ABSOLUTE STEEL

METAL ROOFING INSTALLATION GUIDE

GRAND RIB 3
and MULTI-PURPOSE
PANEL

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

• Thank You for Choosing Absolute Steel •

IMPORTANT NOTE

This booklet provides guidelines and instructions for installing metal roofing products offered by Absolute Steel. The booklet's material was current at the time it was written, and we strive to keep both its text and its illustrations up to date, reflecting changes in building codes, manufacturers' design and specification changes and so on.

We reserve the right to make changes in the specifications and other details offered at any time, and without incurring any liability or obligation by doing so.

Instructions and illustrations are intended as examples only, representing the usual procedures for most locations and circumstances. They may not be appropriate in all environmental circumstances, nor for all structures' designs and materials. Any roofing project's planning, engineering and installation should be appropriate to the specific circumstances of the job, and in conformation with all applicable building codes and regulations, as well as current industry practices.

To make certain you have the very latest information available, please contact us – we'll be happy to answer any questions, and provide any known details or updates that may not yet have been included in this booklet.

GENERAL INSTRUCTIONS AND TIPS

Panel Storage

* If your metal panels will not be installed immediately upon delivery, they should be stored indoors, in a dry and well-ventilated location.

* Steps must be taken to prevent moisture (such as from rain, or condensation) from becoming trapped between panels, as it could cause water stains and in some cases corrosion, damaging the appearance of the panels and potentially shortening their service life.

* In storing panels indoors, their packaging bands should be broken and the panels stored either on end, or on an incline of at least eight inches, with supporting boards underneath to prevent sagging. Panel ends should be resting on wood or some other material that will insulate them. The panels should be separated (fanned) slightly at the lower end, to allow air circulation.

* If outdoor storage is unavoidable, it is done at the owner's risk. In such a case, the panels should be covered with canvas or waterproof paper**. Plastic should NOT be used to cover panels, since it will cause condensation.**

Safety Precautions

* When working with metal panels, always wear protective gloves to prevent cuts from sharp edges.

* Always wear safety goggles or glasses when cutting or drilling metal panels. When a cut has been completed, gently sweep away any metal shavings or bits, to prevent injury and potential damage to panel surfaces.

* If it is necessary to walk on a metal roof, wear shoes with non-slip soles and be extremely careful – panels can become slippery.

General Installation Tips

* It is a very good idea to read through this entire booklet before you begin installation work. This will familiarize you with the overall process, and may alert you to steps or cautions you might not otherwise expect. This read-through step can be very helpful even if you have installed roofing before – there may be new or different steps you won't be familiar with.

* Before beginning installation, make certain the structure is square. If it is not, panels will not meet properly edge to edge, and a tight seal will not be created between panels.

* Wet or green lumber should not be used in a roof's supporting structure. It warps as it dries, potentially creating leaks and damage. It may also release moisture, damaging panels. Fasteners driven into green lumber may not be held securely.

* Routinely brush away any bits of metal or other debris. Sharp metal bits can damage panel surfaces, opening the way to corrosion. Hot bits of metal produced during cutting or drilling can also embed themselves in panel surfaces, and eventually rust, causing rust streaks or stains.

GENERAL INSTRUCTIONS AND TIPS - Continued

Fastening Tips

* For best results, use 1½″ washered wood screws in the flat areas of panels, as illustrated below. Proper screws will ordinarily be supplied with your panels.

* Drive screws so that the washer is pressed firmly against the panel. Over-tightening and under-tightening can both lead to leakage.

* If you choose to pre-drill holes for fasteners, drill through a cover sheet to prevent hot drill shavings from sticking to panel coatings.

* If a screw is driven through a panel but misses the material underneath, do not leave it in place. Remove the screw and seal the hole with caulk, or with a #14 stitch screw.

Fastening Pattern - Eaves, Ridges and End Laps

Fastening Pattern - Intermediate Supports

Anti-Siphon Channel

Roofing - General

Using Grand Rib 3 or Multi-Purpose panels for roofs sloped at less than 2.5:12 (2½ inches rise for each 12 inches of horizontal distance) is not recommended. For slopes 2.5:12 and greater, panels should be overlapped by 6″ at the ends.

Lapping Pattern

Panels should be applied so that side laps face away from the prevailing winds. To do this, the first panel should be placed along the eave on the down-wind side of the roof. That is, the side furthest from the direction of the prevailing winds (see illustration). Panels should be installed in the sequence indicated (1, 2, 3 and so on).
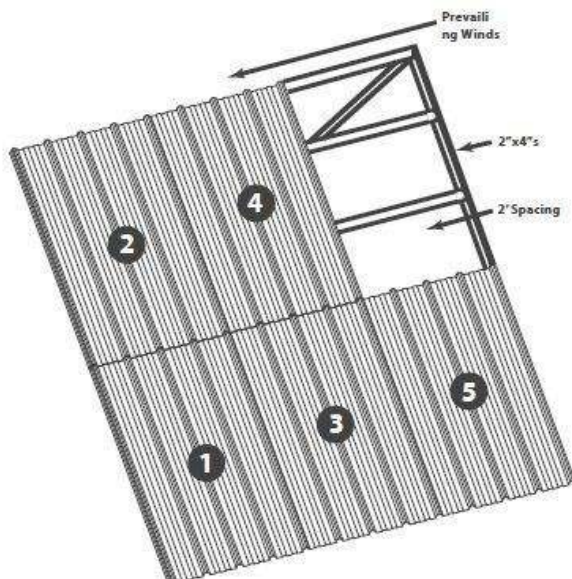
Maximum purlin spacing for roof 2' on center
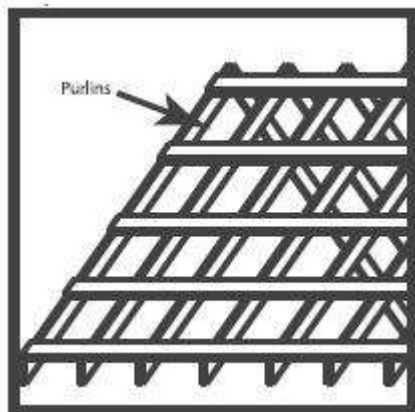
Option 1: Install panels directly to wooden framing.
* Use 2' purlin spacing maximum
* Install panels
NOTE: This option NOT recommended for roofing a heated space with no insulation or vapor barrier.
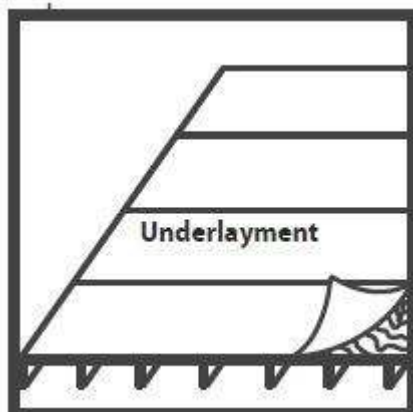
Option 2 : Install panels on solid decking
* Install plywood deck
* Install synthetic underlayment or other vapor barrier
* Install panels
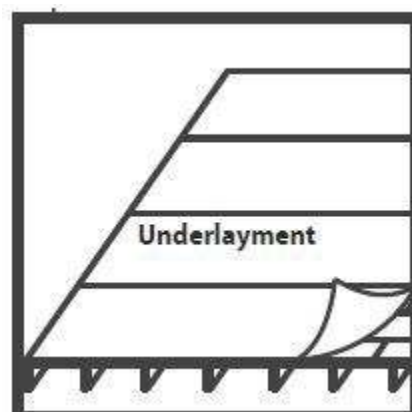
Option 3: Install panels over existing shingles
* Install synthetic underlayment or other vapor barrier
* Install panels

Roofing - General (continued)

When installing panels, leave an overhang of at least 1 inch at the eaves, to allow room for installation of drip edge.

Use inside closure (formed foam) at the eaves, to prevent water, insects, birds and debris from entering openings.

To guard against wind damage at the eaves, and for a neatly finished appearance, gable trim is recommended. Install screws every 6-10 inches.

Butyl tape (as shown below) is recommended along panel side laps. Another option is to install a ¾″ or 7/8″ lap stitch screw in the crown of the rib, to secure the side lap. This is recommended if the roof slope is less than 4:12.

Butyl tape
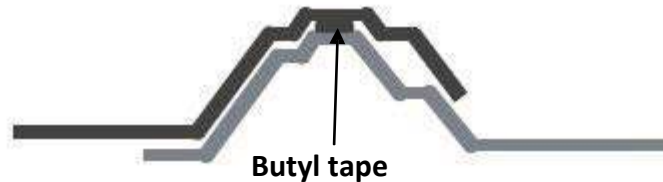
Allowable Uniform Loads (per square foot)

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

ENGINEERING NOTES:

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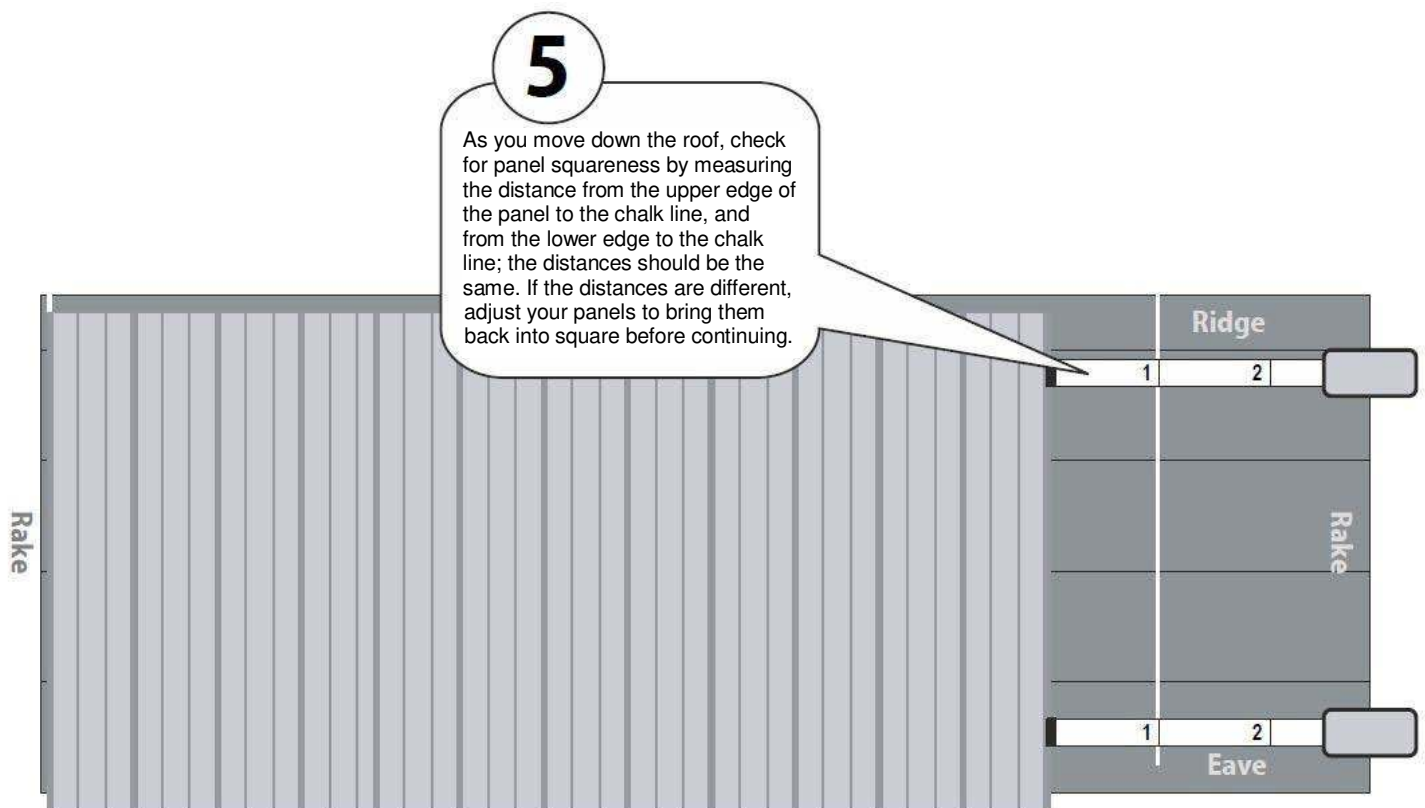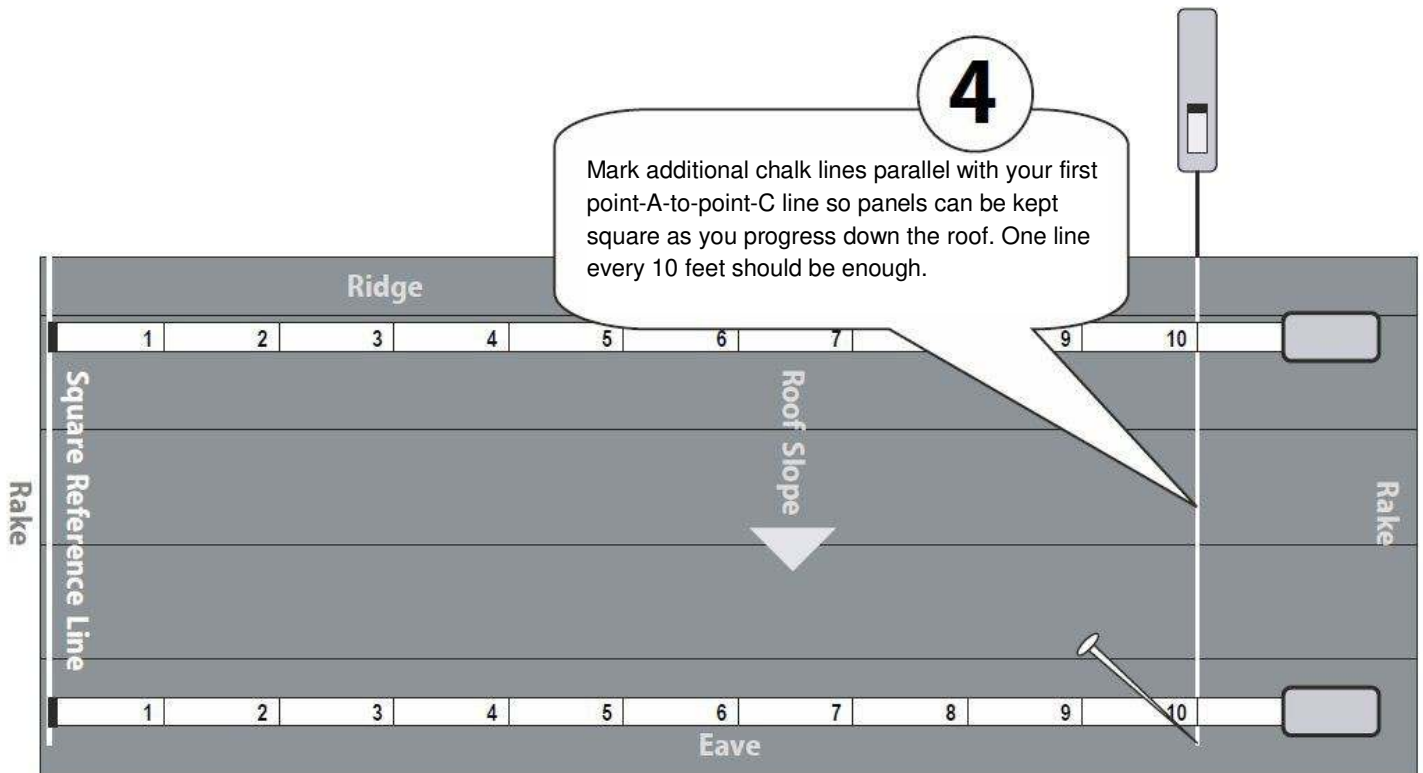5. Check local building codes if panel testing is required.

Roofing - General (continued)

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

2 Use two tape measures to locate your point C: One tape should be hooked to the nail at point A and extended 4' directly up along the rake and parallel to it. The second tape should be hooked to the nail at B, and extended 5' diagonally to the rake. The 5' mark on the tape from point B should be positioned so it exactly meets the 4' mark on the tape from point A. Mark this meeting point with a nail.

The 4' and 5' measurements give you the "4" and "5" sides of the triangle.

Point C

Point A

Point B

Ridge

Rake

Roof Slope

Rake

Eave

1 Mark point A (as shown) with a temporarily-driven nail. Measure along the eave 3' and set another nail to mark point B. This A-B line must be parallel to the eave. This is the "3" side of the 3-4-5 triangle.

Larger 3-4-5 triangles can be made by simply multiplying the length of each "leg" by the same number. For example, if the roof is 18 feet from peak to eave, you might multiply by 4. This would give you a 12-16-20 triangle (with 16' from point A to point C).

Point C

Ridge

Rake

Roof Slope

Rake

3 Mark a chalk line on the roof deck, parallel to the rake, from point A to point C. This will be the reference line to use to make sure your first panel is installed squarely.

Point A

Eave

Roofing - General (continued)

4

Mark additional chalk lines parallel with your first point-A-to-point-C line so panels can be kept square as you progress down the roof. One line every 10 feet should be enough.

Ridge

Square Reference Line

Rake

Roof Slope

Rake

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 9 | 10 |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

Eave

5

As you move down the roof, check for panel squareness by measuring the distance from the upper edge of the panel to the chalk line, and from the lower edge to the chalk line; the distances should be the same. If the distances are different, adjust your panels to bring them back into square before continuing.

Ridge

Rake

Rake

| 1 | 2 |

| 1 | 2 |

Eave

Roof Panel and Trim Installation Sequence

The illustrations that follow show the sequence that would be followed in installing Grand Rib 3 or Multi-Purpose panels on a particular roof. A relatively complicated roof is shown, to allow for the many types of trim and roof plans. The best sequence may be different, depending on your roof plan, but the illustrations should help you work out how to proceed. You are also always welcome to contact our metal roofing experts for assistance and advice with your roof installation: 1 -877-833-3237. Detailed instructions and illustrations for installing panels and each of the different types of trim are included in later sections of this booklet.
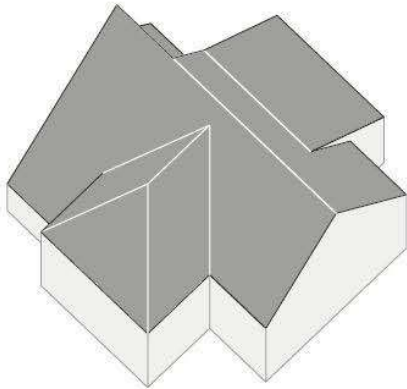
1. Moisture Barrier
Install synthetic underlayment or other moisture barrier, following manufacturer's instructions.
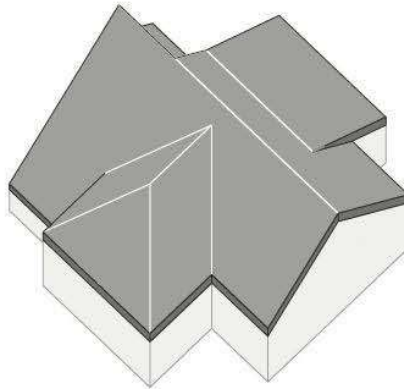
2. Fascia Trim (Optional)
Install fascia trim along all eaves and gables (rakes).
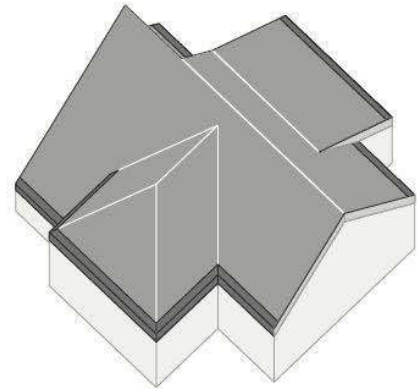
3. Eave Trim
Install eave trim along all eaves. Lap eave trim over any fascia trim.
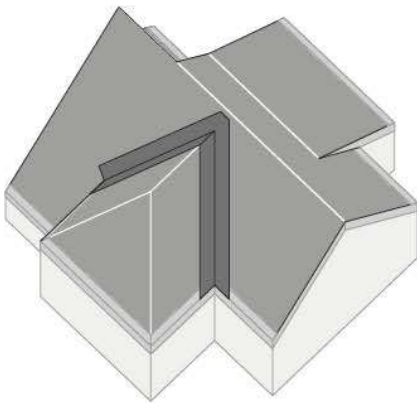
4. Valley Trim
Install valley trim in any valleys. Begin at the eave; lap over eave trim and work upward.
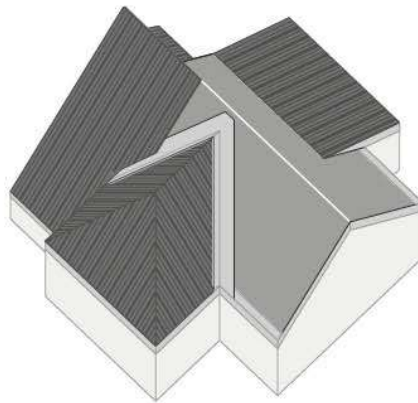
5. Grand Rib 3 or Multi-Purpose Panels
Install panels, overlapping eave and valley trim. Do not fasten down panels along the ridge, if ridge trim is to be overlapped by the panels.
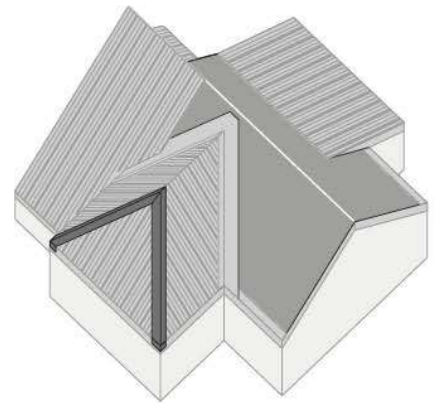
6. Hip Trim
Install hip trim over panel edges at each hip.

Roof Panel and Trim Installation Sequence (continued)
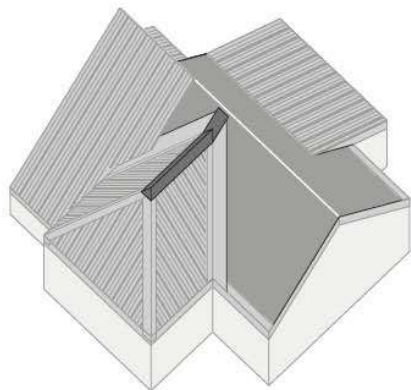
7. Ridge Trim on Hips and at Hip/Valley Intersections
Install ridge trim over the hip trim, hip ridges and hip/valley intersections.
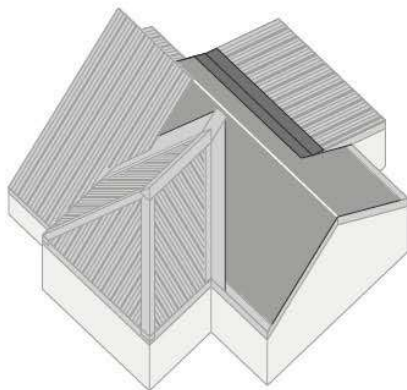
8. Transition Trim
Install transition trim along any transitions, overlapping lower-slope panels and upper-slope moisture barrier.
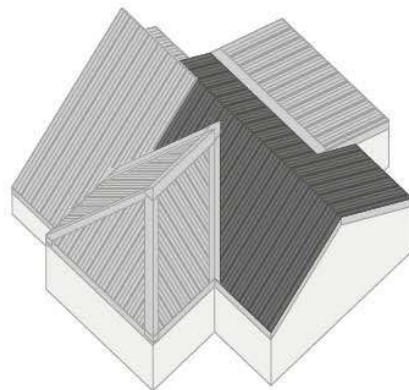
9. Grand Rib 3 or Multi-Purpose Panels
Install panels on high slopes (overlapping transition trim) and in any other un-paneled areas remaining.
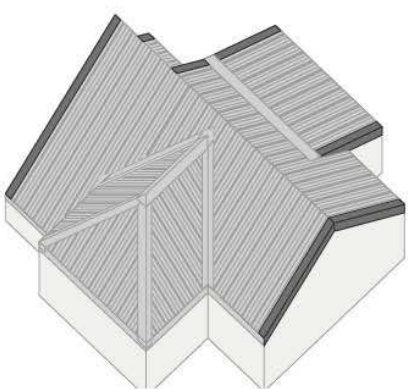
10. Gable/Rake Trim
Install gable trim (rake trim) along all gable (rake) edges, overlapping panels.
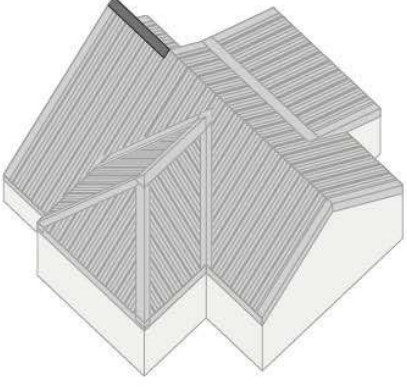
11. High Side Peak Trim
Install trim along any high side peaks, overlapping panels.
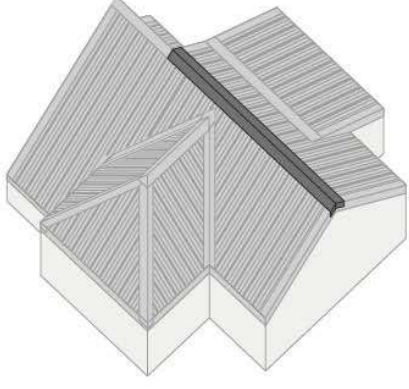
12. Final Ridge Trim
Install ridge trim along any remaining exposed ridges, overlapping panels.
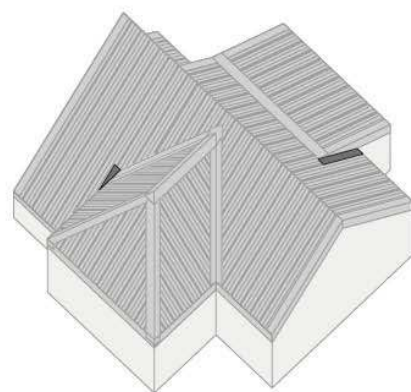
13. Side Wall Trim
Install side wall trim along any sidewall / roof junctions, overlapping panels.
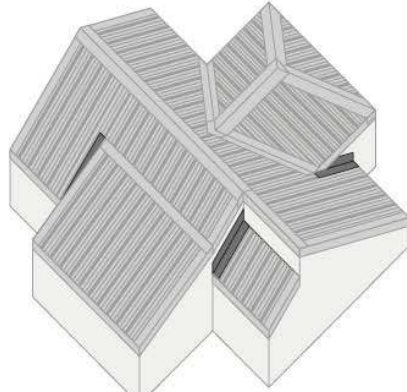
14. Side Will Trim (Rear View)
(Same as #13.)
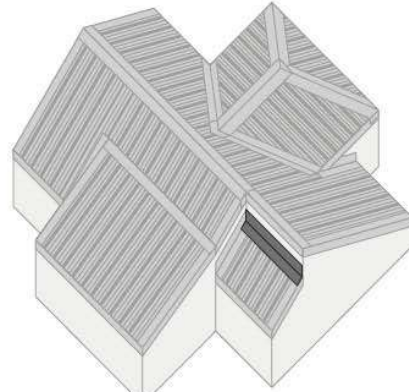
15. End Wall Trim
Install end wall trim along any endwall/roof junctions, overlapping panels.

INSTALLING FASCIA TRIM

Numbers give suggested sequence for trim installation steps.
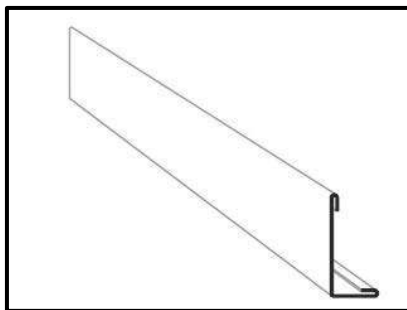
1 - Roof Substrate
Install roof substrate following manufacturer's instructions and local codes.

2 - Moisture Barrier
Install moisture barrier according to manufacturer's instructions and local codes.
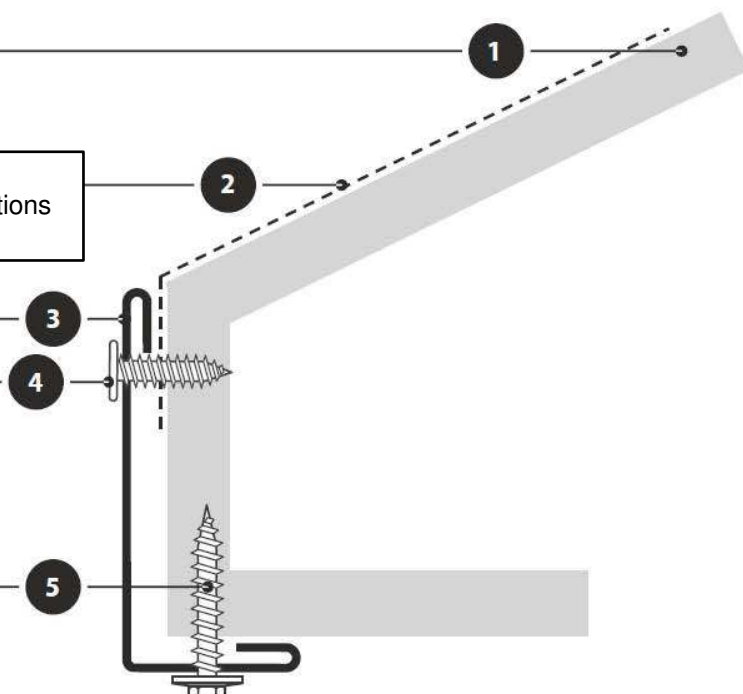
3 - Fascia Trim
Install fascia trim as shown.

4 - Trim Pancake Screw
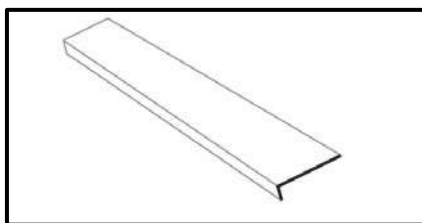Spaced 2" apart. Butt trim ends together to cover full length of eaves.

5 - Trim Wood Screw
Spaced 2" apart. Butt trim ends together to cover full length of eaves.

INSTALLING MINI-STYLE EAVE TRIM

Numbers give suggested sequence for trim installation steps.

2 - Moisture Barrier
Install moisture barrier according to manufacturer's instructions and local codes.

4 - Trim Pancake Screw
Space 2" apart. Butt trim ends together to cover full length of eaves.

3 - Mini-Style Eave
Install mini-style eave trim using pancake screws (as shown).

1 - Roof Substrate
Install roof substrate following manufacturer's instructions and local codes.
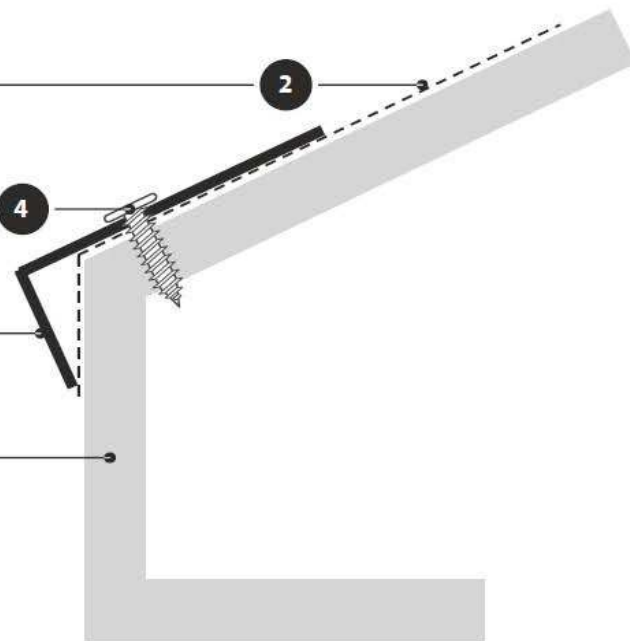
7 - Panel Wood Screw
Space according to recommended fastening pattern and frequency, according to local codes.

6 - Roofing Panel
Install panel, overhanging edge of eave trim by 1". Ensure panels are square (see panel squaring tips in this booklet).

5 - Inside Closure
Install inside closure over the mini-style eave trim.
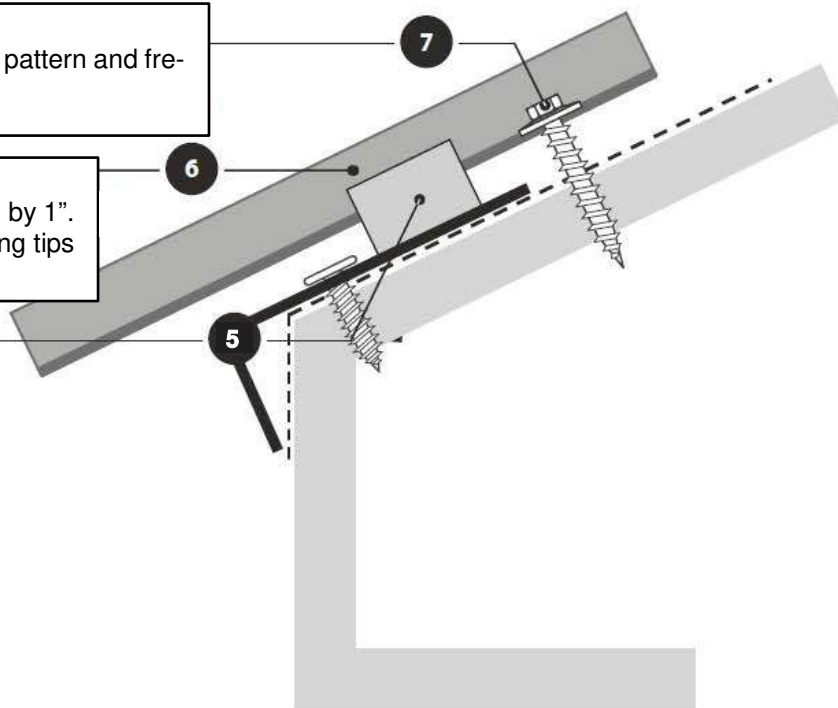
INSTALLING EAVE TRIM

Numbers give suggested sequence for trim installation steps.
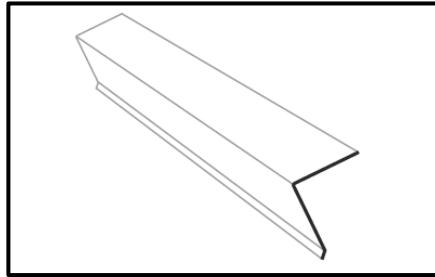
2 - Moisture Barrier
Install moisture barrier according to manufacturer's instructions and local codes.
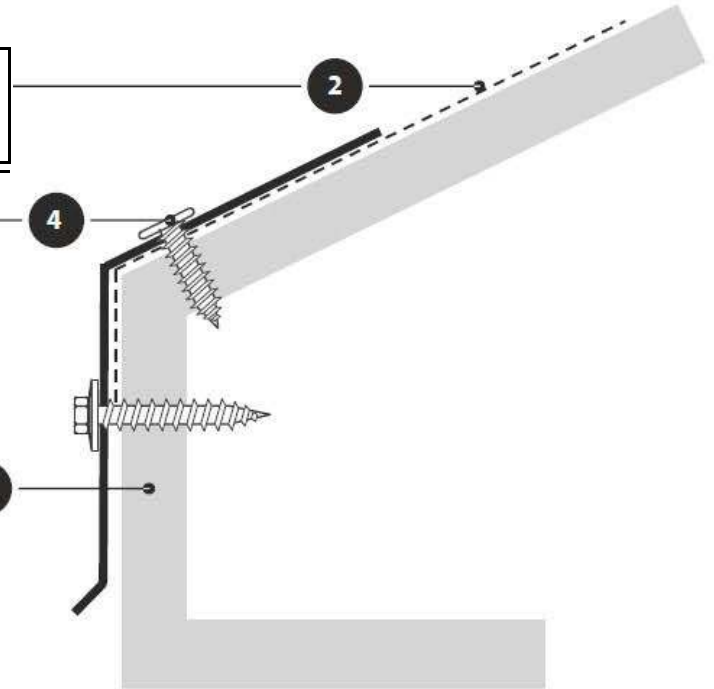
4 - Trim Pancake Screw
Space 2" apart. Butt trim ends together and cover full length of eaves.

3 - Eave Trim
Install using pancake screws and wood screws (as shown).

1 - Roof Substrate
Install roof substrate following manufacturer's instructions and local codes.

7 - Panel Wood Screw
Space according to recommended fastening pattern and frequency, and according to local codes.

6 - Roofing Panel
Overhang edge of eave trim by 1". Ensure panels are square (see panel squaring tips in this booklet).

5 - Inside Closure
Install inside closure over the eave trim.
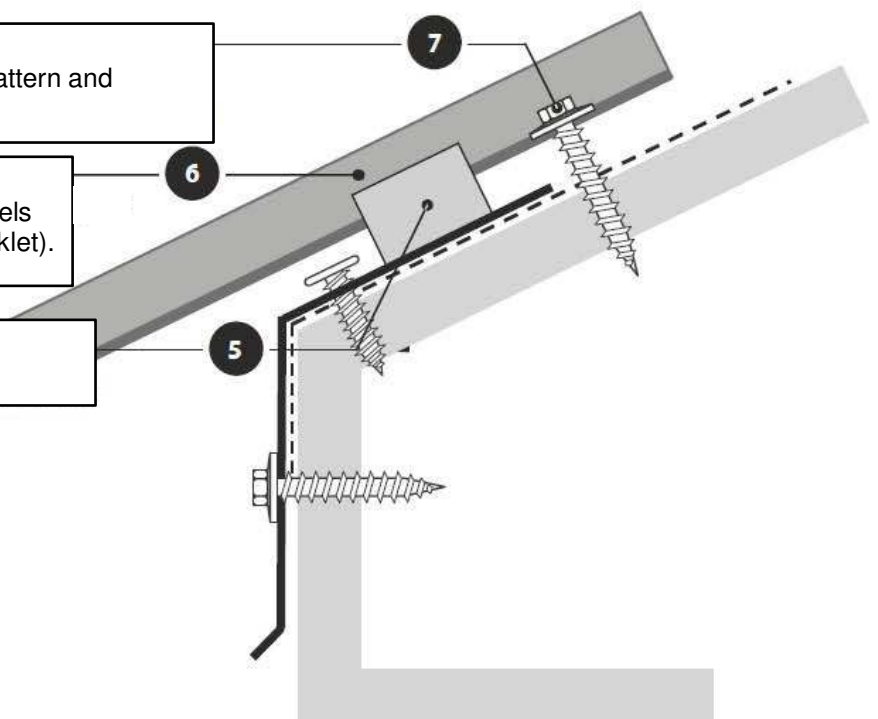
INSTALLING GABLE (RAKE) TRIM

Numbers give suggested sequence for trim installation steps.
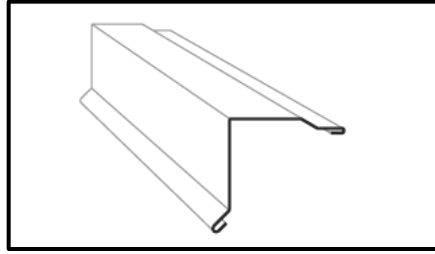
5 - Tape Sealant
Apply butyl sealant tape along length of panel's first inner (lower-profile) rib.

3 - Roofing Panel
Install flush with gable edge; overhang eave trim edge 1". Ensure panels are square (see panel squaring tips in this booklet).

4 - Panel Wood Screw
Space according to recommended fastening pattern and frequency, and according to local codes.

2 - Moisture Barrier
Install moisture barrier according to manufacturer's instructions and local codes.

1 - Roof Substrate
Install roof substrate following manufacturer's instructions and local codes.

6 - Gable (Rake) Trim
Install trim beginning at the bottom (eave). Higher trim pieces should overlap lower pieces by 4" (see lapping diagram in this booklet).

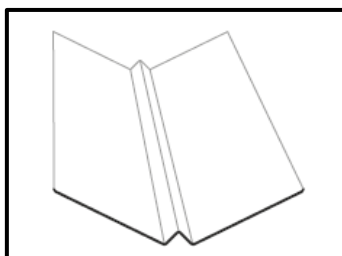**7 - Trim Wood Screw**
Space 2" apart along full length of trim.

8- Trim Wood Screw
Space 2" apart along full length of trim.
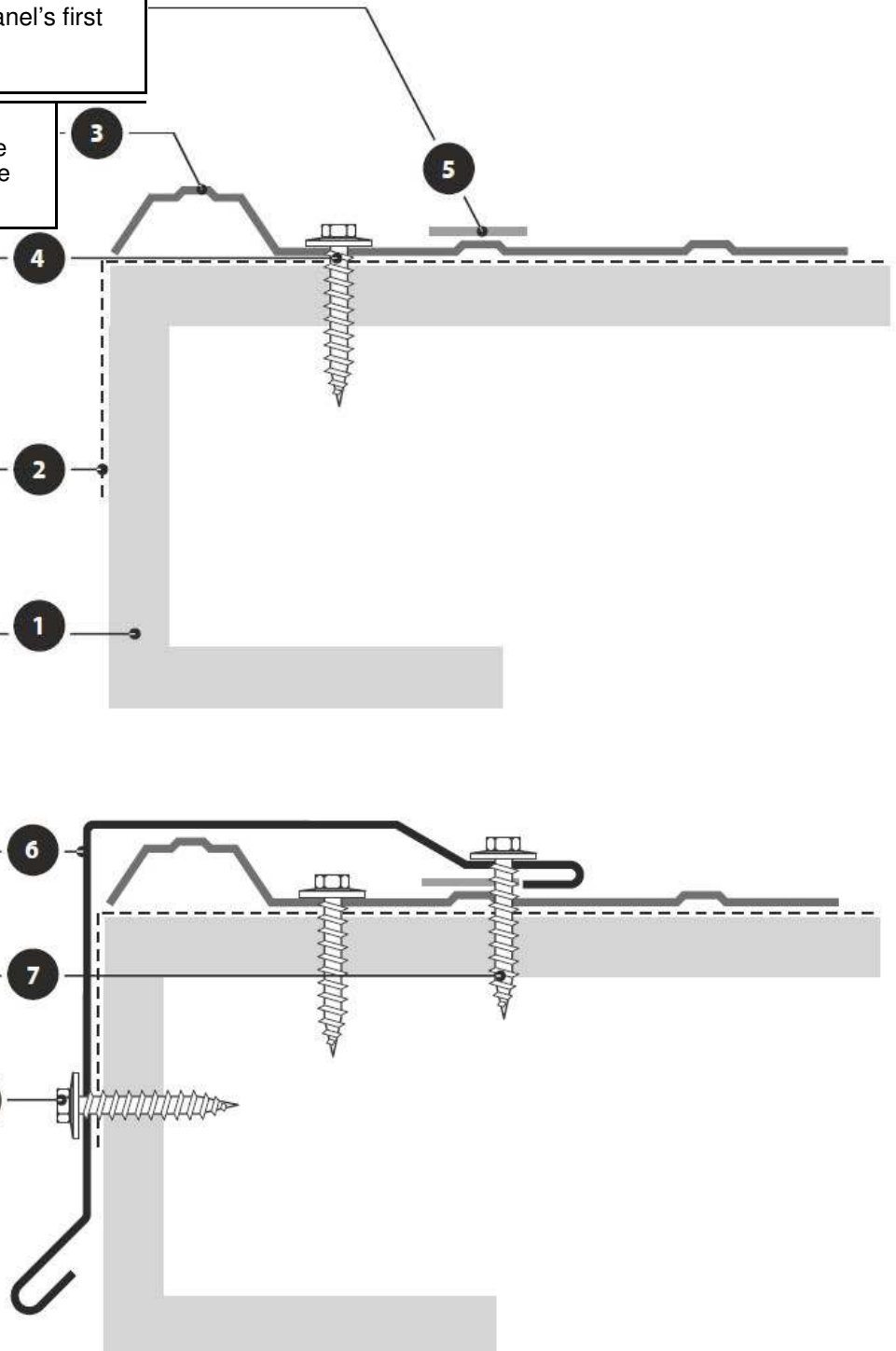
INSTALLING PRE-FORMED VALLEY TRIM

Numbers give suggested sequence for trim installation steps.

1 - Roof Substrate
Install following manufacturer's instructions and local codes.

2 - Moisture Barrier
Install according to manufacturer's instructions and local codes.

3 - Pre-Formed Valley Trim
Install beginning low and working up. Higher pieces should overlap the pieces below by 4".

4 - Trim Pancake Screw
Space 2" apart on each side of valley, along full length of trim.

3" minimum

6 - Roofing Panel
Leave at least 3" gap from water diverter rib and 3" down from top edge of valley. Ensure panel is square.

5 - Expanding Closure
Install parallel to side of water diverter rib, and about 4" above.

7 - Panel Wood Screw
Space according to recommended fastening pattern and local codes.

NOTE: See Valley Lapping – page 27.

NOTE: See Valley Cutting – page 28.

INSTALLING TRANSITION (PITCH BREAK) TRIM

Numbers give suggested sequence for trim installation steps.
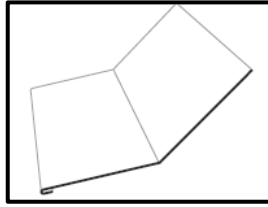
10 - Panel Wood Screw
Space according to the recommended fastening pattern and local codes.

9 - Roofing Panel
Install with lower edge 1" above the transition bend. Fasten using panel wood screws.

8 - Inside Closure
Install along the length of the transition trim, about 2" above the bend.

6 - Transition Trim
Place trim over outside closure. Fasten using trim wood screws.

7 - Trim Wood Screw
Space 18" apart along length of trim. Drive through the outside closure and the ribs of the panel beneath.

5 - Outside Closure
Install along upper edge of panels, about 2" below the edge.

4 - Panel Wood Screw
Space according to recommended fastening pattern and local codes.

3 - Roofing Panel
Install with lower edge overhanging eave edge by at least 1". Ensure panels are square using squaring method on pages 7-8 .

2 - Moisture Barrier
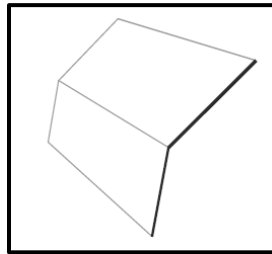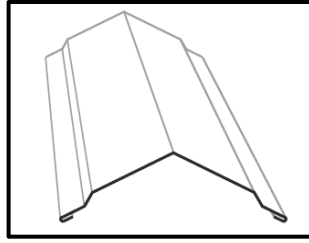Install according to manufacturer's instructions and local codes.

1 - Roof Substrate
Install following manufacturer's instructions and local codes.
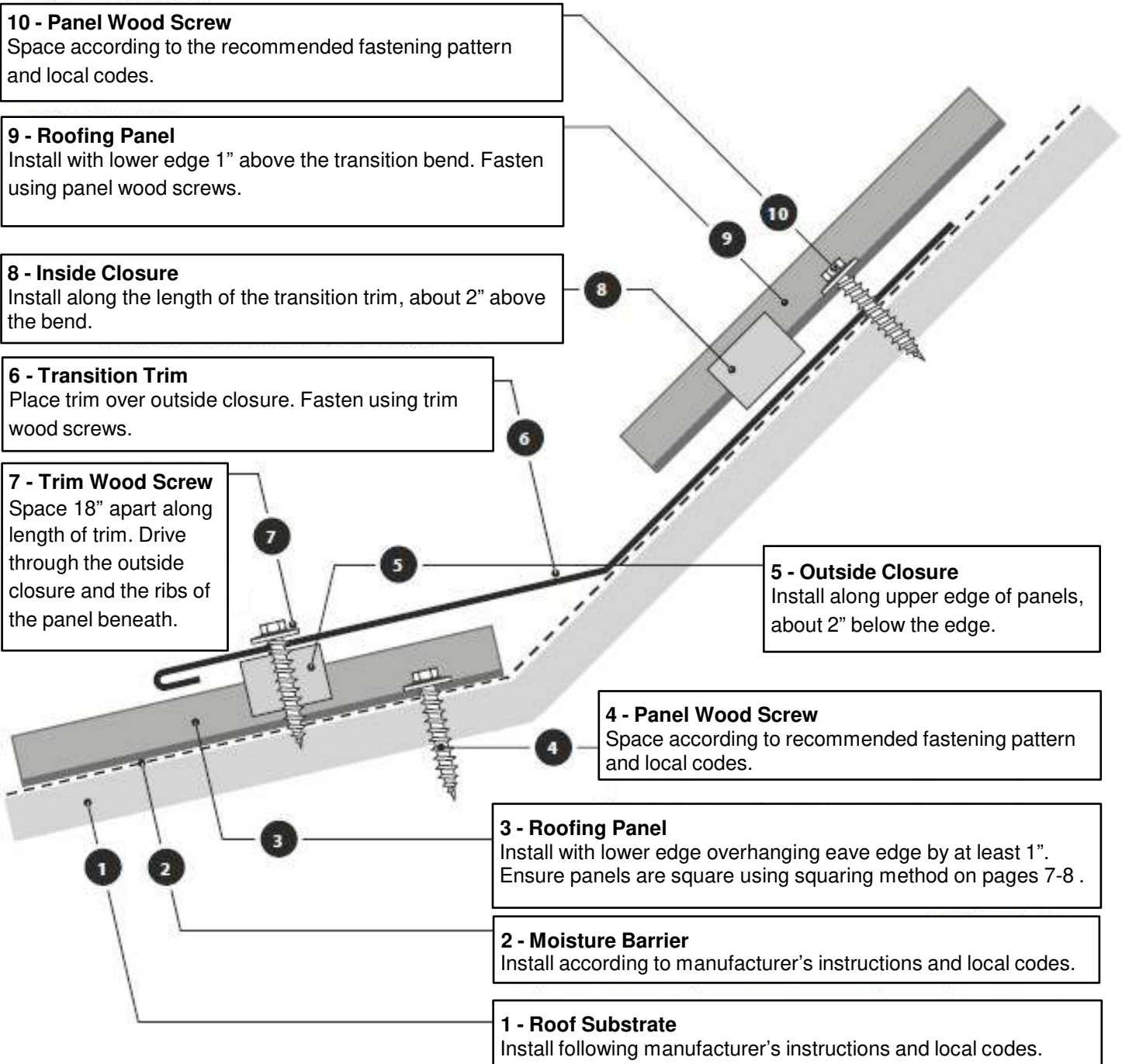
INSTALLING GAMBREL TRIM

Numbers give suggested sequence for trim installation steps.

9 - Roofing Panel
Position 1" above transition bend, and square. Fasten using panel wood screws.

10 - Panel Wood Screw
Space according to recommended fastening pattern and local codes.

8 - Inside Closure
Install along full length of the gambrel trim, about 2" above bend.

4 - Trim Wood Screw
Space according to recommended fastening pattern and local codes.

6 - Gambrel Trim
Place trim over the outside closure. Fasten using trim wood screws.

7 - Panel Wood Screw
Space 18" apart along full length of trim. Drive through outside closure and panel rib.

5 - Outside Closure
Install along upper edge of panels, about 1" below the edge.

3 - Roofing Panel
Install with lower edge overhanging eave by at least 1".

2 - Moisture Barrier
Install according to manufacturer's instructions and local codes.

1 - Roof Substrate
Install following manufacturer's instructions and local codes.

INSTALLING HIP TRIM

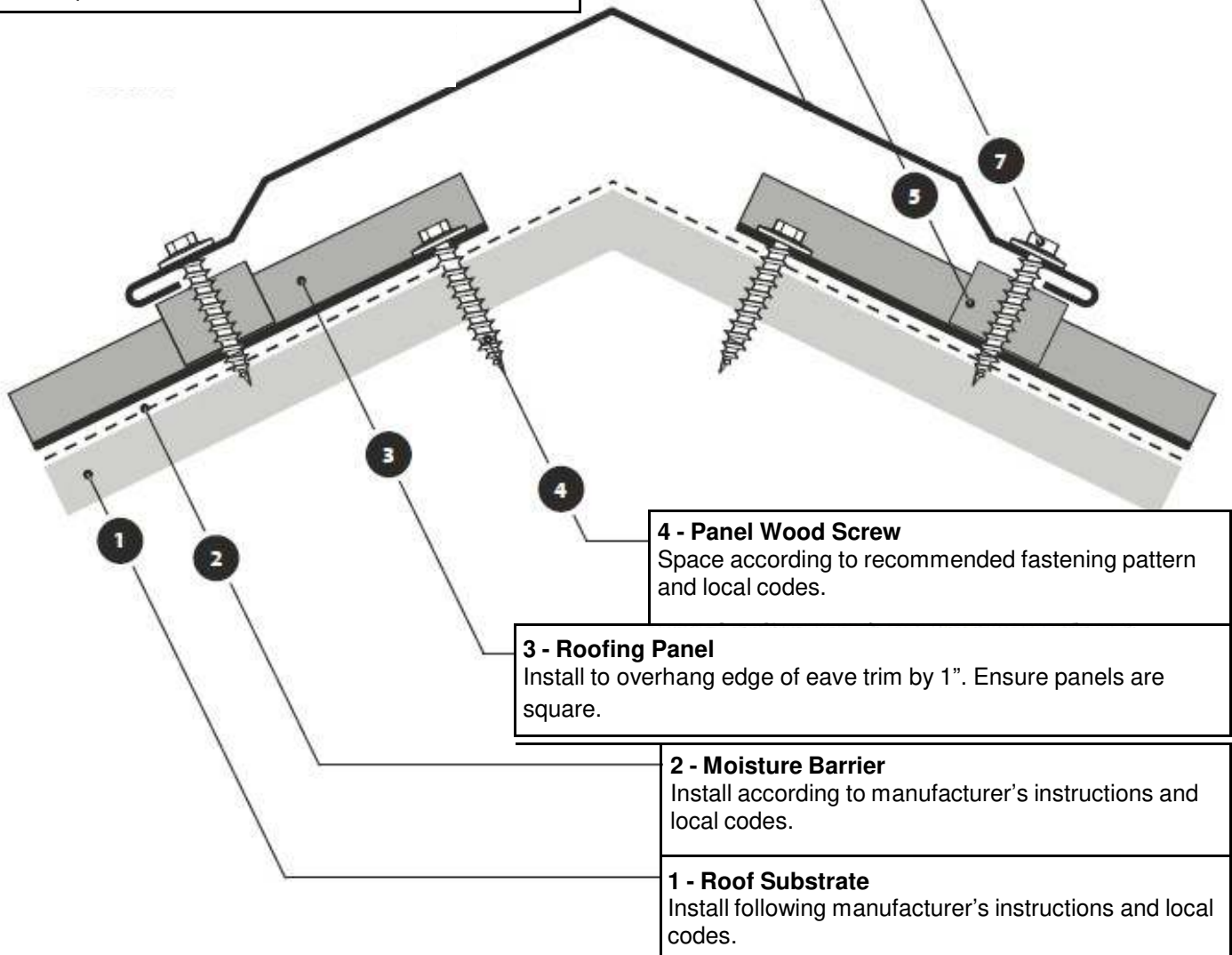*Numbers give suggested sequence for trim installation steps.*

7 - Panel Wood Screw
Space 18" apart along length of trim. See lapping diagram, fastener pattern, pages 4-5.

6 - Hip Trim
Install over expanding closures. Fasten with panel wood screws.

5 - Expanding Closure
Install parallel to the hip centerline, about 1" from upper edge of roof panel.

4 - Panel Wood Screw
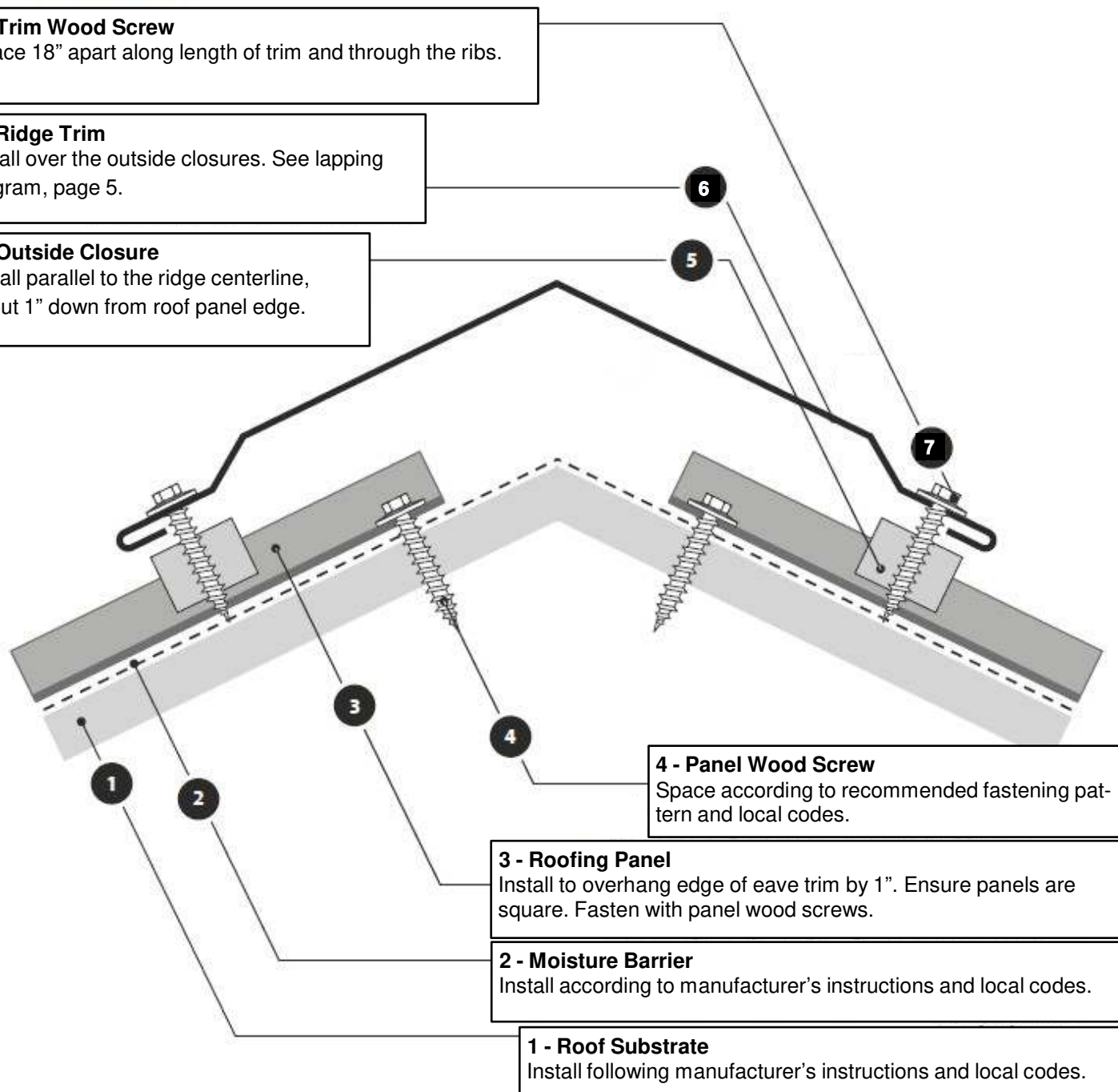Space according to recommended fastening pattern and local codes.

3 - Roofing Panel
Install to overhang edge of eave trim by 1". Ensure panels are square.

2 - Moisture Barrier
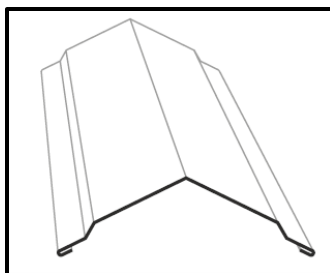Install according to manufacturer's instructions and local codes.

1 - Roof Substrate
Install following manufacturer's instructions and local codes.

INSTALLING RIDGE TRIM

Numbers give suggested sequence for trim installation steps.
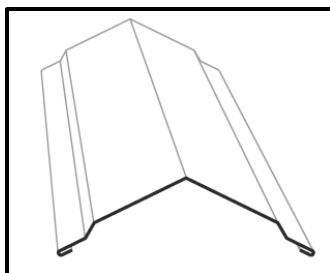
7 - Trim Wood Screw
Space 18" apart along length of trim and through the ribs.

6 - Ridge Trim
Install over the outside closures. See lapping diagram, page 5.

5 - Outside Closure
Install parallel to the ridge centerline, about 1" down from roof panel edge.

4 - Panel Wood Screw
Space according to recommended fastening pattern and local codes.

3 - Roofing Panel
Install to overhang edge of eave trim by 1". Ensure panels are square. Fasten with panel wood screws.
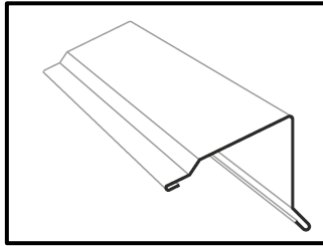
2 - Moisture Barrier
Install according to manufacturer's instructions and local codes.

1 - Roof Substrate
Install following manufacturer's instructions and local codes.

INSTALLING VENTED RIDGE TRIM

Numbers give suggested sequence for trim installation steps.

7 - Trim Wood Screw
Space 18" apart along length of trim and through the ribs. See lapping diagram, page 5.

6 - Ridge Trim
Install over the outside closures. See lapping diagram, page 5.

5 - Vented Closure (Profile Vent)
Install over top of panel, parallel to the ridge center-line, about 1" below upper edge of panel.

4 - Panel Wood Screw
Space according to recommended fastening pattern and local codes.

3 - Roofing Panel
Install to overhang edge of eave trim by 1". Ensure panels are square. Fasten with wood panel screws.

2 - Moisture Barrier
Install according to manufacturer's instructions and local codes.

1 - Roof Substrate
Install following manufacturer's instructions and local codes.

INSTALLING HIGH SIDE PEAK TRIM

Numbers give suggested sequence for trim installation steps.

8 - Trim Wood Screw
Space 2" apart along vertical wall, full length of trim.

6 - High Side Peak Trim
Install over the outside closure. See lapping diagram, page 5.

7 - Trim Wood Screw
Space 2" apart along length of trim. Drive through trim and closure.

5 - Outside Closure
Install parallel to peak, about 1" below upper edge of roof panel.

4 - Panel Wood Screw
Space according to recommended fastening pattern and local codes.

3 - Roofing Panel
Install panel to overhang edge of eave trim by 1". Ensure panels are square. Fasten with panel wood screws.

2 - Moisture Barrier
Install according to manufacturer's instructions and local codes.

1 - Roof Substrate
Install following manufacturer's instructions and local codes.
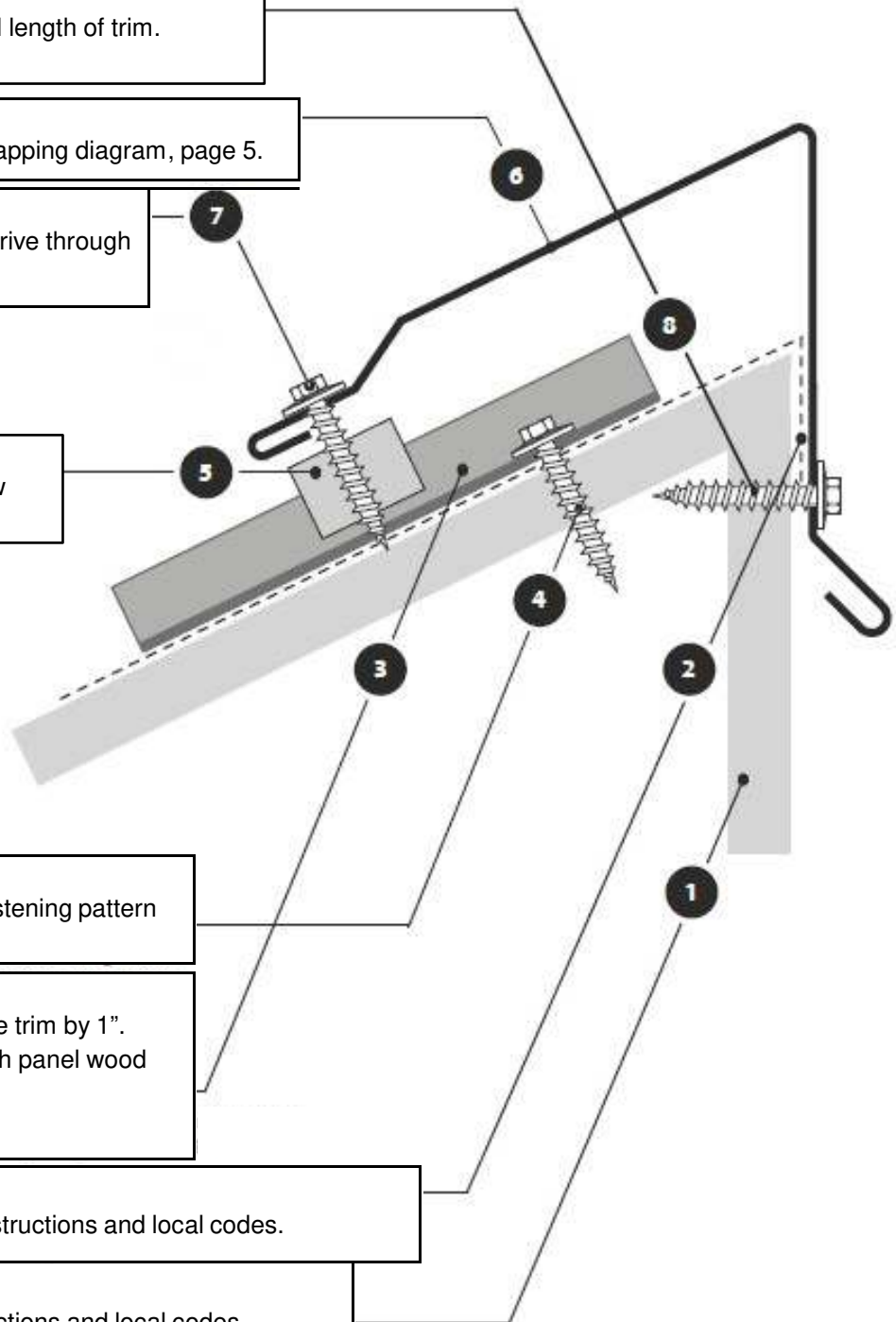
INSTALLING SIDE WALL TRIM

Numbers give suggested sequence for trim installation steps.
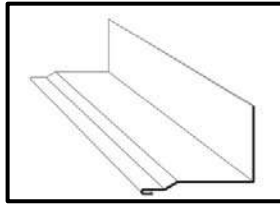
10 - Tube Sealant
Apply in a continuous bead along the counter flashing (if installed), filling the space between flashing and wall. Round or slope the sealant bead so water will run off.

9 - Trim Wood Screw
Space 2" apart, full length of trim. If wall is not wood, different fastener may be needed.

8 - Counter Flashing (Optional)
Install above side wall trim. Fasten using trim wood screws.

6 - Side Wall Trim
Install over butyl tape. Overlap trim ends by 4". See lapping diagram, page 5. If no counter flashing, fasten side wall trim to vertical (wall) side with trim wood screws.

7 - Trim Wood Screw
Space 2" apart along length of trim.

5 - Butyl Tape (Tape Sealant)
Apply too full length of panel, positioned to seal trim.

4 - Panel Wood Screw
Space per recommended fastening pattern and local codes.
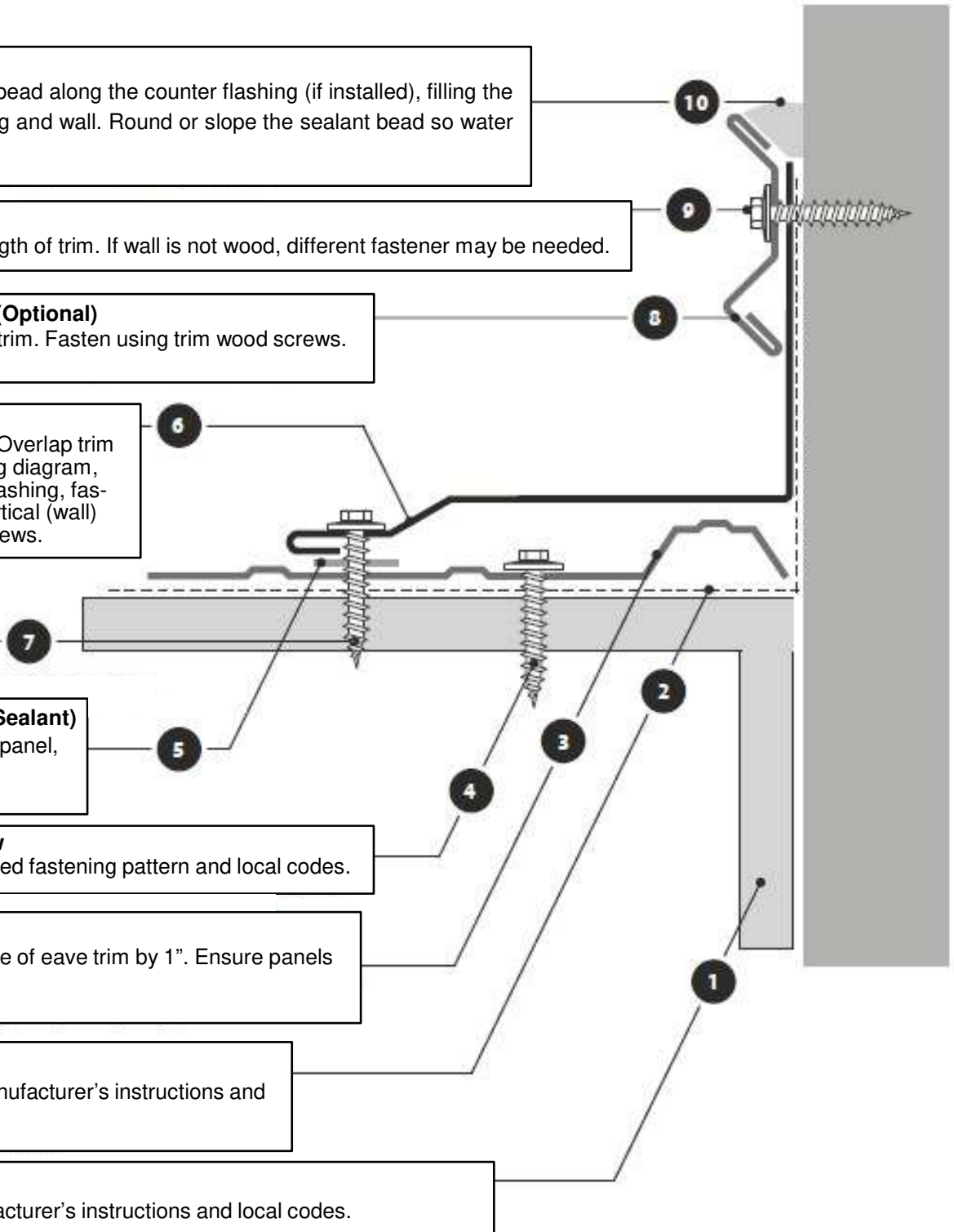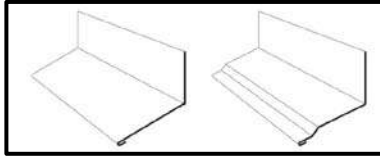
3 - Roofing Panel
Install to overhang edge of eave trim by 1". Ensure panels are square.

2 - Moisture Barrier
Install according to manufacturer's instructions and local codes.

1 - Roof Substrate
Install following manufacturer's instructions and local codes.

INSTALLING END WALL TRIM

Numbers give suggested sequence for trim installation steps.

10 - Tube Sealant
Apply a continuous bead along counter flashing (if installed), filling space between flashing and wall. Round or slope bead so water will run off.

9 - Trim Wood Screw
Space 2" apart, full length of trim. If wall is not wood, another fastener may be needed.

8 - Counter Flashing (Optional)
Install above end wall trim. Fasten using trim wood screws.

6 - End Wall Trim
Install over closure. Overlap ends 4". See lapping diagram, page 5. If no counter flashing, fasten end wall trim to wall with trim wood screws.

5 - Outside Closure
Install along panels, parallel to end wall and about 1" below panel edge.

7 - Trim Wood Screw
Space 18" apart, full length of trim. Drive through closure and rib.

3 - Roofing Panel
Install to overhang eave trim by 1". Ensure panels are square. Fasten with panel wood screws.

2 - Moisture Barrier
Install according to manufacturer's instructions and local codes.

1 - Roof Substrate
Install following manufacturer's instructions and local codes.

4 - Panel Wood Screw
Space according to recommended fastening pattern and local codes.
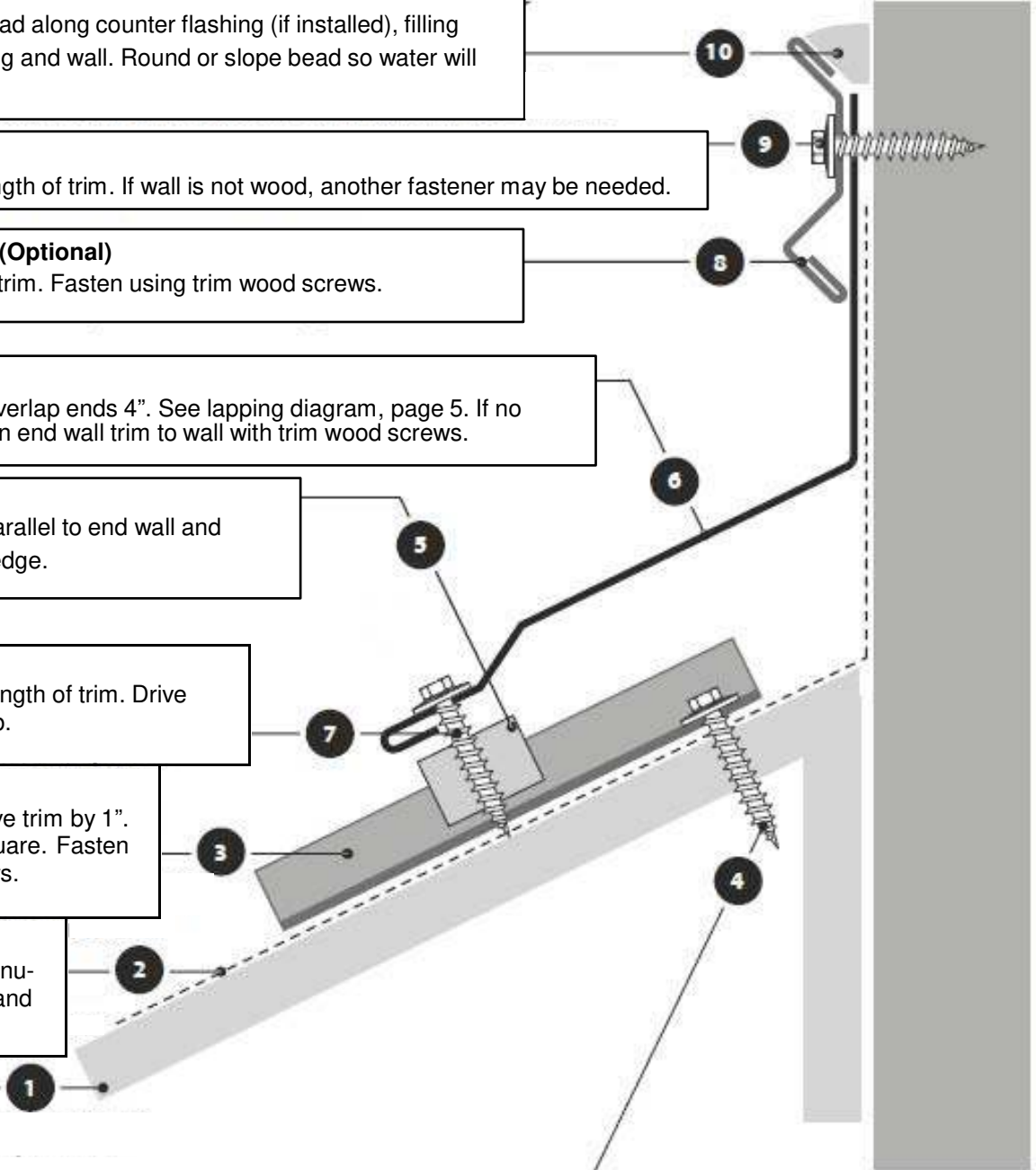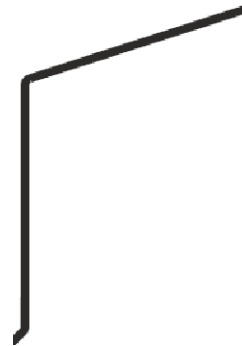
Trim Types

Trim can vary from supplier to supplier. Please contact us for exact dimensions: 1-877-833-3237.
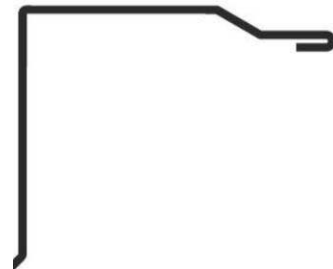
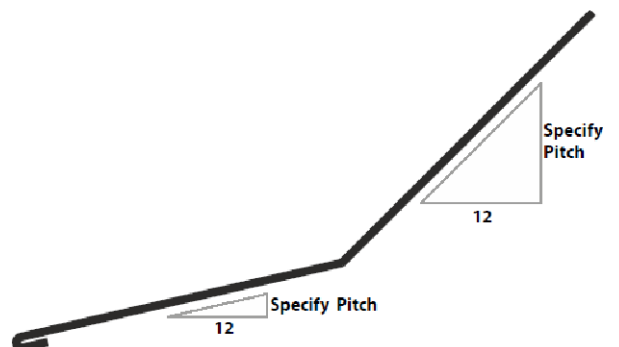**Mini Eave**

Eave Trim

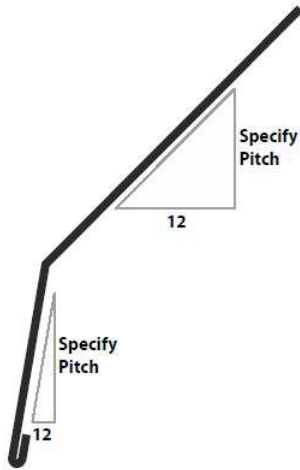**Fascia Trim**

Rake / Gable Trim

Valley

Specify Pitch

12

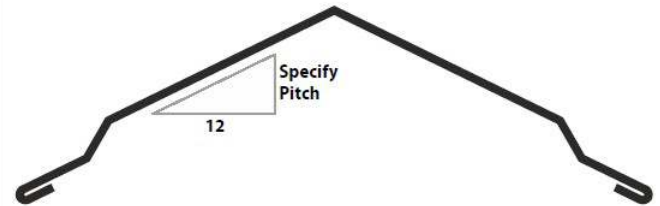**Transition Flashing**

Specify Pitch

12

Specify Pitch

12

Trim Types (continued)

Trim can vary from supplier to supplier. Please contact us for exact dimensions: 1-877-833-3237.

Gambrel Flashing
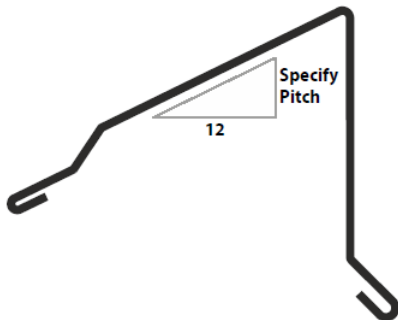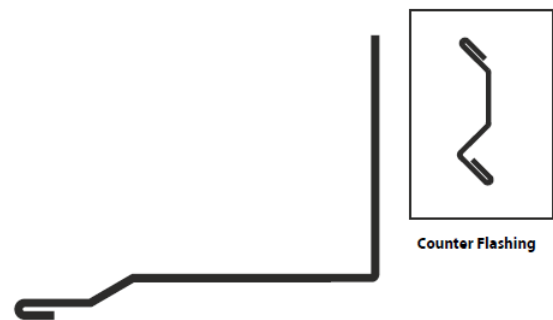
Specify Pitch

12

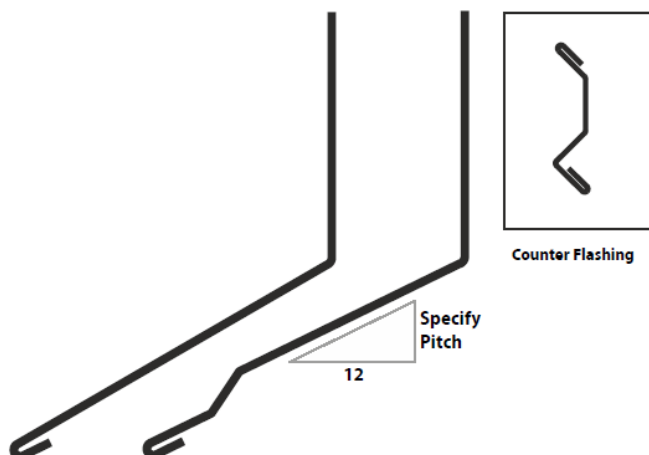Specify Pitch

12

Ridge Cap / Hip Cap

Specify Pitch

12

High Side Peak

Specify Pitch

12

Side Wall Trim

Counter Flashing
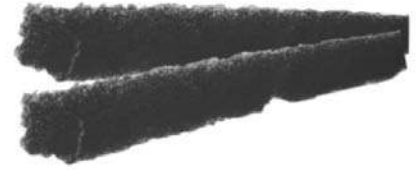
End Wall Trim

Counter Flashing

Specify Pitch

12

Tools and Accessories

Foam Closures
Seal gaps at panel ends

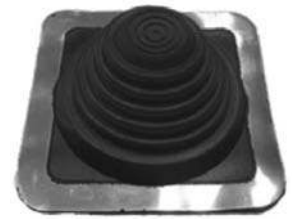**Expanding Closure Foam**
Seal gaps at hips and valleys

Profile Ridge Vent
Allows air flow at ridges

Roofing Fasteners
Screws, Rivets

Panel Sealants
Tube and butyl tape

Pipe Boots
Seal around exhaust and electrical pipes

TurboShear
Attachment for power drill

Snips
Cut panel and trim

Coated Gloves
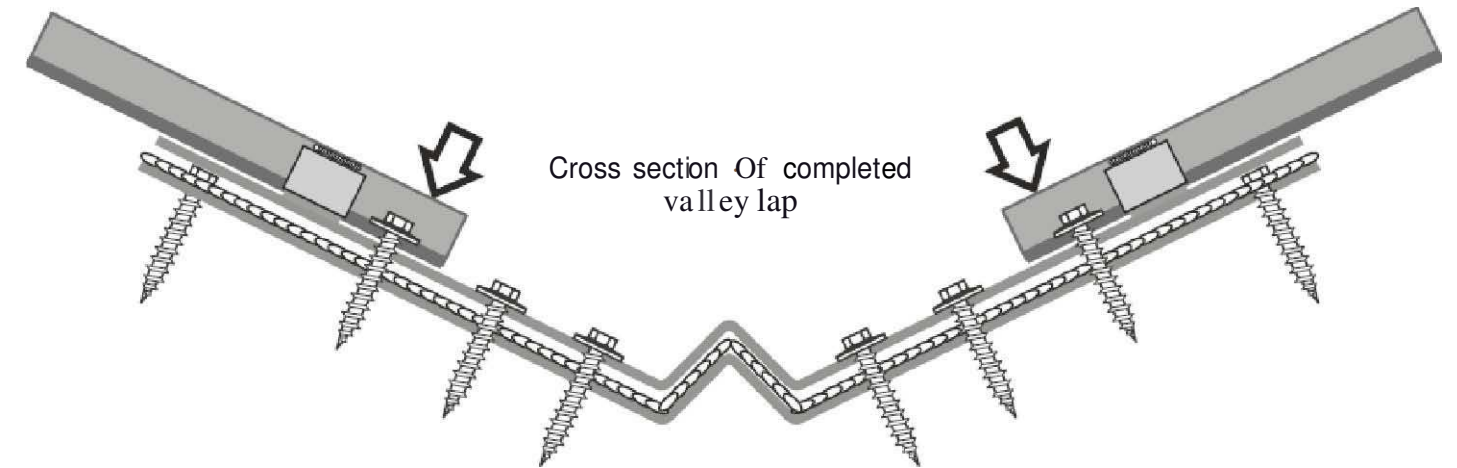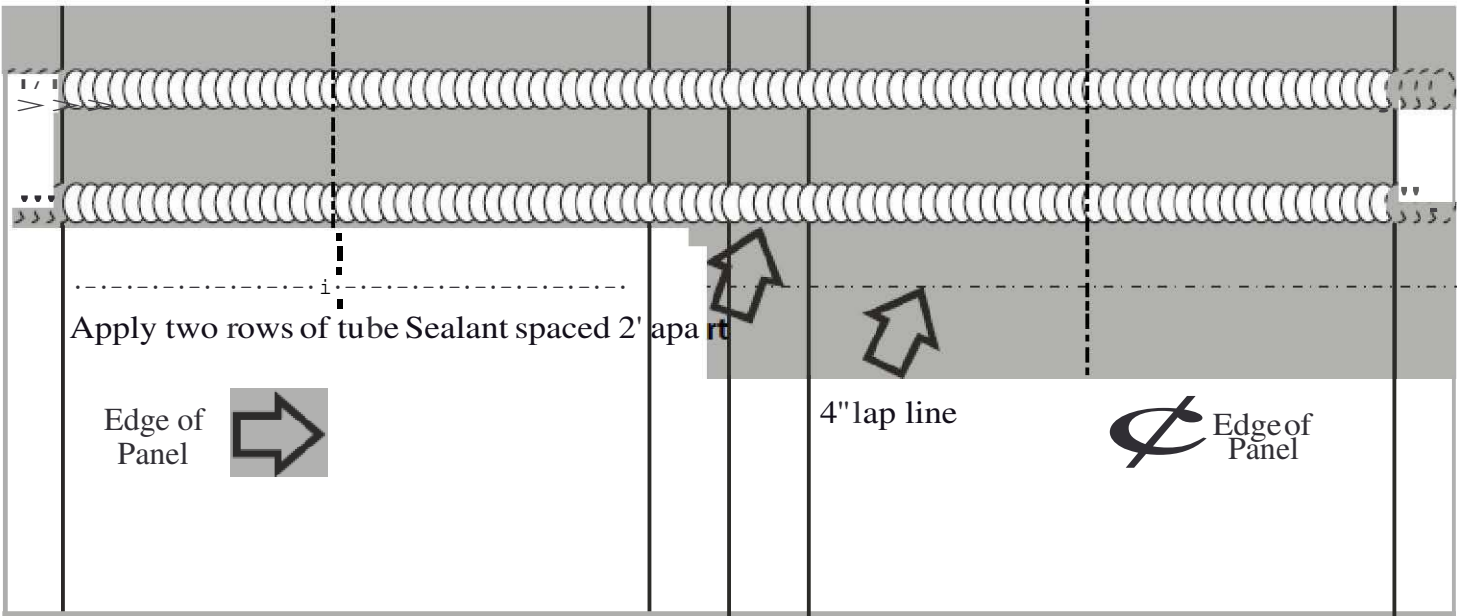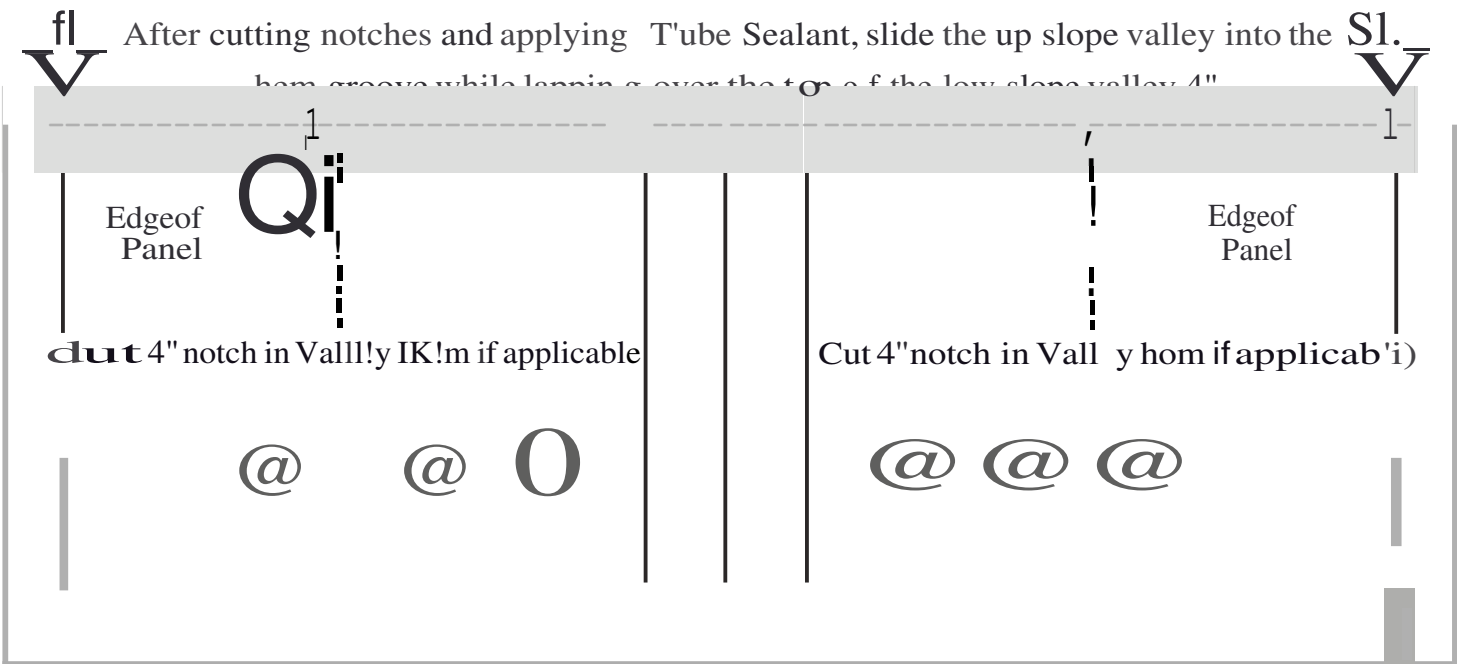Non-slip protection

Drill bits and driver bits
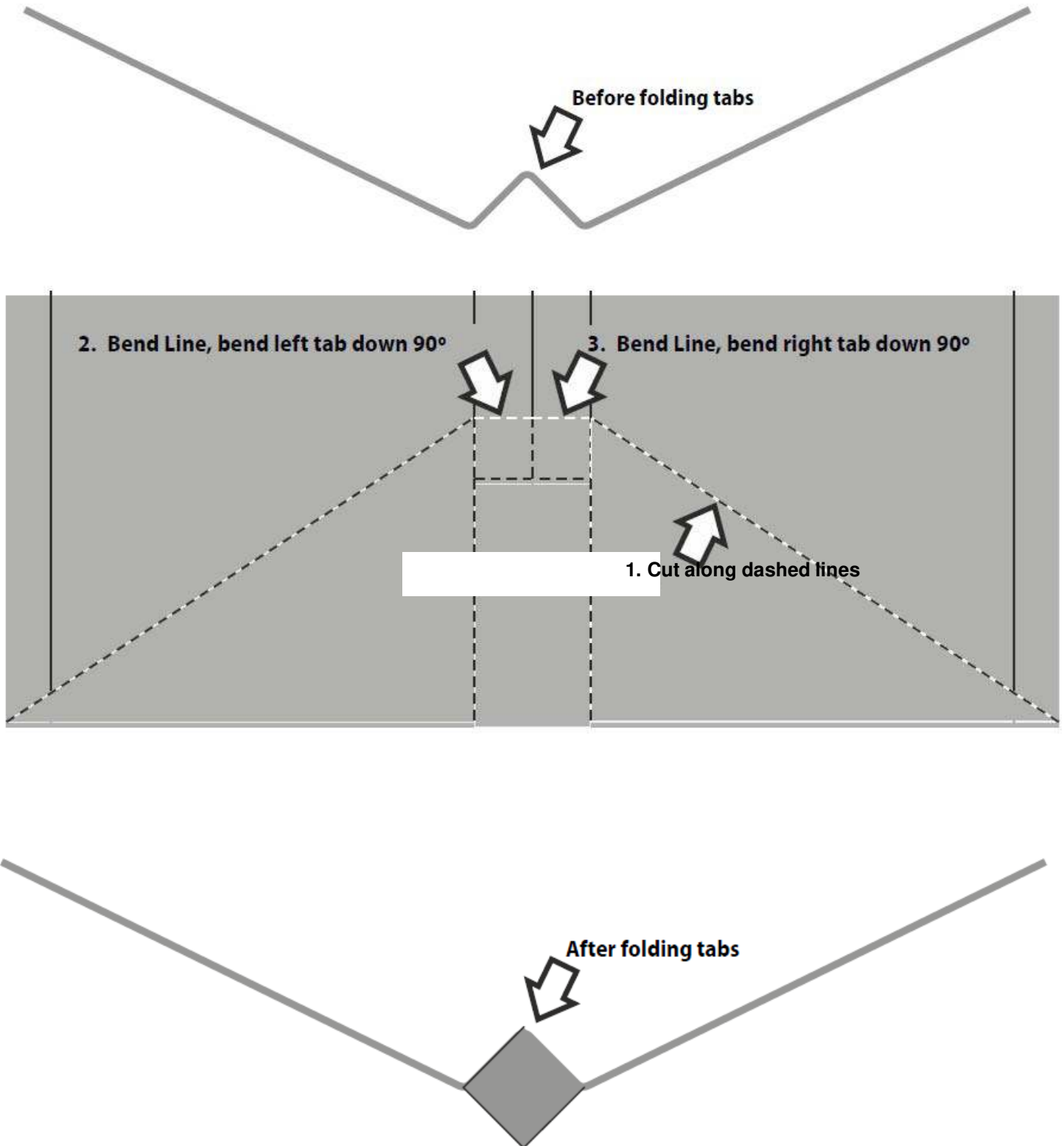
Bending and hemming tools

Pop rivet gun

Valley Trim and Panel Lapping

After cutting notches and applying T'ube Sealant, slide the up slope valley into the hem groove while lapping over the top of the low slope valley 4".

Edge of Panel

Edge of Panel

Cut 4" notch in Valley Hem if applicable

Cut 4" notch in Valley hem if applicable

Apply two rows of tube Sealant spaced 2' apart

Edge of Panel

4" lap line

Edge of Panel

Cross section Of completed valley lap

Valley Trim Cutting

Valley starter cutting diagram with water diverter tabs.

Before folding tabs

2. Bend Line, bend left tab down 90°   3. Bend Line, bend right tab down 90°

1. Cut along dashed lines

After folding tabs

Pipe Flashing

Cut pipe flashing 15% smaller than actual pipe.

Apply tube sealant to the underside of the pipe flashing.

Slide pipe flashing down over the pipe.
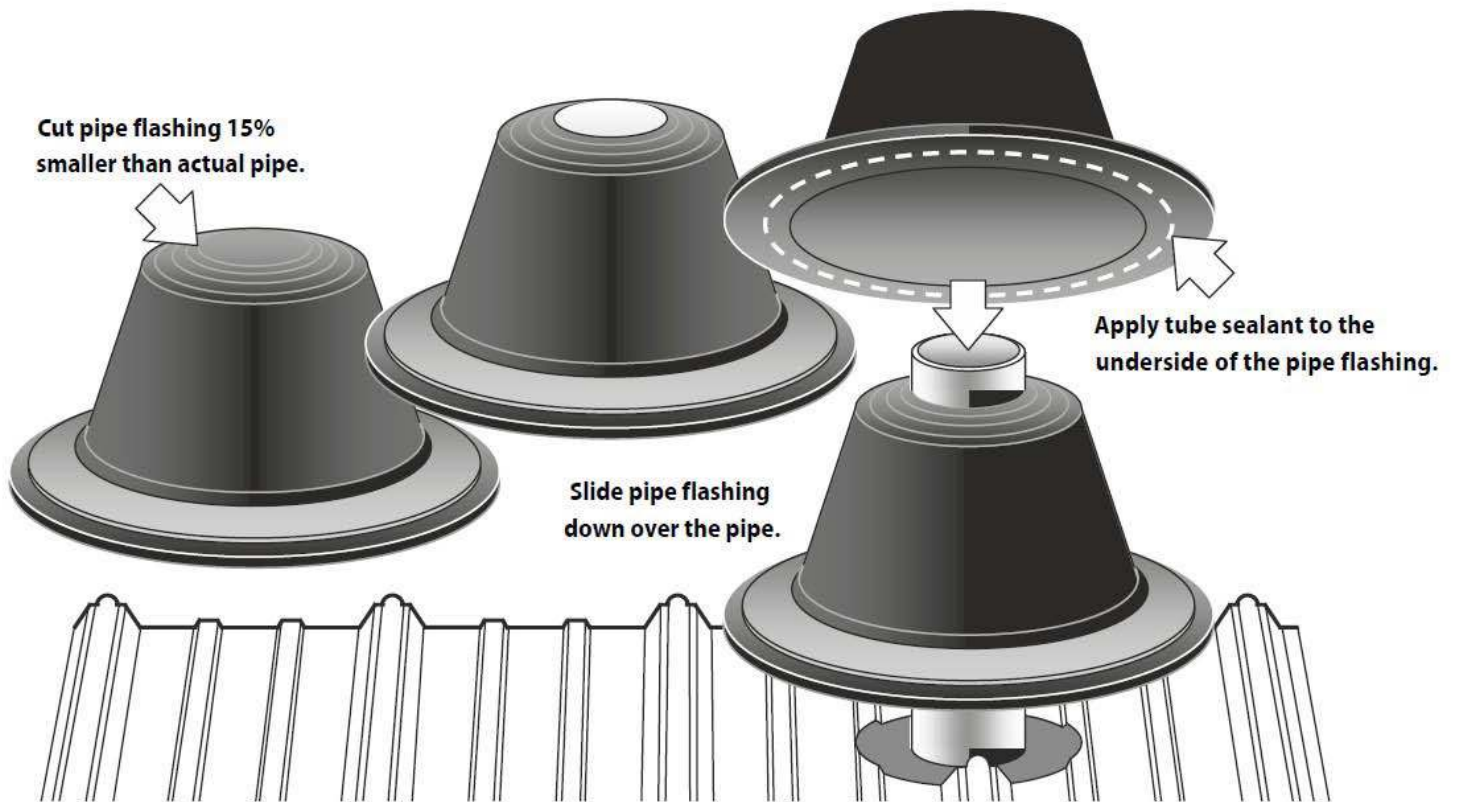
Press pipe flashing into the contours of the panel to form a good seal. Fasten with wood screws or stitch screws. Additional sealant can also be applied around the base for extra security.
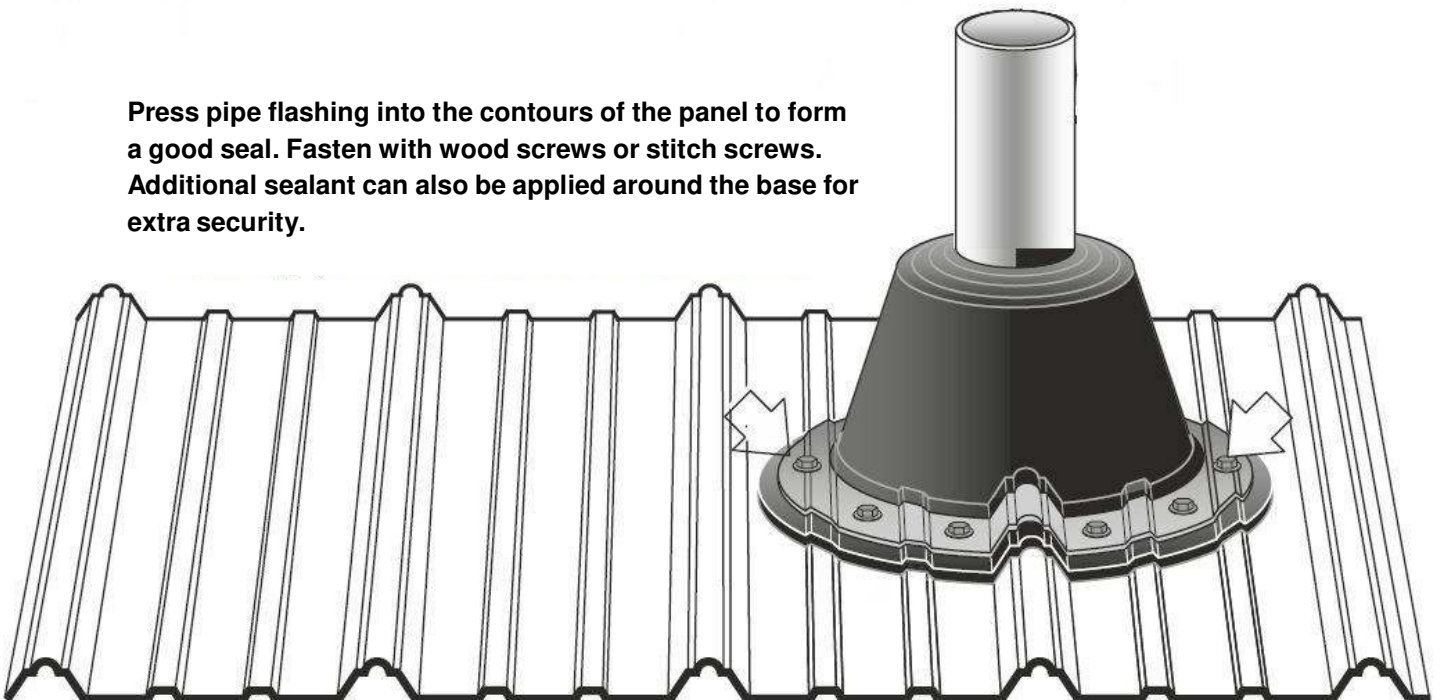
Have a question or comment?

Need technical assistance?

Give us a call (toll free) at **877-833-3237.** We'll be glad to help.

Thank you for choosing