panel.

### Tuff-Rib® Panel

Install the panel and overhang the panel a minimum of 1" beyond the Eave Trim edge. See panel squaring method in this manual.

### Panel Wood Screw

Fasten panels to the roof substrate using Wood Screws spaced according to the recommended fastening pattern and frequency, and in compliance with local building codes.

### Moisture Barrier

Install moisture barrier according to the manufacturer's recommended procedure and in compliance with local building code requirements.

### Roof Substrate

Install the roof substrate according to local building code requirements.

### Rake Trim

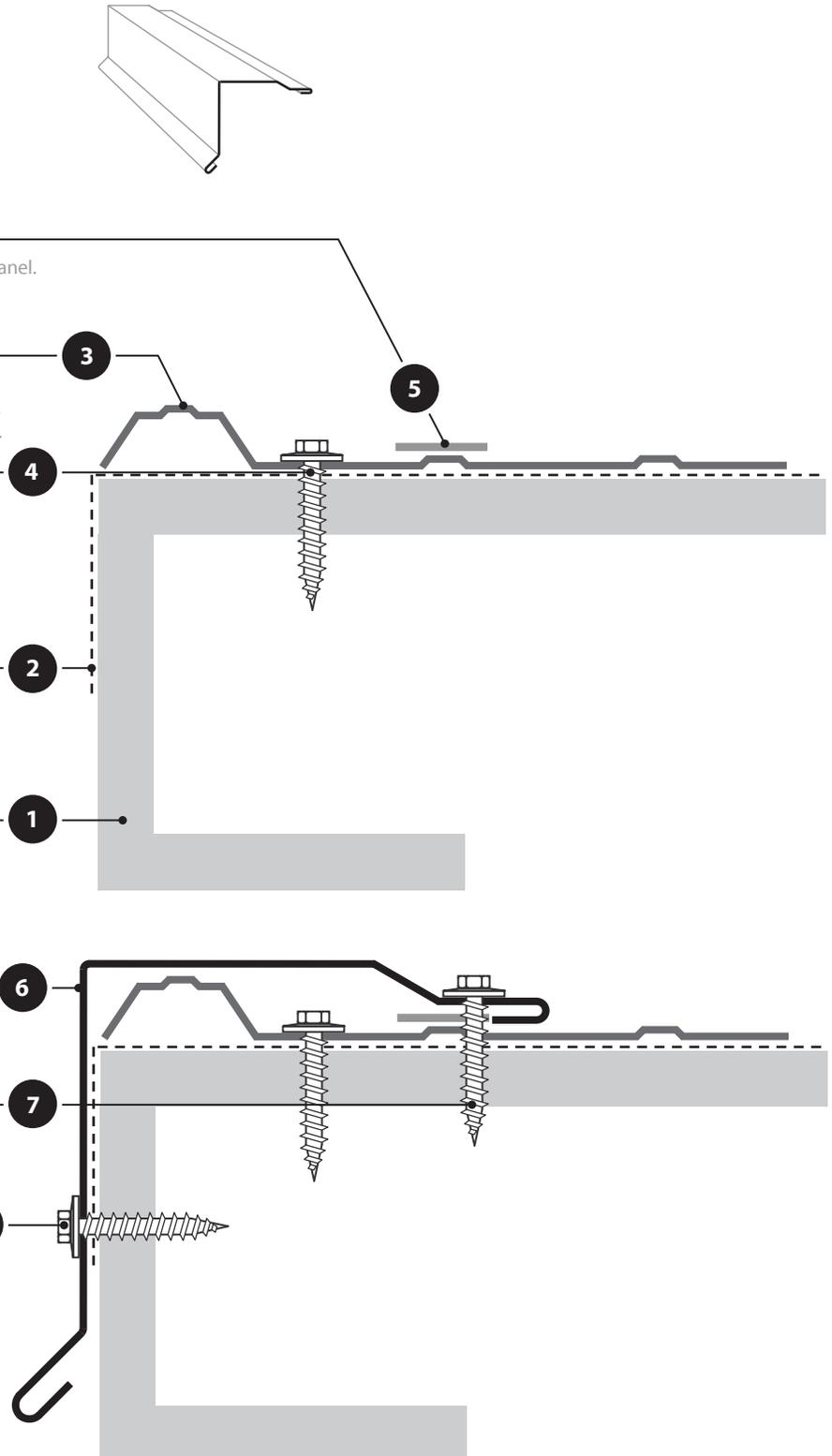
Install the Rake trim and overlap the ends 4". See lapping diagram in this manual.

### Trim Wood Screw

Fasten trim with Wood Screws spaced 12" apart along the length of the trim.

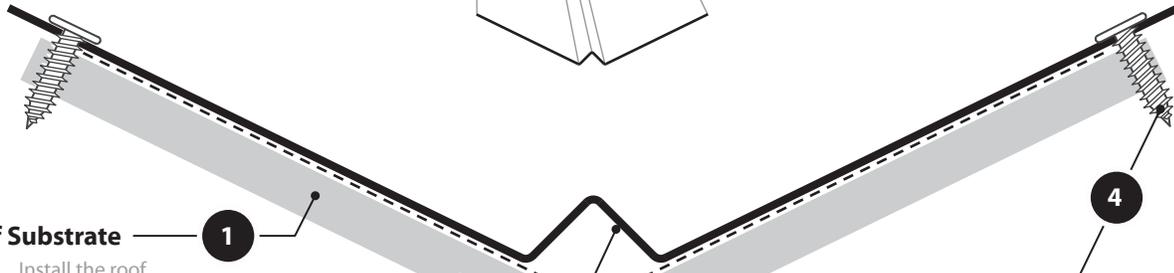
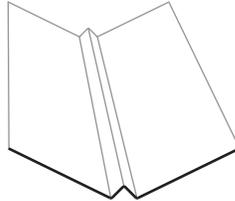
### Trim Wood Screw

Fasten trim with Wood Screws spaced 12" apart along the length of the trim.



# Preformed Valley

Numbers indicate suggested trim assembly sequence.



**Roof Substrate** — 1

Install the roof substrate according to local building code requirements.

**Moisture Barrier** — 2

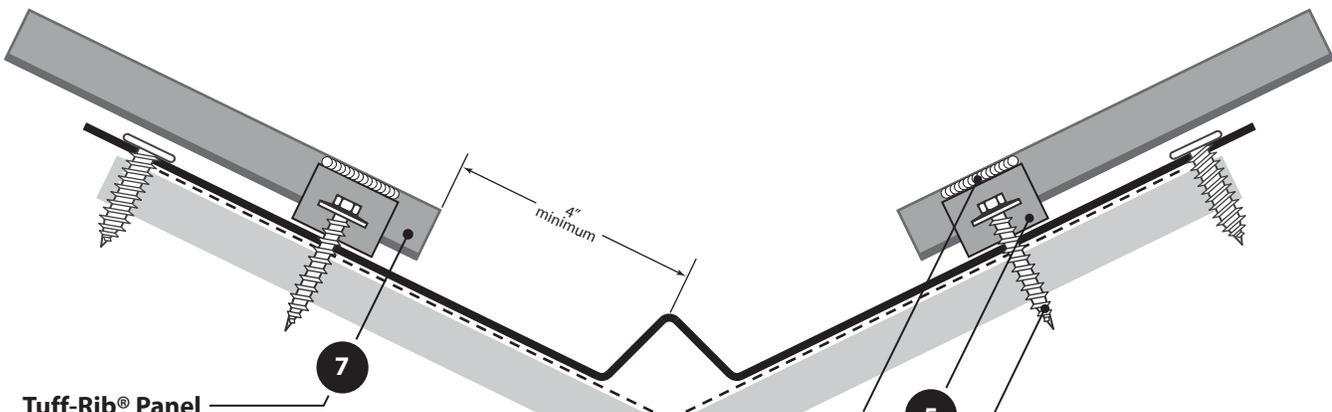
Install moisture barrier according to the manufacturer's recommended procedure and in compliance with local building code requirements.

**Preformed Valley Trim** — 3

Install the Valley trim and overlap the ends 4". See lapping diagram in this manual.

**Trim Pancake Screw** — 4

Fasten trim with Pancake Screws spaced 12" apart along the length of the trim. See lapping diagram fastener pattern in this manual.



**Tuff-Rib® Panel** — 7

Install the panel a minimum of 3" up from the water diverter at the bottom of the Valley and minimum of 3" down from the top of the Valley. See panel squaring method in this manual.

**Tube Sealant** — 5

Apply Optional Tube Sealant to the top side of the Closure.

**Expanding Closure** — 6

Place Expanding Closure, parallel to each side of the Valley center water diverter. Closure should be up from the panel end about 1". See panel minimum set back above.

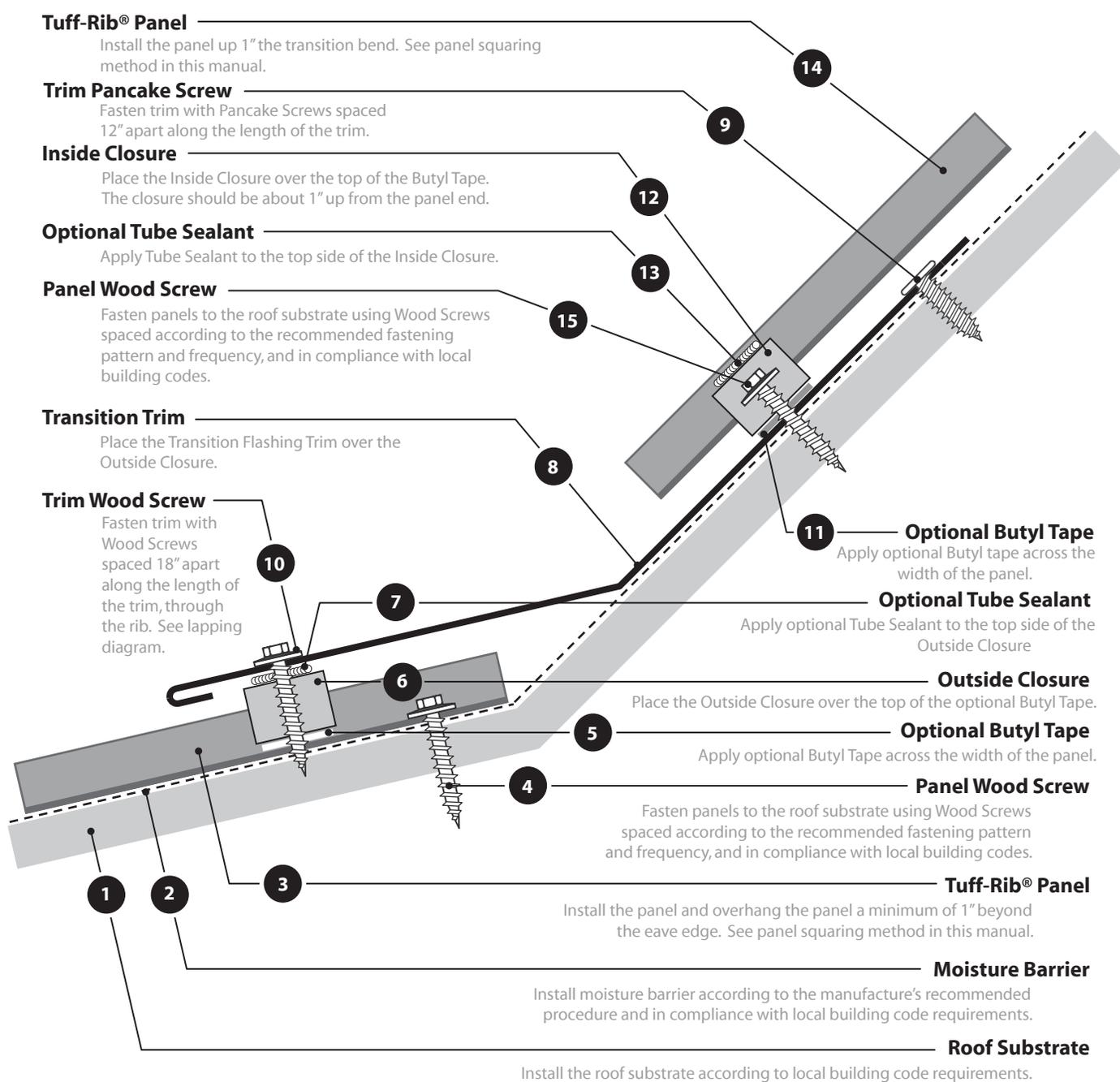
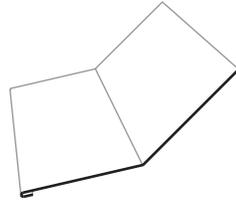
**Panel Wood Screw** — 8

**Notes:**

- 1. See Valley Lapping - Page 25
- 2. See Valley Cutting - Page 26

# Transition

Numbers indicate suggested trim assembly sequence.



**Tuff-Rib® Panel**

Install the panel up 1" the transition bend. See panel squaring method in this manual.

**Trim Pancake Screw**

Fasten trim with Pancake Screws spaced 12" apart along the length of the trim.

**Inside Closure**

Place the Inside Closure over the top of the Butyl Tape. The closure should be about 1" up from the panel end.

**Optional Tube Sealant**

Apply Tube Sealant to the top side of the Inside Closure.

**Panel Wood Screw**

Fasten panels to the roof substrate using Wood Screws spaced according to the recommended fastening pattern and frequency, and in compliance with local building codes.

**Transition Trim**

Place the Transition Flashing Trim over the Outside Closure.

**Trim Wood Screw**

Fasten trim with Wood Screws spaced 18" apart along the length of the trim, through the rib. See lapping diagram.

**Optional Butyl Tape**

Apply optional Butyl tape across the width of the panel.

**Optional Tube Sealant**

Apply optional Tube Sealant to the top side of the Outside Closure

**Outside Closure**

Place the Outside Closure over the top of the optional Butyl Tape.

**Optional Butyl Tape**

Apply optional Butyl Tape across the width of the panel.

**Panel Wood Screw**

Fasten panels to the roof substrate using Wood Screws spaced according to the recommended fastening pattern and frequency, and in compliance with local building codes.

**Tuff-Rib® Panel**

Install the panel and overhang the panel a minimum of 1" beyond the eave edge. See panel squaring method in this manual.

**Moisture Barrier**

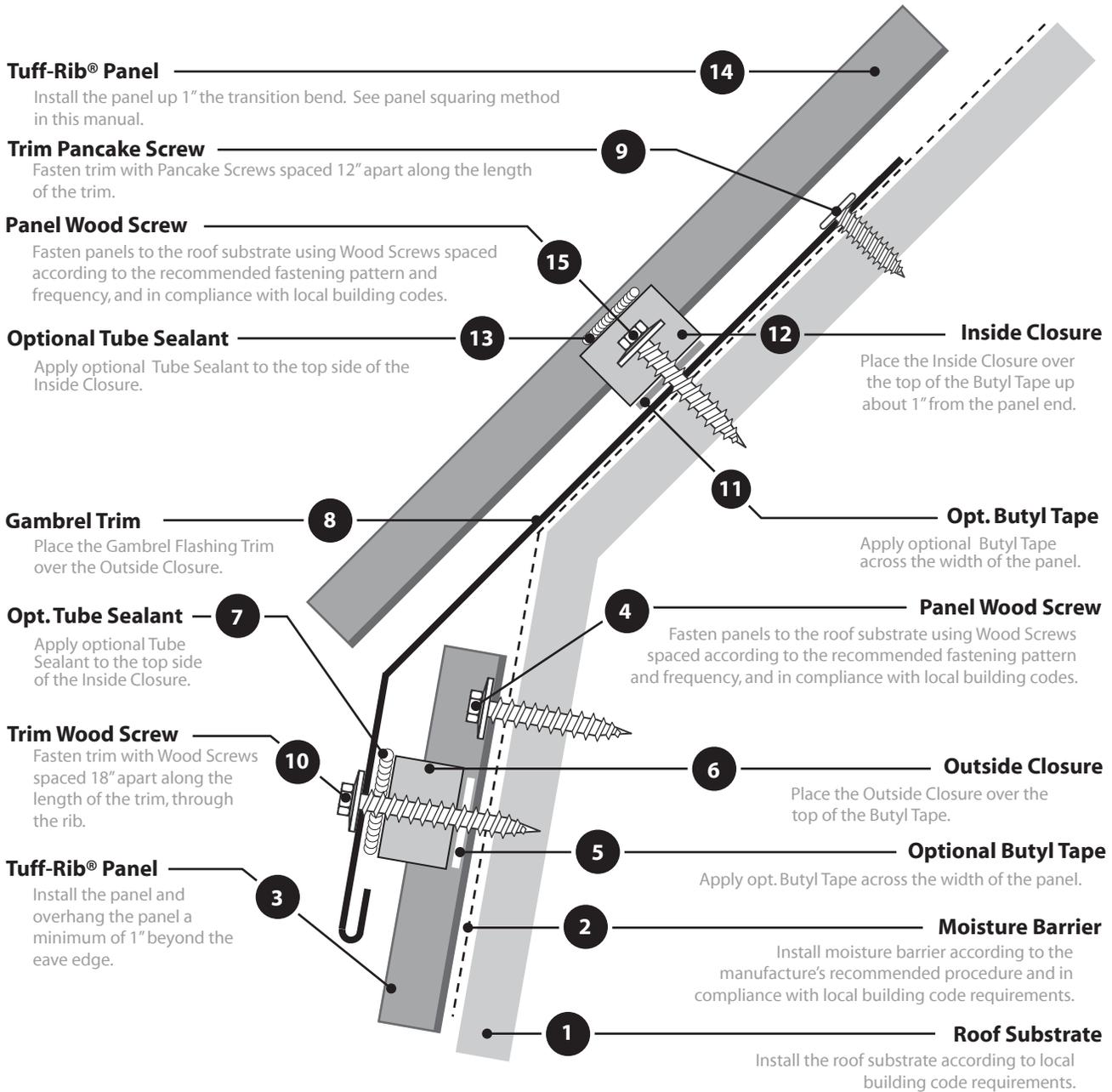
Install moisture barrier according to the manufacturer's recommended procedure and in compliance with local building code requirements.

**Roof Substrate**

Install the roof substrate according to local building code requirements.

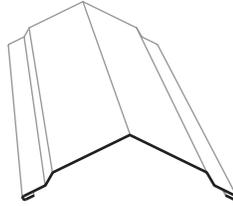
# Gambrel

Numbers indicate suggested trim assembly sequence.



# Hip

Numbers indicate suggested trim assembly sequence.



**Trim Wood Screw**

Fasten trim with Wood Screws spaced 18" apart along the length of the trim, through the rib. See lapping diagram.

**Opt. Tube Sealant**

Apply optional Tube Sealant to the top side of the Expanding Closure.

**Hip Trim**

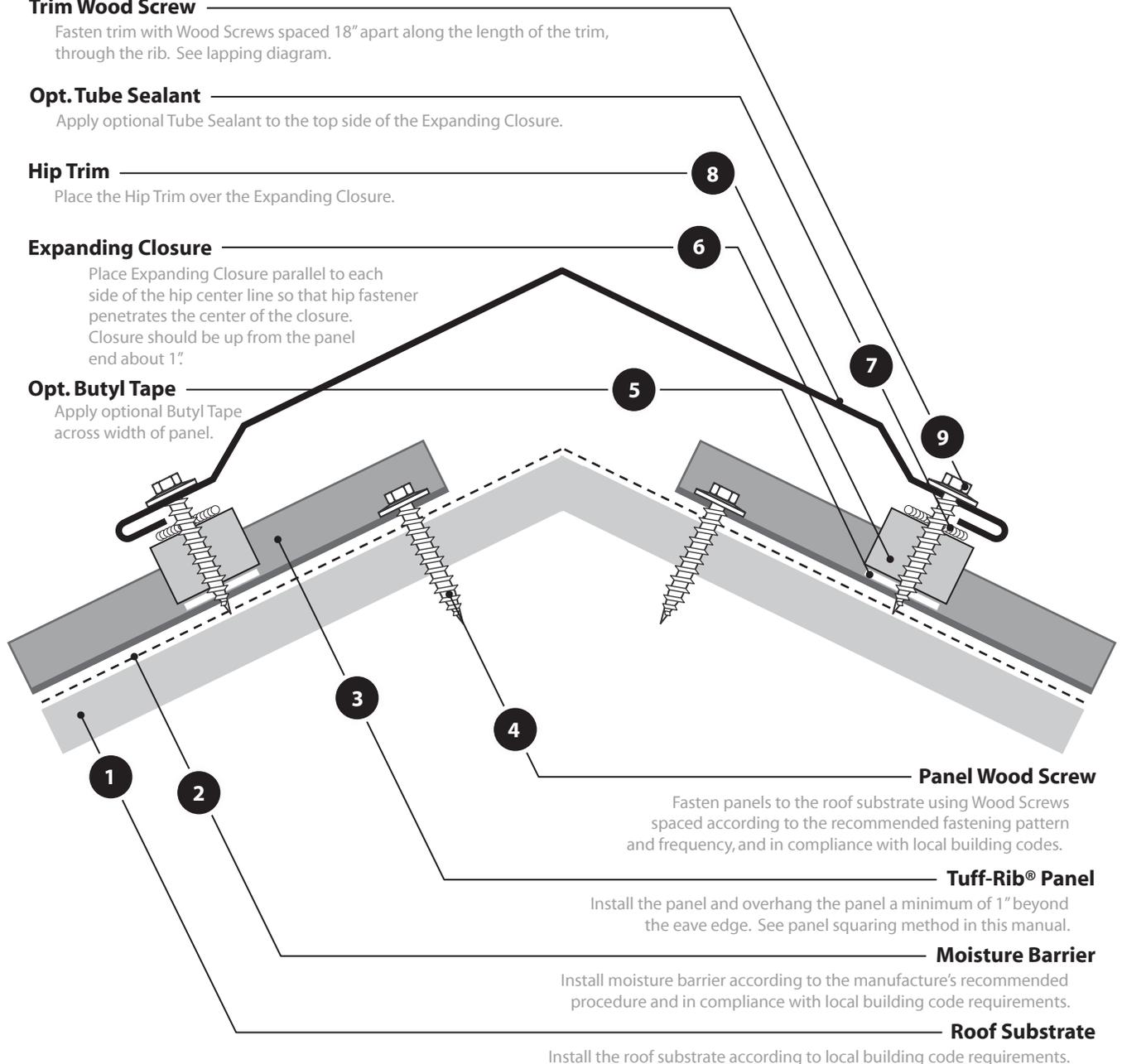
Place the Hip Trim over the Expanding Closure.

**Expanding Closure**

Place Expanding Closure parallel to each side of the hip center line so that hip fastener penetrates the center of the closure. Closure should be up from the panel end about 1".

**Opt. Butyl Tape**

Apply optional Butyl Tape across width of panel.



**Panel Wood Screw**

Fasten panels to the roof substrate using Wood Screws spaced according to the recommended fastening pattern and frequency, and in compliance with local building codes.

**Tuff-Rib® Panel**

Install the panel and overhang the panel a minimum of 1" beyond the eave edge. See panel squaring method in this manual.

**Moisture Barrier**

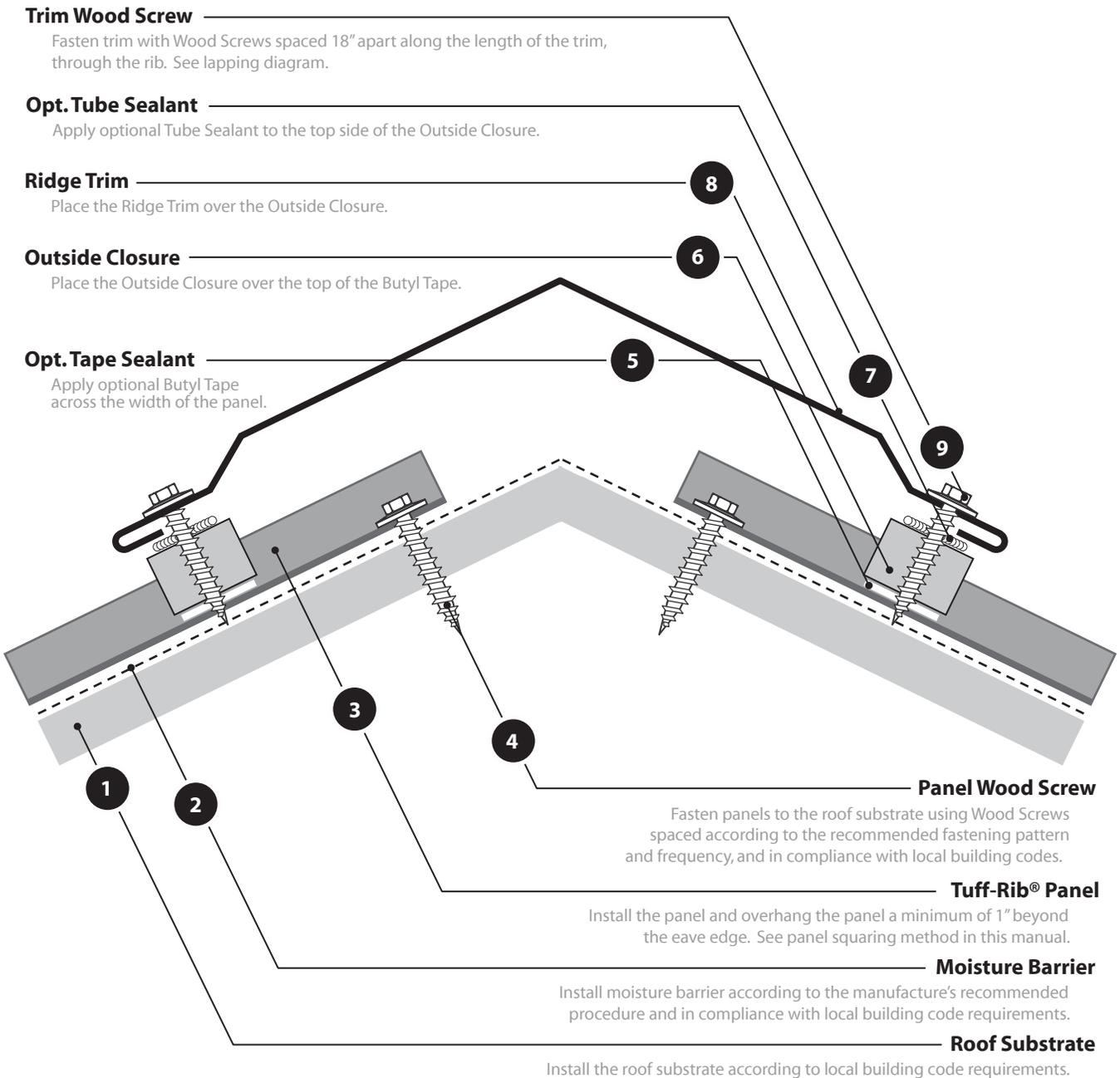
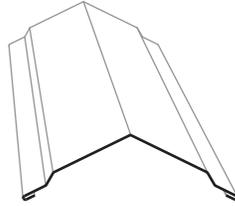
Install moisture barrier according to the manufacturer's recommended procedure and in compliance with local building code requirements.

**Roof Substrate**

Install the roof substrate according to local building code requirements.

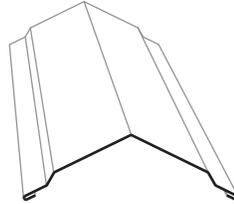
# Ridge

Numbers indicate suggested trim assembly sequence.

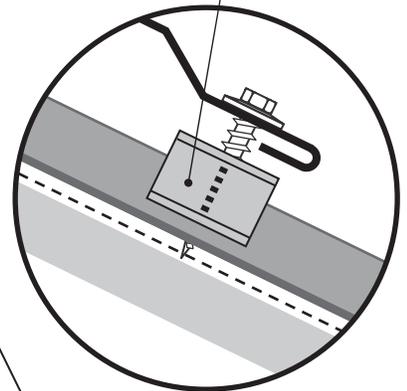


# Vented Ridge

Numbers indicate suggested trim assembly sequence.



LP2 Vented Closure Option



**Trim Wood Screw**

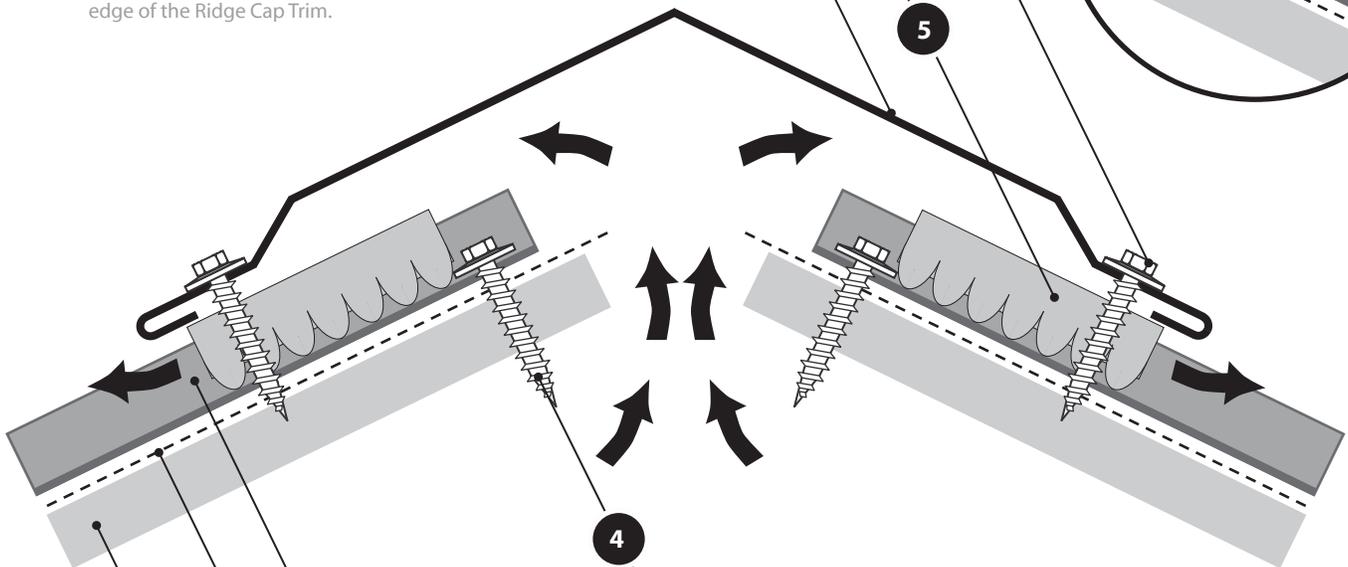
Fasten trim with Wood Screws spaced 18" apart along the length of the trim, through the rib. See lapping diagram fastener pattern in this manual.

**Ridge Trim**

Place the Ridge Trim over the Outside Closure.

**Vent Material**

Apply ridge vent material along the outside edge of the Ridge Cap Trim.



**Panel Wood Screw**

Fasten panels to the roof substrate using Wood Screws spaced according to the recommended fastening pattern and frequency, and in compliance with local building codes.

**Tuff-Rib® Panel**

Install the panel and overhang the panel a minimum of 1" beyond the eave edge. See panel squaring method in this manual.

**Moisture Barrier**

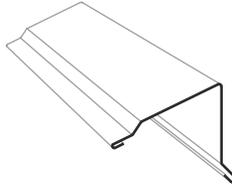
Install moisture barrier according to the manufacturer's recommended procedure and in compliance with local building code requirements.

**Roof Substrate**

Install the roof substrate according to local building code requirements.

## High Side Peak

Numbers indicate suggested trim assembly sequence.



### Trim Wood Screw

Fasten trim with Wood Screws spaced 2' apart along the length of the trim. See lapping diagram.

### High Side Peak Trim

Place the High Side Peak Trim over the Outside Closure.

### Trim Wood Screw

Fasten trim with Wood Screws spaced 18" apart along the length of the trim, through the rib. See lapping diagram.

### Opt. Tube Sealant

Apply optional Tube Sealant to the top side of the Inside Closure.

### Outside Closure

Place the Outside Closure over the tip of the optional Butyl Tape.

### Tuff-Rib® Panel

Install the panel and overhang the panel a minimum of 1" beyond the eave edge. See panel squaring method in this manual.

### Opt. Butyl Tape

Apply optional Butyl Tape across the width of the panel.

### Panel Wood Screw

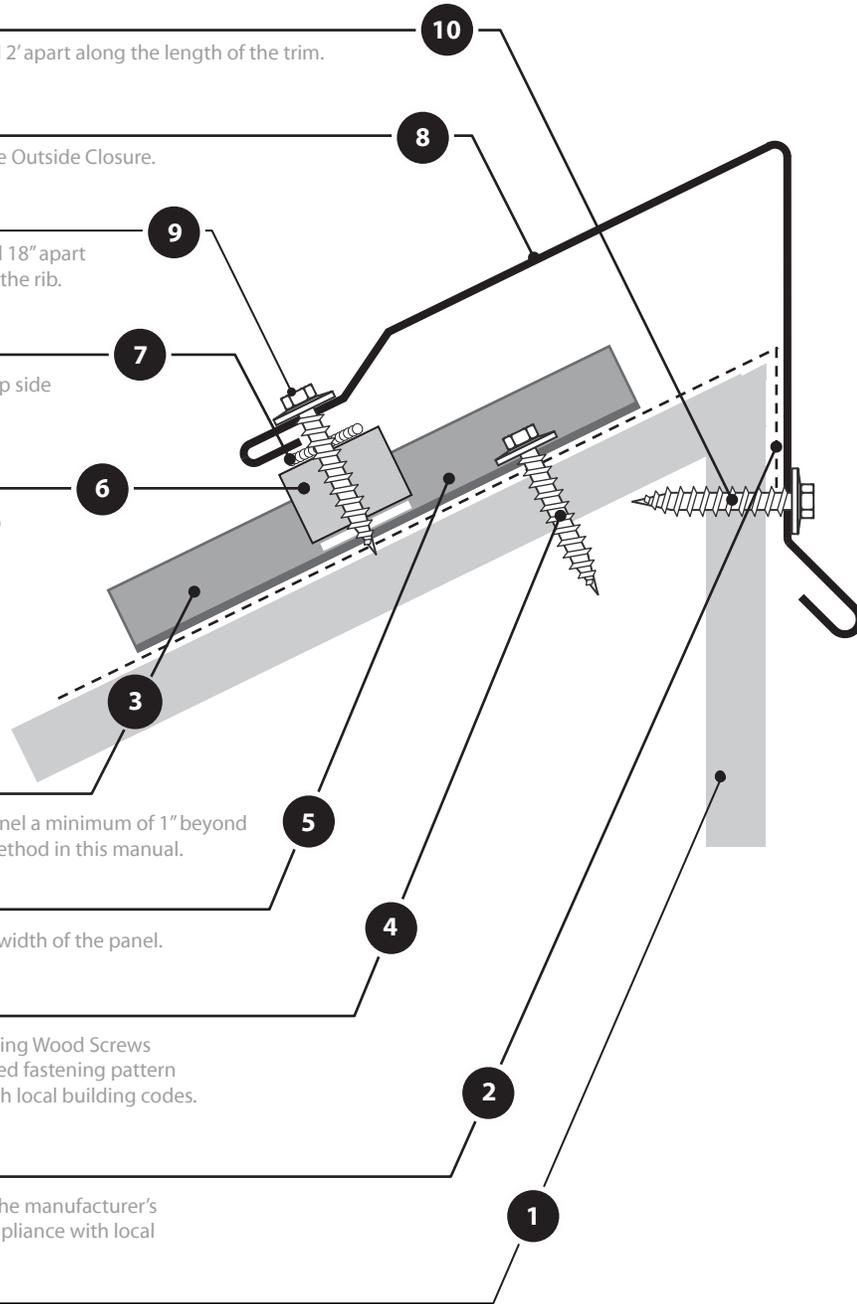
Fasten panels to the roof substrate using Wood Screws spaced according to the recommended fastening pattern and frequency, and in compliance with local building codes.

### Moisture Barrier

Install moisture barrier according to the manufacturer's recommended procedure and in compliance with local building code requirements.

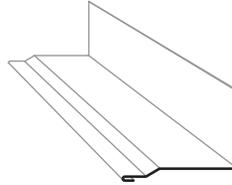
### Roof Substrate

Install the roof substrate according to local building code requirements.



## Side Wall

Numbers indicate suggested trim assembly sequence.



**Tube Sealant**

Apply Tube Sealant continuously along the Counter Flashing and generously filling the space between the flashing and the wall. Round or slope the Sealant top so that water will run off.

**Trim Wood Screw**

Fasten trim with Wood Screws spaced 2' apart along the length of the trim. If wall material is not wood, fasteners will be by others.

**Counter Flashing**

Position the Counter Flashing above the Side Wall Trim as shown. Some applications may not need counter flashing.

**Side Wall Trim**

Place the Side Wall Trim over the Butyl tape and overlap the ends 4". See lapping diagram in this manual.

**Roof Substrate**

Install the roof substrate according to local building code requirements.

**Butyl Tape**

Apply Butyl Tape along the length of the panel.

**Trim Wood Screw**

Fasten trim with Wood Screws spaced 2' apart along the length of the trim. See lapping diagram.

**Panel Wood Screw**

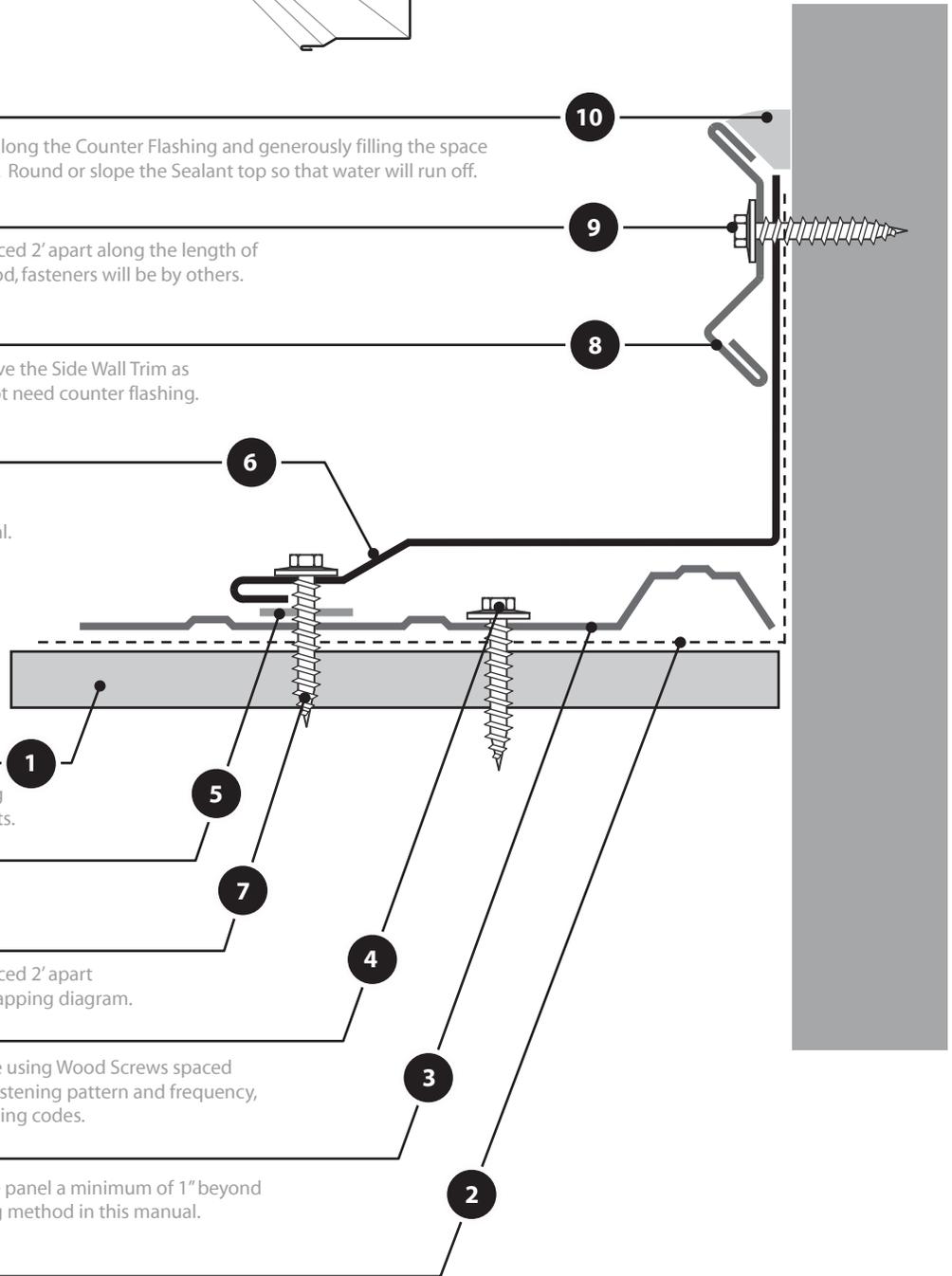
Fasten panels to the roof substrate using Wood Screws spaced according to the recommended fastening pattern and frequency, and in compliance with local building codes.

**Tuff-Rib® Panel**

Install the panel and overhang the panel a minimum of 1" beyond the eave edge. See panel squaring method in this manual.

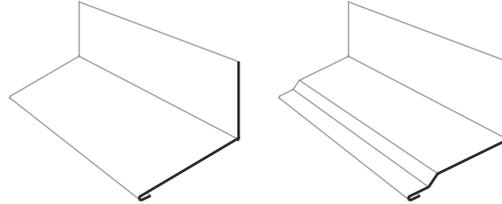
**Moisture Barrier**

Install moisture barrier according to the manufacturer's recommended procedure and in compliance with local building code requirements.



## End Wall

Numbers indicate suggested trim assembly sequence.



**Tube Sealant**

Apply Tube Sealant continuously along the Counter Flashing and generously filling the space between the flashing and the wall. Round or slope the Sealant top so that water will run off.

**Trim Wood Screw**

Fasten trim with Wood Screws spaced 2' apart along the length of the trim. If wall material is not wood, fasteners will be by others.

**Counter Flashing**

Position the Counter Flashing above the Side Wall Trim as shown. Some applications may not need counter flashing.

**End Wall Trim**

Place the End Wall Trim over the Butyl tape and overlap the ends 4". See lapping diagram in this manual.

**Outside Closure**

Place the Outside Closure over the top of the Butyl Tape.

**Tube Sealant**

Apply Tube Sealant along the length of the Outside Closure.

**Trim Wood Screw**

Fasten trim with Wood Screws spaced 18" apart along the length of the trim, through the rib. See lapping diagram.

**Tuff-Rib® Panel**

Install the panel and overhang the panel a minimum of 1" beyond the eave edge. See panel squaring method in this manual.

**Moisture Barrier**

Install moisture barrier according to the manufacturer's recommended procedure.

**Roof Substrate**

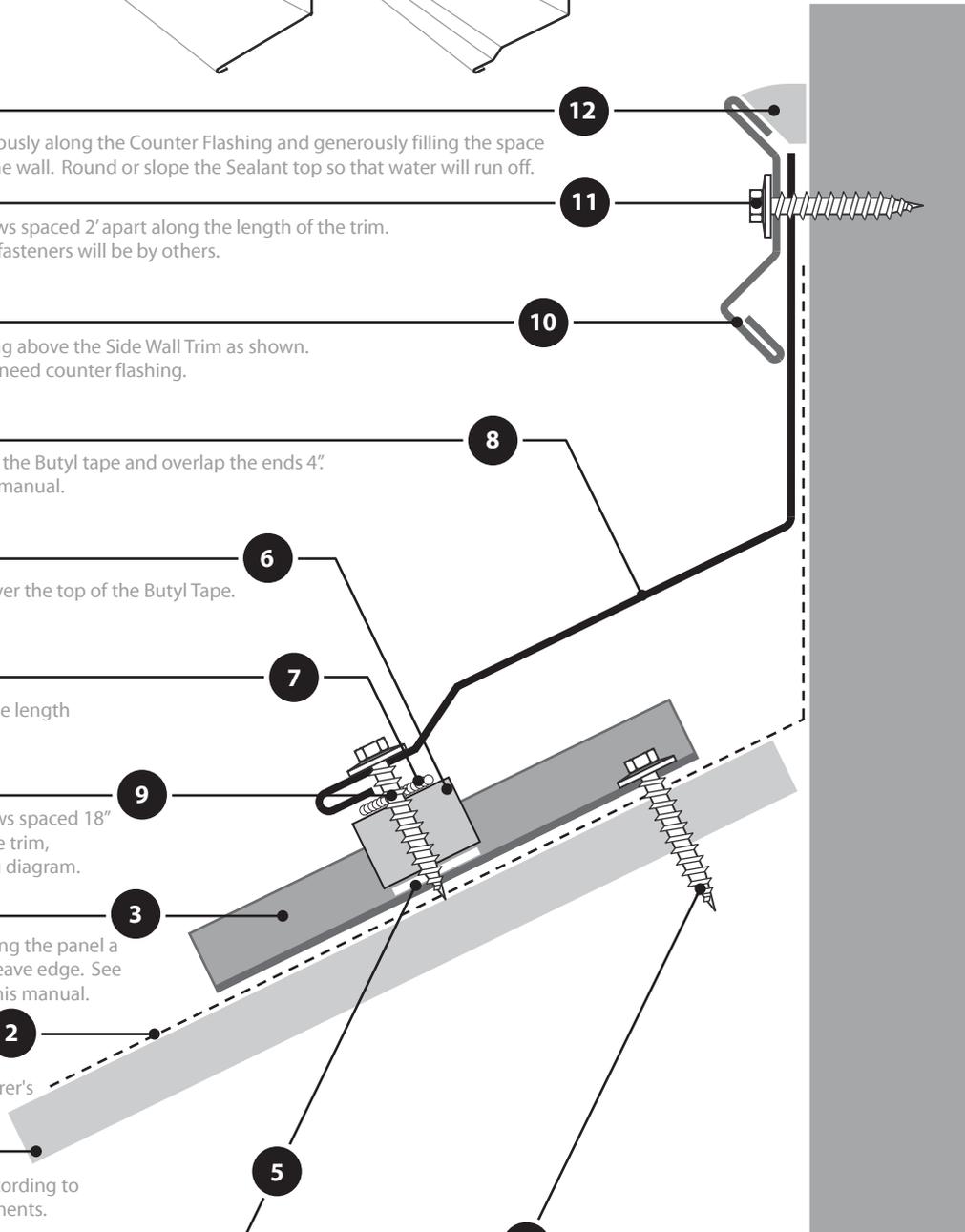
Install the roof substrate according to local building code requirements.

**Tape Sealant**

Apply Butyl Tape along the length of the panel.

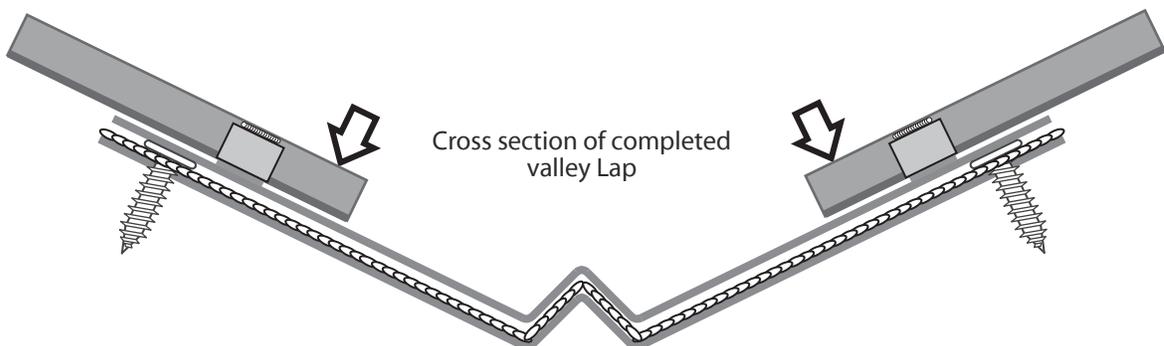
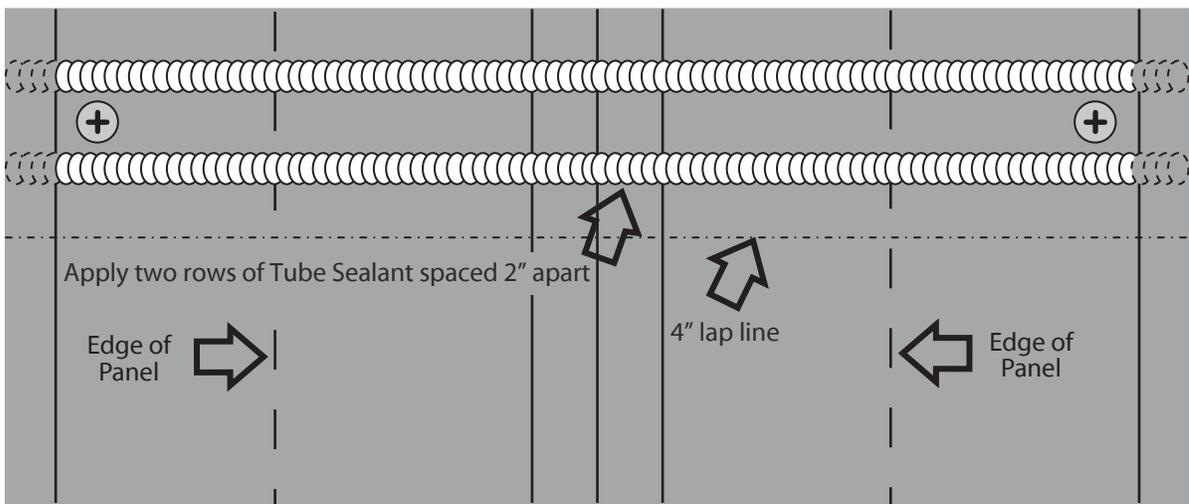
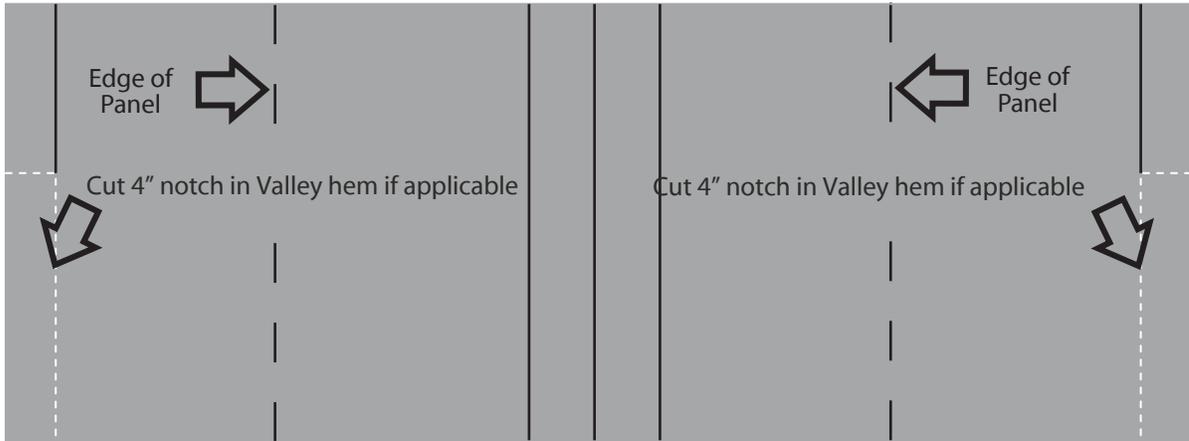
**Panel Wood Screw**

Fasten panels to the roof substrate using Wood Screws spaced according to the recommended fastening pattern and frequency, and in compliance with local building codes.



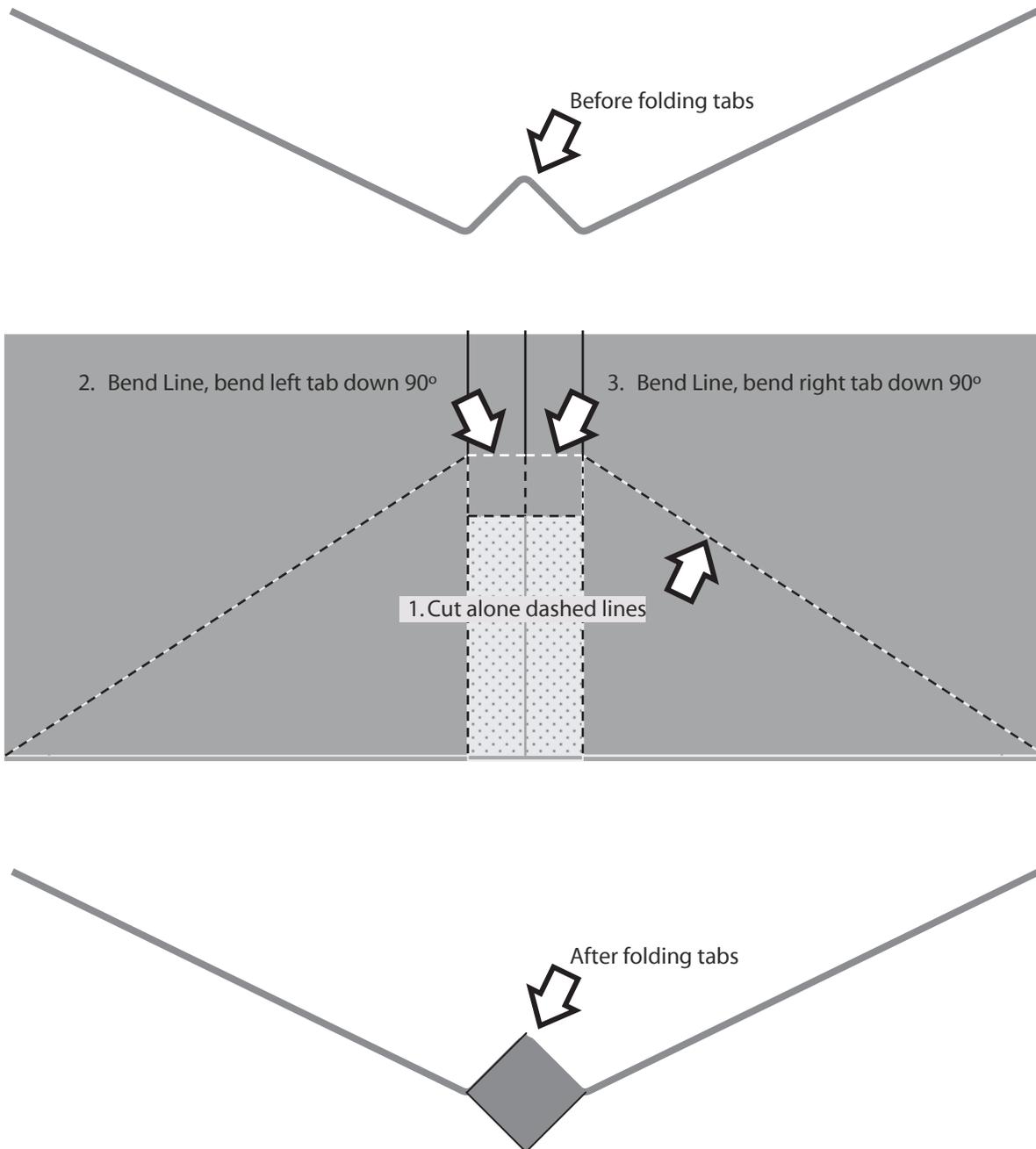
## Valley Lapping

↓ After cutting notches and applying Tube Sealant, slide the up slope valley into the hem groove (if applicable) while lapping over the top of the low slope valley 4". ↓

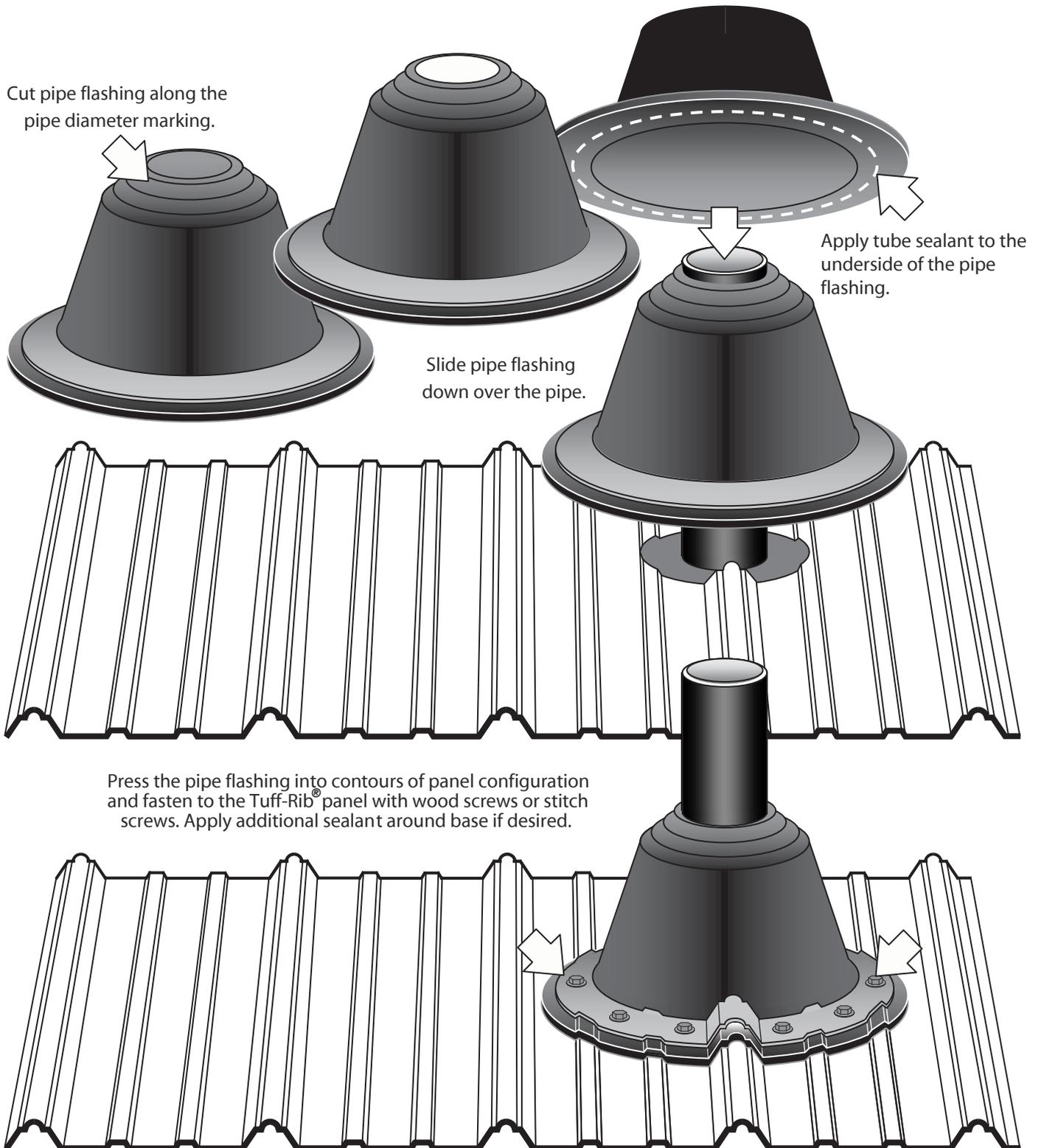


## Valley Cutting at Eave

Valley starter cutting diagram with water diverter tabs.



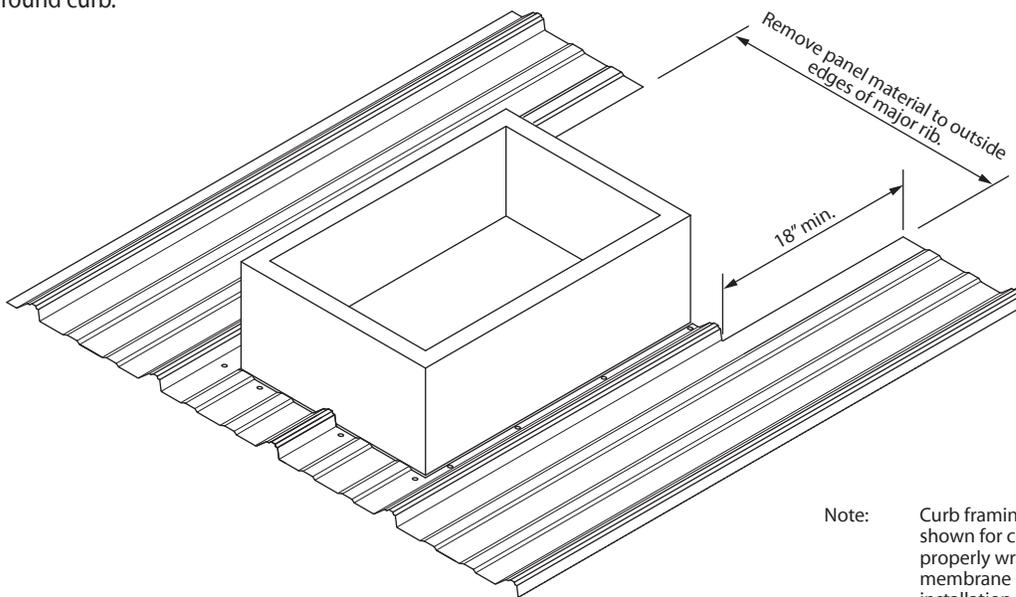
## Pipe Flashing



## CURB DETAIL (Chimneys & Skylights)

### STEP 1

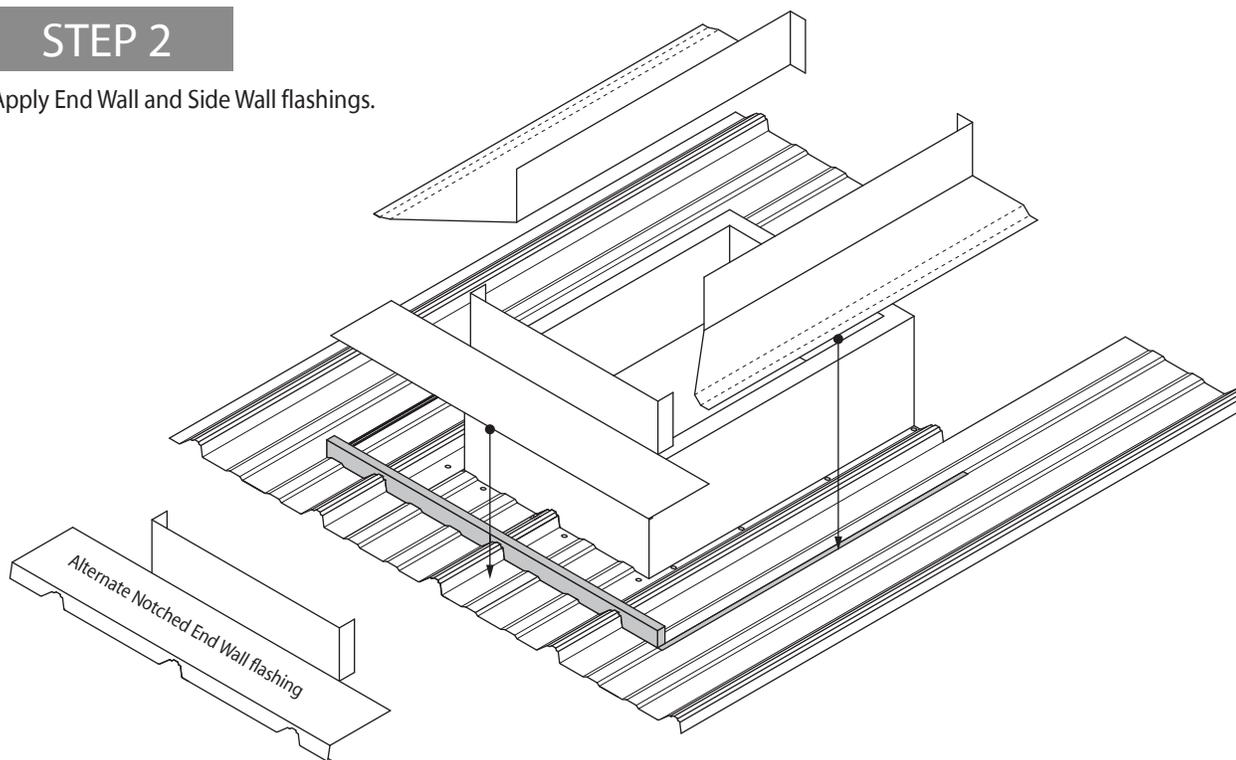
Install panels around curb.



Note: Curb framing and underlayment not shown for clarity. Curb must be properly wrapped with approved membrane underlayment prior to installation of panels/flashings.

### STEP 2

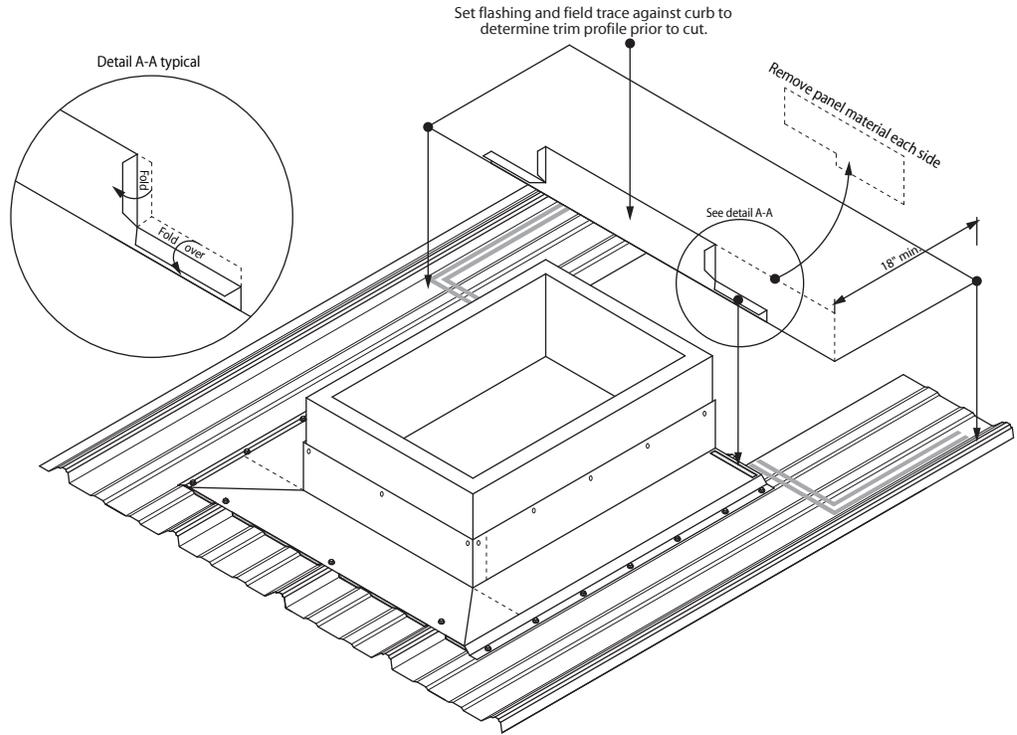
Apply End Wall and Side Wall flashings.



### CURB DETAIL (Chimneys & Skylights) (cont.)

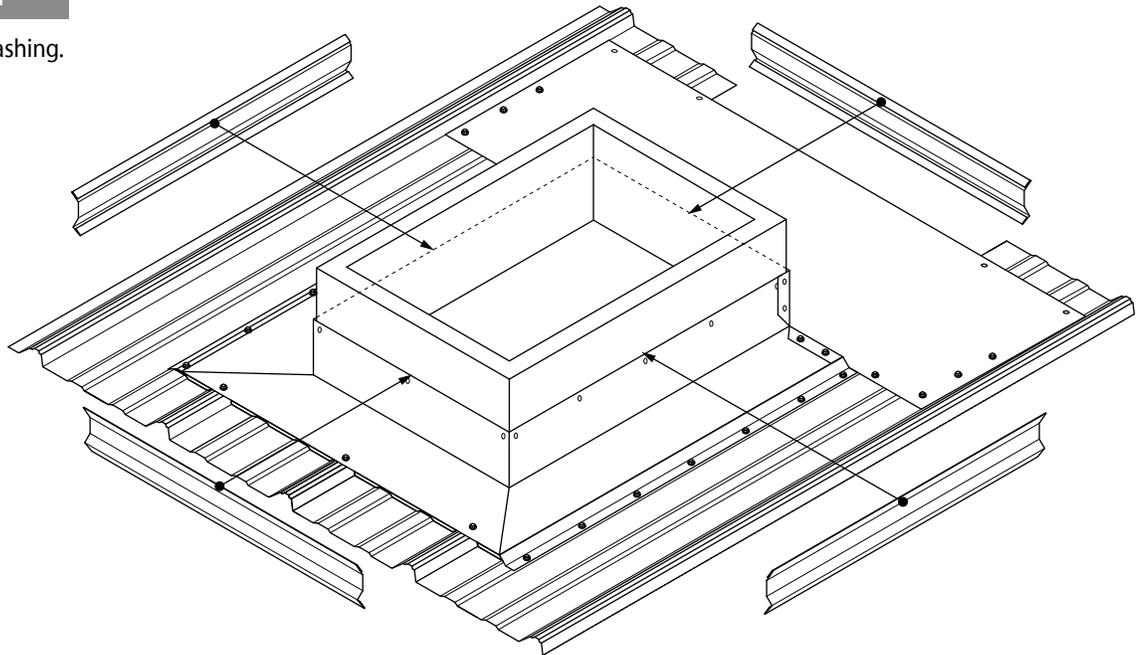
#### STEP 3

Install low wall flashing.



#### STEP 4

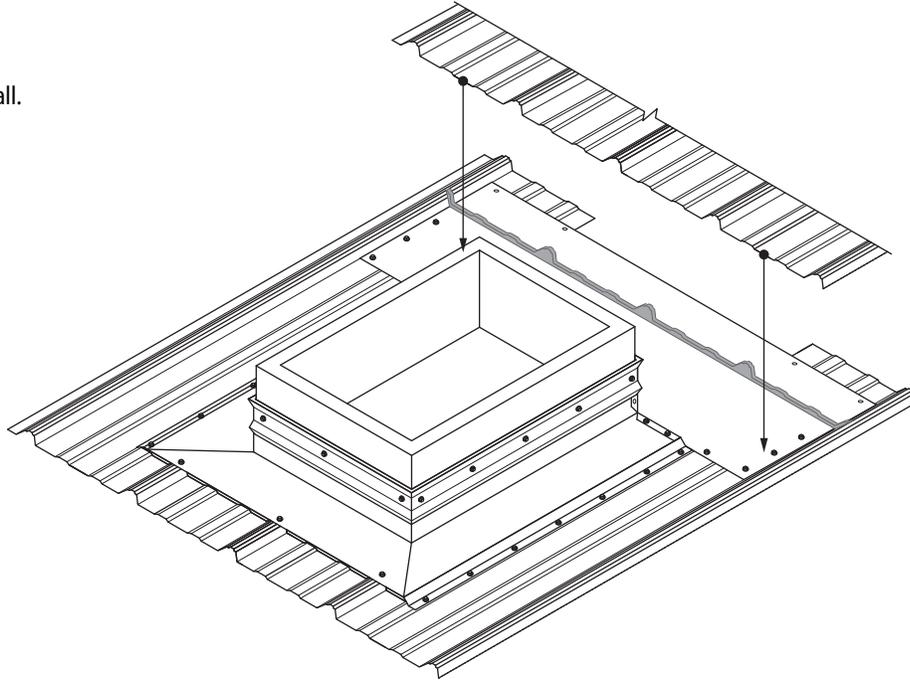
Install Counter Flashing.



**CURB DETAIL (Chimneys & Skylights) (cont.)**

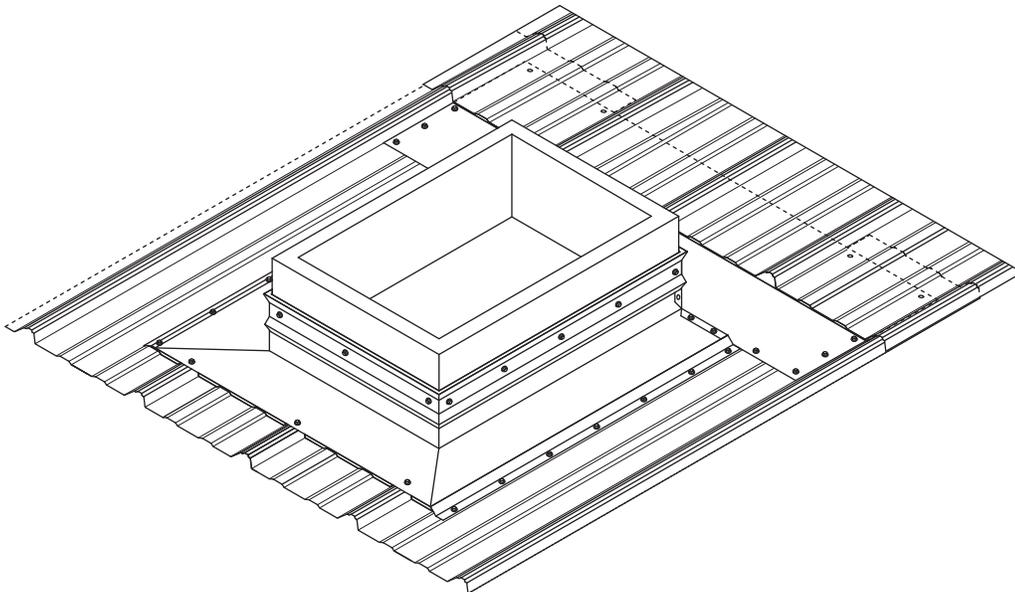
**STEP 5**

Install foam closure and prepare for upper panel install.



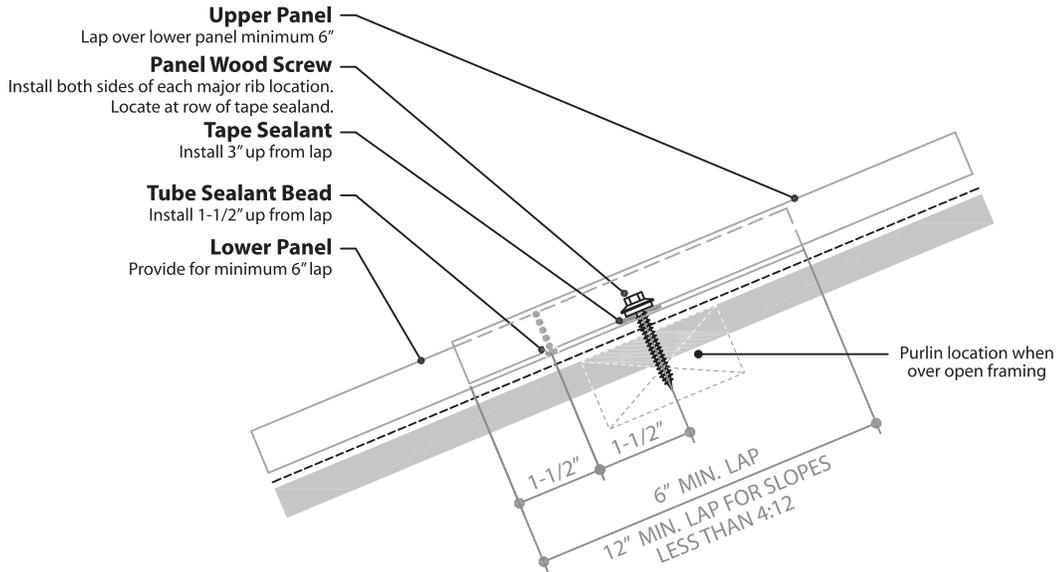
**STEP 6**

Fasten upper panel over Low Wall flashing.



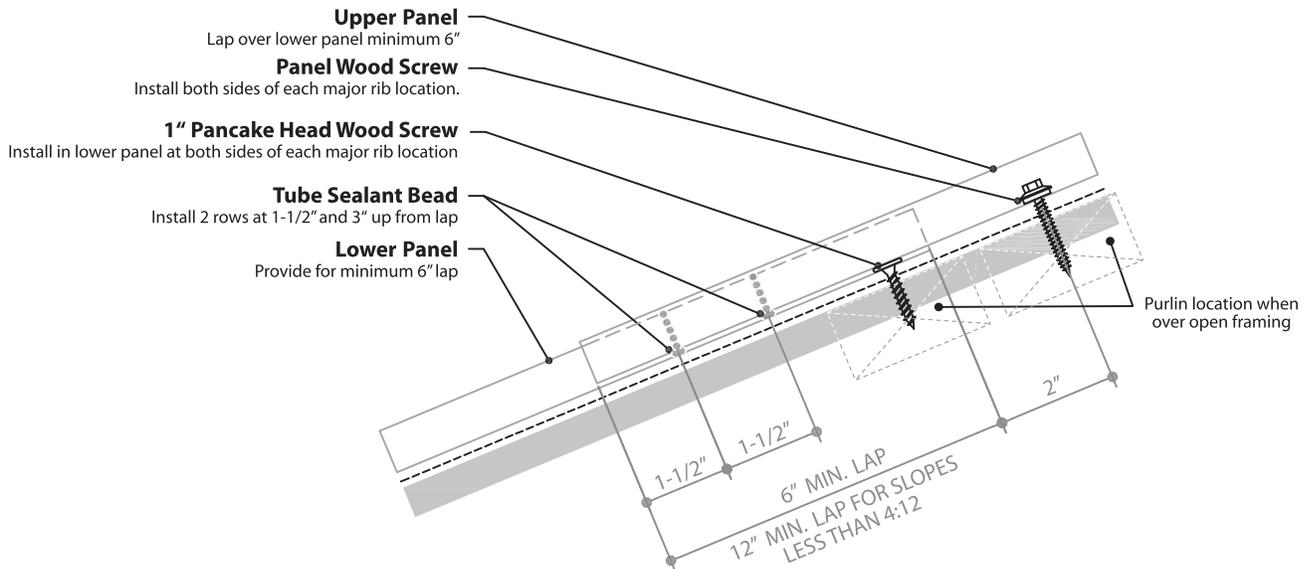
### PANEL ENDLAP DETAIL (Short Run)

Use when total panel run is less than 35 feet



### PANEL ENDLAP DETAIL (Long Run)

Use when total panel run is 35 feet or greater





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