

BARREL-VAULT Tile



TABLE OF CONTENTS

Installation Notes	2
Safety Notes	2
Useful Links	2
General Information	3
Walking On the Roof	4
Suggested Tools	4
Parts & Pieces	5
Screws & Nails	6
Available Components / Accessories	6
Fasteners	7
Fastening Direct-to-Deck Panels	7
Fastening Patterns per Design Pressure	8
Field Panels Layout & Fastening Methods	9
Eave / Rake Prep & Install	10
Rake Panels Install	11
Valley Prep & Install without Tray	12
Valley Prep & Install with Exit Tray	13
Valley Panels Install	14
Hip Prep & Install	15
Hip Panels Install	15
Ridge Prep & Install	16
Ridge Vent Install	17
Mission Cap Install at Rake / Ridge Intersection	18
Mission Cap Install at Hip / Ridge Intersection	19
Chimney / Skylight / Headwall / Sidewall Detail	20-22
EZ Vent Install	23
Pipe Vent Install - Sandwich Method	24
Pipe Vent Install - Split Course Method	25
Short Course Detail	26
Special Transition Details	27
Solar Mount Install	28
Dormer Valley Exit	29
Valley Exit with Wakaflex® Flashing	29
Finishing Touches	30

INSTALLATION NOTES

These installation guidelines demonstrate Direct-to-Deck Bend Up installation techniques for BARREL-VAULT Tile roof panels and accessories. Options are dependent upon chosen design and performance requirements of a given project. **Local building codes might create alternative options.**

INSTALLATION WARNING

The details and information in this document reflect current roofing practices used in the United States. Installers of Unified Steel roof panels and accessories should have knowledge of roof structures, an understanding of how to work with stone coated steel panels and accessories, and experience working with sloped roofs.

We recommend that installers of Unified Steel roof products use a Unified Steel Cutter and Bender, and have completed an **Installer Orientation Training Program** for each profile installed. Unified Steel does not consider its products to be “do-it-yourself” (D.I.Y.) mainly due to specialized cutting and bending tools used during installation.

NOTE: Circular saw or grinder wheel to cut panels is not acceptable.



*Panels are susceptible to scuffing from foot traffic when subjected to prolonged periods of water saturation, do not install wet. See **"Installing Panels When Wet"** Technical Bulletin for details.*

SAFETY NOTES



The safety tips provided here are for general awareness of the user. Unified Steel assumes no liability or responsibility for incorrect use of the products or any personal injury that may be caused as a result of use.

- *Select an open area and establish a safe working perimeter to set up tools. Instruct anyone near the safe working area.*
- *Inspect each tool before use. Do not use a tool that is not in good working condition. Regularly maintain tools for best performance.*
- *Wear personal protective equipment.*
- *Be aware of “pinch points” and keep hands and clothing away from such areas.*

GENERAL INFORMATION**FASTENERS**

BARREL-VAULT Tile panels are fastened through the nose in a Direct-to-Deck fashion. They use vertically positioned fasteners across the back flange and angled fasteners across the nose down-turn.

All fasteners used on a Unified Steel® system shall meet or exceed the corrosion resistant standard as defined in ASTM B-117, (1,000-hr minimum Salt Spray Corrosion Resistance).

Panel fasteners shall be of sufficient length to penetrate into the roof deck a minimum of 3/4".

MATERIALS

The panels are produced from AZ-50, Aluminum-zinc alloy coated steel complying with ASTM A792.

PACKING AND STORAGE

A pallet of panels contains approximately 20 squares (186 sqM). Panels should be stored under a weather-proof cover or inside in an area free from moisture.

ROOF PITCH

BARREL-VAULT Tile panels are designed to be installed on a minimum roof pitch of 3:12 (12 degrees) or above. Roof slopes below 3:12 are deemed decorative coverings. See your local jurisdiction's prescribed treatment for decorative coverings.

ROOFING UNDERLAYMENT

Minimum one layer ASTM D226 Type-II, ASTM D8257, or ASTM D1970, as needed to meet local building code requirements, installed per manufacturer's instructions.

ROOF DECK SHEATHING

The panels must be installed directly on solid or closely fitted minimum 15/32-inch (112 mm) thickness plywood, on solid or closely fitted wood structural panel sheathing, equivalent thickness spaced or closely fitted solid wood planking, or on spaced structural sheathing boards complying with the applicable code. Where spaced boards are used, additional structural sheathing boards must be attached to the roof framing as required to accommodate all panel and batten fastening locations.

BATTENS

2x2 Elevated Batten System (EBS) or Standard 2x2 lumber #2 Grade or better Spruce Pine Fir are acceptable. This also applies to 1x4 and 1x2 used as stackers on some ridge or hip build-outs.

STEEL Battens ('Channels') can be used. They shall be a minimum of 22 AWG gauge (0.64 mm) corrosion resistant material and are formed in either a 'Hat', 'C', 'U', 'J' or 'Z' shaped section. All shapes require as close to 90-degree angles as possible. Minimum batten size is 1-1/2" high x 1" wide (38 x 25 mm) steel battens shall be designed to resist the design loads of the building.

SEALANT/CAULKING

Only exterior grade urethane or (non-acidic) silicone caulking should be used for Sealant.

TESTING

The panels have been tested and evaluated to industry standards and are listed in Code Evaluation Report (QAI CER), National Research Council Canada (CCMC), State of Florida (FBC), Miami-Dade (NOA), and Texas Department of Insurance (TDI) evaluation reports. Testing has been conducted to evaluate fire, wind, impact resistance, water infiltration, and durability. Information regarding specific tests and approvals can be obtained from Unified Steel.

VENTILATION

Ensure proper attic ventilation as prescribed per local codes. Either Unified Steel vents or ridge venting can be installed to help achieve adequate ventilation.

WARRANTY

The panels carry a limited warranty for fifty years. This limited warranty is transferable and does not cover damage due to improper handling or installation. Complete warranty details available at WestlakeRoyalRoofing.com.

DISSIMILAR METALS

To avoid adverse corrosion effects caused by dissimilar metals, COPPER and LEAD flashings should not be used with Unified Steel panels and accessories.

FINISH COATING

Minor scuffing of the stone coated finish can be repaired with a Touch-Up Kit. Use the basecoat acrylic supplied in the kit (not caulking) for repairs. Unfinished flashing material can be painted with durable acrylic aerosol paints. Colored aerosol paints should never be used as "touch-up" on stone coated products.

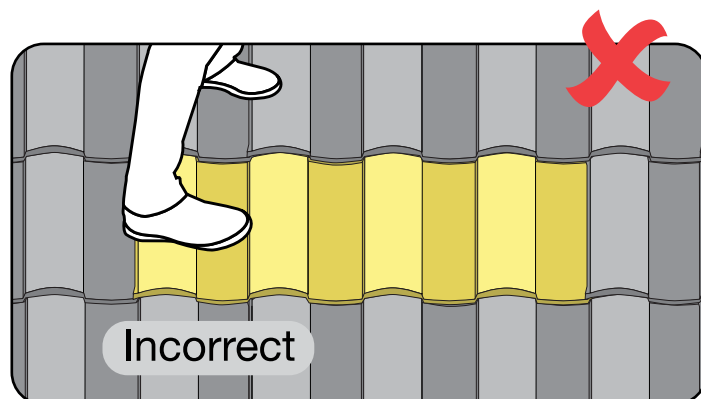
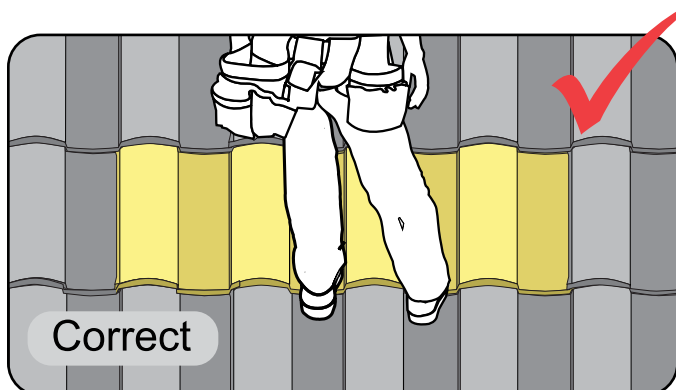
Refer to Unified Steel Technical Bulletin "[Repairing Marked or Scratched Panels](#)" for more details.



Colored aerosol paints should NEVER be sprayed on stone coated panels & accessories.

WALKING ON THE ROOF

Appropriate OSHA approved fall protection must be used when walking on roofs panels. Place your feet over the front lip of the panels. Avoid walking in the middle of the panels and near the panel side-laps, as shown in right image below.



SUGGESTED TOOLS

Cutter

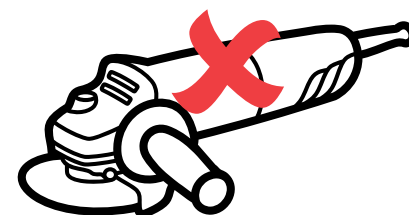


39 lbs (17.7 Kg)

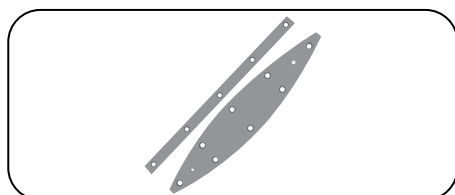
Bender



150 lbs (68.1 Kg), 54" x 43" x 35.25"
(1372 x 1092 x 895 mm)



Circular saw or grinder wheel to cut panels is NOT acceptable.



Cutter Blades (Top and Bottom)
54" x 43" x 35.25" (1372 x 1092 x 895 mm)
8 lbs/Set (3.63 Kg)

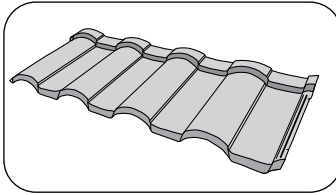


VIDEO ONLINE

WALKING ON THE ROOF

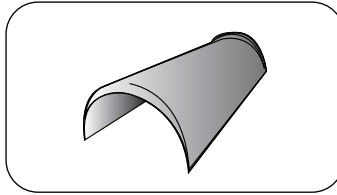


PARTS & PIECES



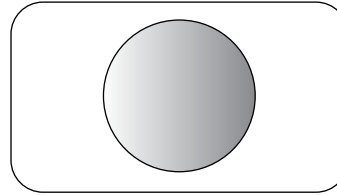
BARREL-VAULT Tile Panel

Coverage: 14" x 43.625"
(356 x 1108 mm),
5.5 lbs (2.5 Kgs), 24 pcs/sq



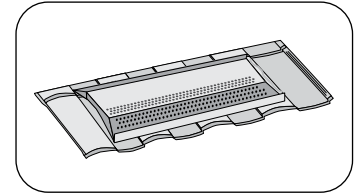
Mission Cap (Hip & Ridge)

6" x 14.5" (152 x 368 mm)



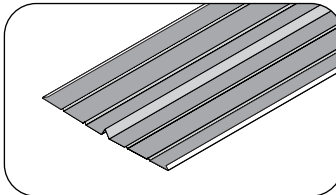
End Disc

6" Dia. (152 mm) 0.18 lbs/EA
(0.08 Kgs)



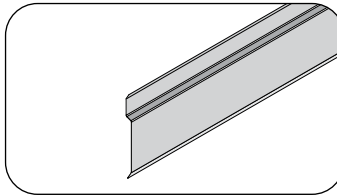
EZ-Vent BARREL-VAULT Tile

Coverage: 14" x 43.625"
(356 x 1108 mm) 9.5 lbs (4.31 Kgs)
NFVA 59.50 Sq In.



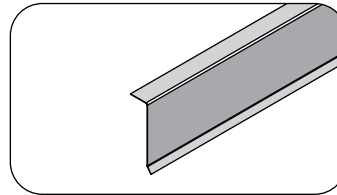
Valley Five 'V'

22" x 120" (559 x 3048 mm),
16.8 lbs (7.6 Kgs)
Painted Black, Brown or Bare
inside



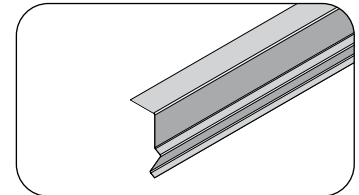
Z-Bar

4.875" x 0.375" x 79"
(124 x 10 x 2006 mm)
2.7 lbs (1.2 Kgs)



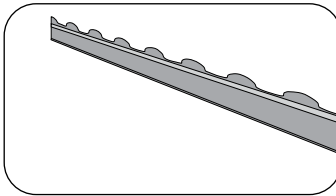
Fascia 3.5"

3.5" x 1" x 79" (89 x 25 x 2006 mm)
2.24 lbs (1 Kg)



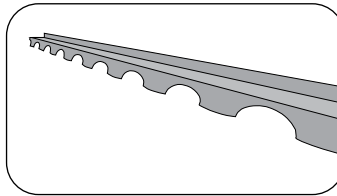
Trim Cap Rake

3.75" x 2.125" x 120"
(95 x 54 x 3048 mm) 4 lbs (1.8 Kgs)



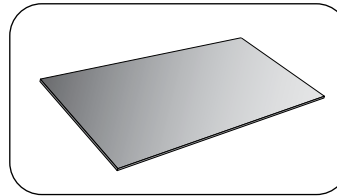
BARREL-VAULT BirdStop

3.75" x 1" x 79"
(95 x 25 x 2006 mm)
5.90 lbs (2.68 Kgs)



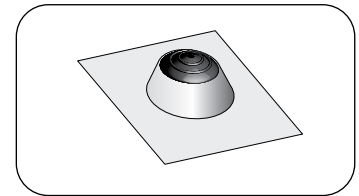
BARREL-VAULT Top Row

1.75" x 3.75" x 79"
(45 x 95 x 2006 mm)
5.64 lbs (2.56 Kgs)



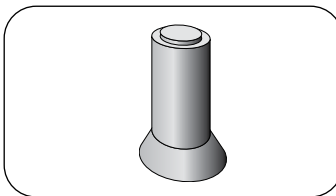
Flat Sheet

18" x 54" (457 x 1372 mm)
8.0 lbs (3.7 Kgs)



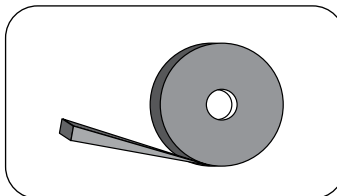
Pipe-Jack 4-N-1

Base 18" x 18" (457-457 mm)
Fits 1.25" to 4" pipes (32-100 mm)
1.86 lbs (0.85 Kg)



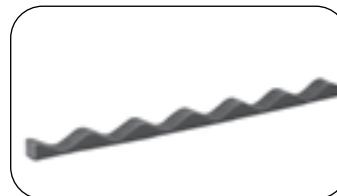
Pipe Sleeve

3/4" - 4" Dia. Pipes (19 - 100 mm)
1.72 lbs (0.78 Kg)



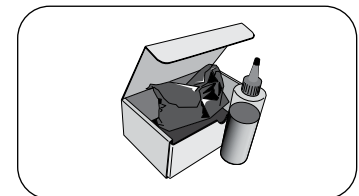
EmSeal Foam Tape Rolls

0.75" x 1" x 19.68'
(19 x 25 x 6000 mm)
1 lbs (0.45 Kg)



Foam Closure Strip

1" x 1-7/8" x 43"
(25 x 48 x 1245 mm)



Touch-up Kit

1 Tube of Basecoat/Adhesive,
1 Bag of Stone Chips, Brush.
3.9 lbs/Box (1.76 Kg)



Basecoat 12-Pack (Adhesive)

12 Tubes/Case



Sealant Tube Non-corrosive,

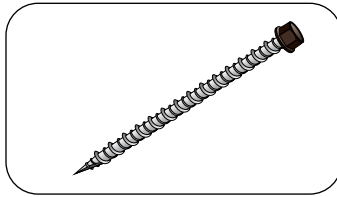
single-component, silicone Sealant.
1 Tube, 12/Case
Available in Black, Brown, Red.



Bulk Stone Chips

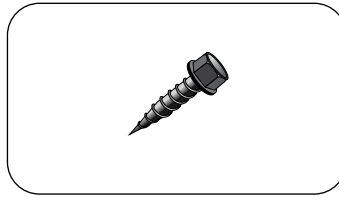
1 Bucket of stone chips - 25 lbs
(11.3 Kg)

SCREWS & NAILS



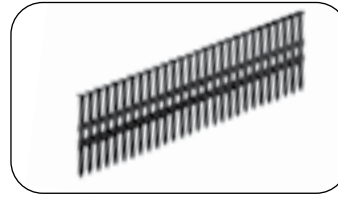
Panel Screws

Carbon Steel or 410 Stainless Steel
2.5" L x 0.25" HWH
(63 mm L x 6 mm HWH)
Available in Black, Brown, Gray, Gold, Red, White.



Stitch Screws Carbon Steel

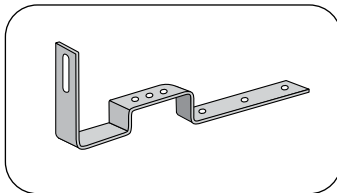
0.75" L x 0.25" HWH
(19 mm L x 6 mm HWH)
Available in Black, Brown, Gray, Gold, Red, White.



Batten Nails

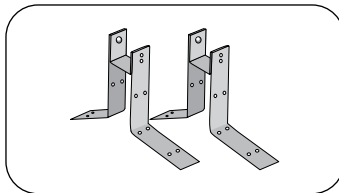
0.131" Dia x 3.25"
(3 mm Dia x 83 mm)
53 lbs/Box (24.06 Kgs)

AVAILABLE COMPONENTS / ACCESSORIES



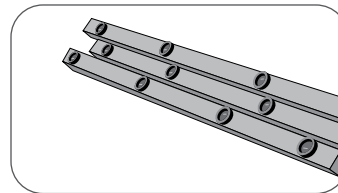
Solar Roof Mount

Stainless Steel Side Mount 90°
3/4" (19.05 mm) fixed bridge height
3" (76.2 mm) wide bridge
Screws Included: 5.16" HWH x 3"



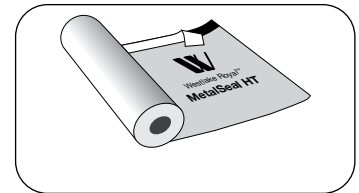
Ridge Riser® Brackets

16 gauge Galvanized Steel



2x2 Elevated Batten System® (EBS)

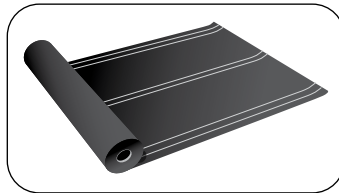
2" x 2" x 96" (50 x 50 x 2438 mm)
12 pcs/Bundle, 1 Bundle = 96 L/ft
(29.28 L/M)



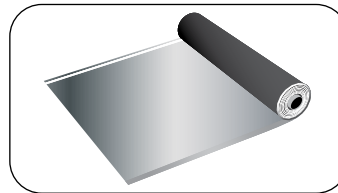
MetalSeal HT Self-adhered,
High Temperature Underlayment
36" x 72' (200 sq. ft.) (915 mm x
2.96 M) 70 lbs/Roll (31.7 Kgs)



SwiftGuard® High-Performance
Synthetic Roof Underlayment
40" x 300' (1000 sq ft)
(1016 mm x 91.44 M)
35.5 lbs/Roll (16 Kgs)



Westlake Royal ORG-Ply 40™
Underlayment/Base Sheet
39-3/8" x 65'-10" (216 sq ft.)
(1M x 20.37 M), 81 lbs/Roll
(36.7 Kg)



Sol-R-Skin™ BLUE Fire
Resistant, Thermal Insulating
Underlayment
54" x 100' (450 sq. ft.)
(1372 mm x 30.48 M), 45 lbs/Roll
(20.4 Kg)



Aluminum Foil Tape Roll
Used with Sol-R-Skin™ BLUE
6" wide x 192" x 16-ft L
6 Rolls/Box



Wakaflex® Universal Flashing
11" x 33'- Black, Brown, Terracotta
(290 mm x 10.07 M)



Unified Steel® Ridge Vent
Continuous ridge vent
17 sq. in (NFVA)/Lft.
2.5" x 1" x 20' (64 x 25 x 6096 mm)

Weights are approximate.

FASTENERS

Unified Steel® panels can be installed with Screws as listed below:

- **PANEL SCREWS**
#10 x 2.5" long x 0.25" HWH (64 mm x 6 mm)
- **STITCH SCREWS** - #8 x .75" long x 0.25" HWH (19 mm L x 6 mm)
- **VALLEY PAN SCREWS** - #10 x 1.5" long x 0.25" HWH w/Rubber washer (38 mm x 6 mm)



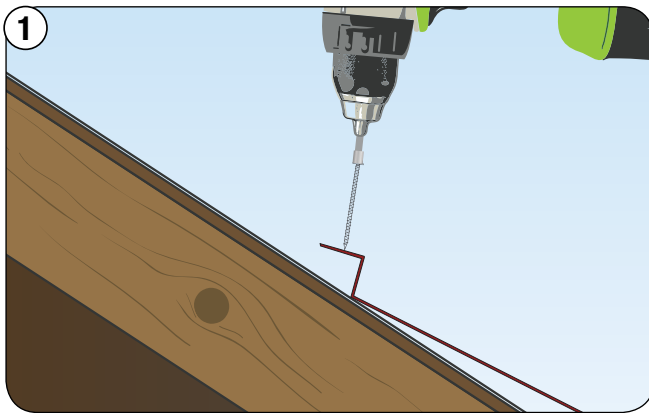
Panel Screw must achieve 3/4" penetration of the deck.

All fasteners used on a Unified Steel roof shall meet or exceed the corrosion resistant standard as defined in ASTM B-117, (1,000 hr minimum Salt Spray Corrosion Resistance).

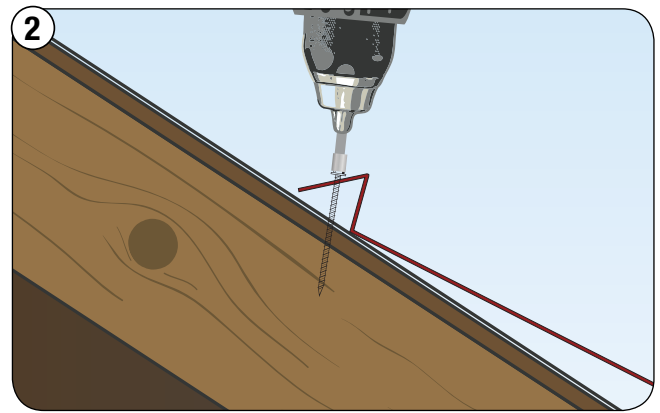


Stainless Steel fasteners are to be used within 1 mile of non-fresh water in coastal area.

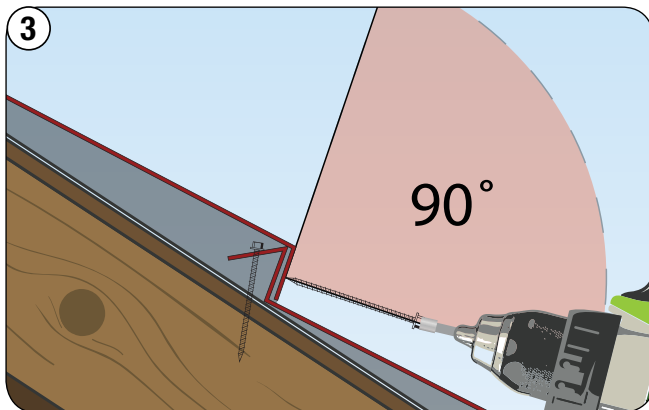
FASTENING DIRECT-TO-DECK PANELS



Panel Back Flange is fastened vertically into roof deck



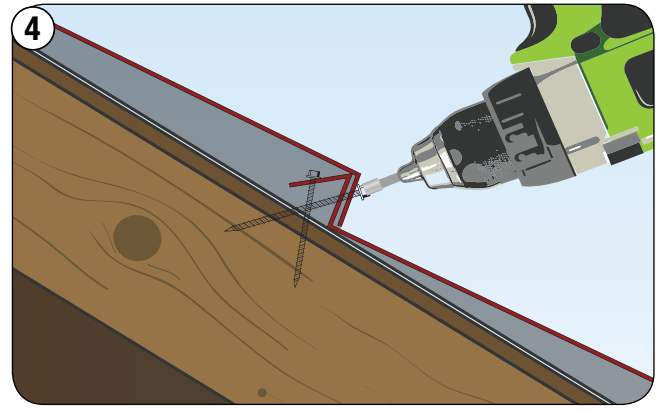
Panel Back Flange is 'seated' down onto roof deck.



Start fastener at a 90° angle to the panel as shown.



*Step 1 and 2 above:
Do Not crush/flatten the Back Flange.*

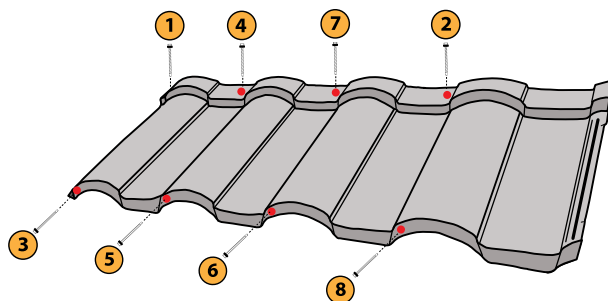


Once fastener has penetrated the nose, angle the screw to penetrate the Back Up-Turn of the panel beneath and into the deck. Due to the Back Flange and Nose Down-Turn fastener angles, the "X" pattern provides exceptional uplift resistance.

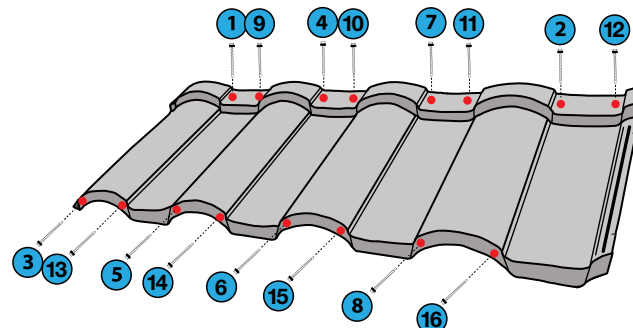
FASTENING PATTERNS PER DESIGN PRESSURE*

Check with municipality prior to establishing method. Will need to determine: • **Local Building Codes** • **Exposure Rating**
• **Wind Uplift Requirements.**

PATTERN 1



PATTERN 2



8 PATTERN 1: Four (4) fasteners across nose down-turn and four (4) across back top-flange.

16 PATTERN 2: Eight (8) fasteners across nose down-turn and eight (8) across the back top-flange.

PATTERN 1** SLOPE 3:12 OR GREATER	
ROOF DECK:	The panels must be installed directly on solid or closely fitted minimum 15/32-inch (112 mm) thickness plywood, on solid or closely fitted wood structural panel sheathing, equivalent thickness spaced or closely fitted solid wood planking, or on spaced structural sheathing boards complying with the applicable building code. Where spaced boards are used, additional structural sheathing boards must be attached to the roof framing as required to accommodate all panel and batten fastening locations.
UNDERLAYMENT:	Minimum one layer ASTM D226 Type-II, ASTM D8257, or ASTM D1970, or as needed to meet local building code requirements, installed per manufacturer's instructions.
ATTACHMENT:	26 ga. Metal Panel installed with four (4) #10-16 x 2-1/2 in. HWH corrosion resistant panel screws through the vertical leg at the headlap beginning at the center of the side lap and four (4) #10-16 x 2-1/2 in. HWH corrosion resistant panel screws through the horizontal leg at the back of panel beginning at the side lap. Fasteners shall penetrate through the deck a minimum 3/4".
MAXIMUM DESIGN PRESSURES:	-52.5 PSF Pressure calculated using 2:1 margin of safety

PATTERN 2*** SLOPE 3:12 OR GREATER	
ROOF DECK:	The panels must be installed directly on solid or closely fitted minimum 15/32-inch (112 mm) thickness plywood, on solid or closely fitted wood structural panel sheathing, equivalent thickness spaced or closely fitted solid wood planking, or on spaced structural sheathing boards complying with the applicable building code. Where spaced boards are used, additional structural sheathing boards must be attached to the roof framing as required to accommodate all panel and batten fastening locations.
UNDERLAYMENT:	Minimum one layer ASTM D226 Type-II, ASTM D8257, or ASTM D1970, or as needed to meet local building code requirements, installed per manufacturer's instructions.
ATTACHMENT:	26 ga. Metal Panel installed with eight (8) #10-16 x 2-1/2 in. HWH corrosion resistant panel screws through the vertical leg at the headlap beginning at the center of the side lap and eight (8) #10-16 x 2-1/2 in. HWH corrosion resistant panel screws through the horizontal leg at the back of panel beginning at the side lap. Fasteners shall penetrate through the deck a minimum 3/4".
MAXIMUM DESIGN PRESSURES:	-127.5 PSF Pressure calculated using 2:1 margin of safety

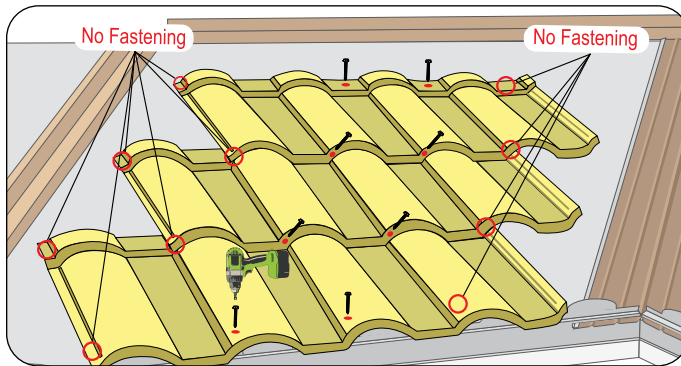
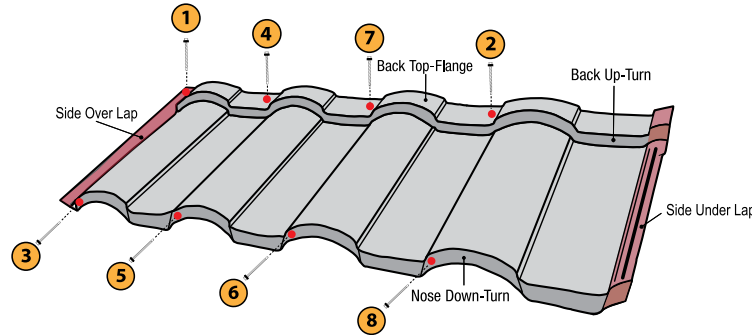
*See [QAI CER](#) or [Texas Department of Insurances](#) for design requirements for areas outside of Florida.

**See current [Creek Lab Report](#) for FBC design requirements to Florida Non-HVHZ and HVHZ (High Velocity Hurricane Zone) regions.

***See [Miami-Dade NOA](#) for HVHZ requirements.

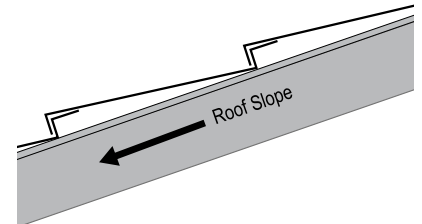
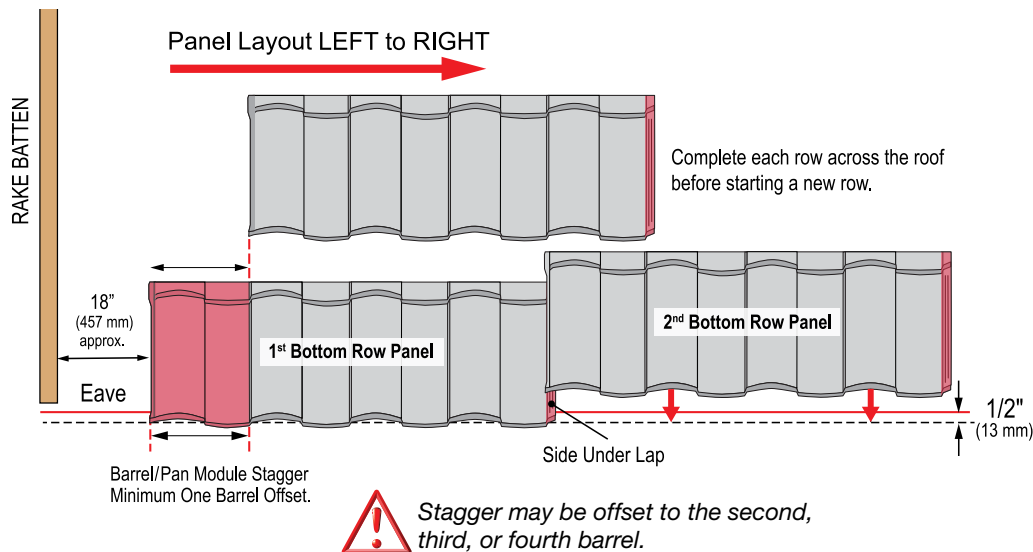


FIELD PANELS LAYOUT & FASTENING METHODS

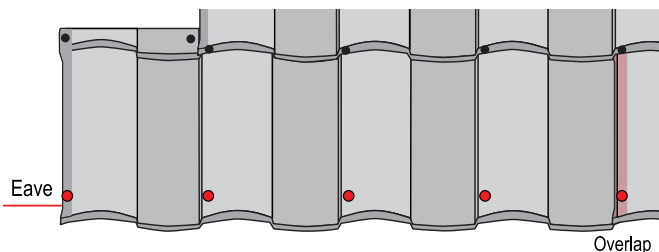


BARREL-VAULT Tile panels have a 9/16" (14 mm) Side Lap and can be staggered by one or multiple concave/convex modules across the panel as needed. **CANNOT be straight laid.**

Do Not Fasten the left end of the first full panel in a row or right end of the last full panel in a row, to allow cut sections to be installed later.



The bottom panels need to have a minimum of 1/2" (13 mm) overhang at the eave.



Fasten first row panels through the top of the panel on the left or the right side of each concave section, out of the main water channel of the panel.

NOTE: Top of the panel fastening is also acceptable behind Unified Steel® EZ-Vents and chimney/skylight details, as necessary.



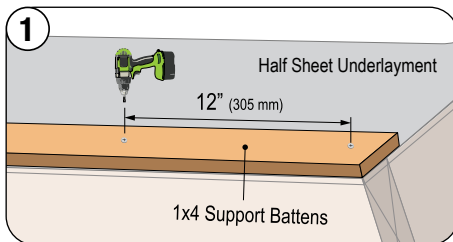
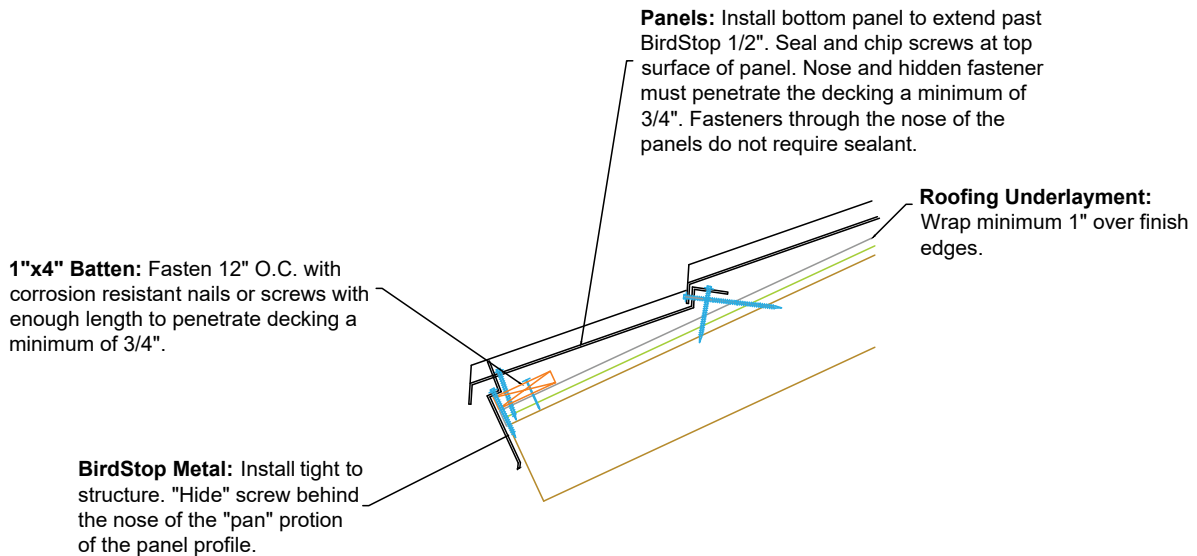
Any fasteners that penetrate through the top of the panel must be sealed and stone-chipped.



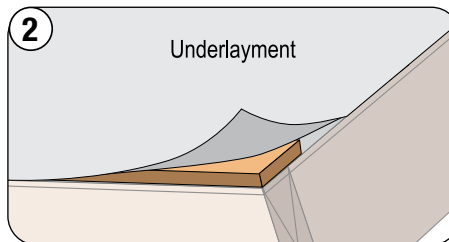
FIELD PANELS LAYOUT & FASTENING



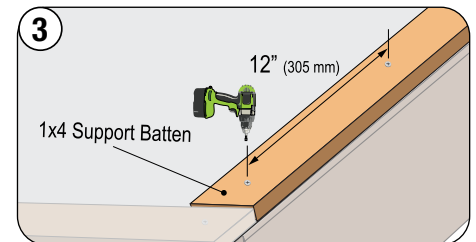
EAVE / RAKE PREP & INSTALL



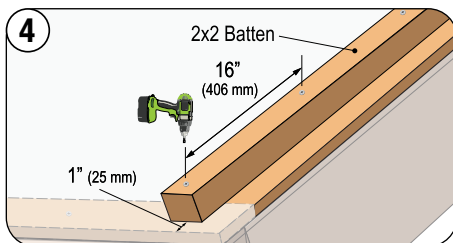
Install 1x4 Support Batten over the half sheet of the underlayment. Fasten batten 12" (305 mm) o.c.



Install full sheet of the underlayment on top of the 1x4 eave batten.



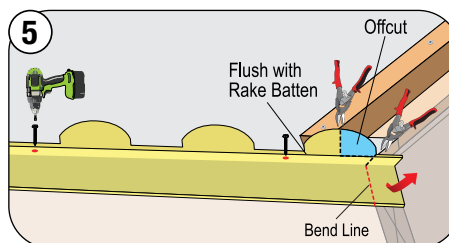
Install 1x4 Support Batten up the rake. Fasten 12" (305 mm) o.c.



Install 2x2 batten up the rake, flush with the left edge of the 1x4 rake batten. Fasten 16" (406 mm) o.c.



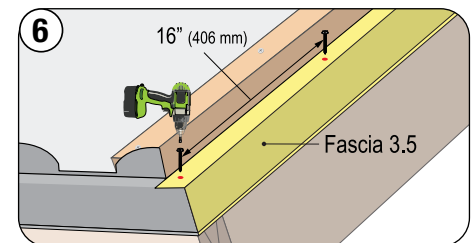
As an option, instead of the 1x4 and 2x2 battens, you can use 2x2 EBS Battens up the rake.



Install BirdStop across the eave on top of a 1x4 support batten. Cut and bend the BirdStop at the corner. The positioning is critical as this part will dictate panel layout across the roof, as the panels follow the scalloped profile of the BirdStop.



BirdStop fastener locations shall be evenly spaced across the BirdStop **at each or every second, low-scalloped section** so the panel overhangs and hides the fastener.



Install Fascia 3.5" up the rake, as shown. Fasten 16" (406 mm) o.c.



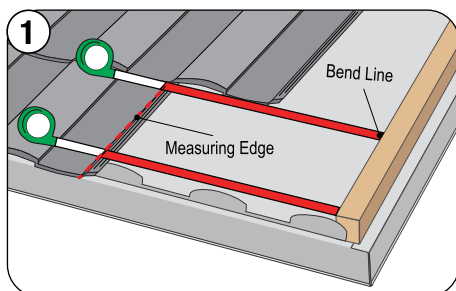
Refer to local building code for flashing fastening. Some regions require additional fastening.



EAVE / RAKE PREP & INSTALL



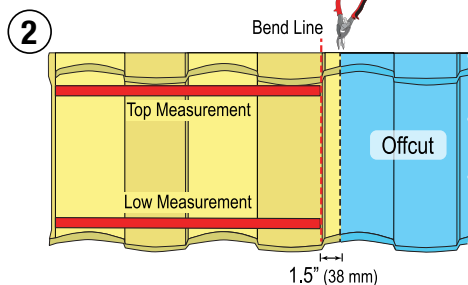
RAKE PANELS INSTALL



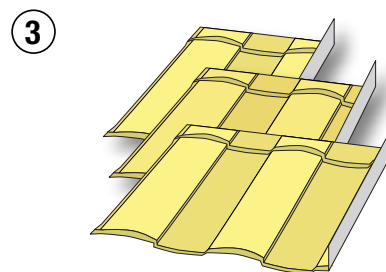
Measure from the full panel across to the rake batten on each course.



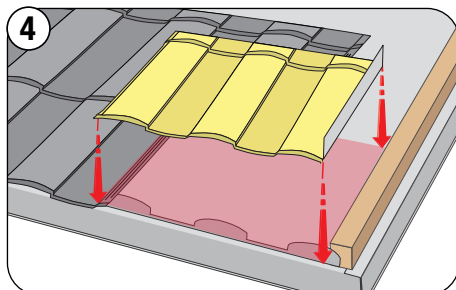
Always DEDUCT 1/2" (13 mm) from actual measurements to ensure an easy fit of Rake cuts.



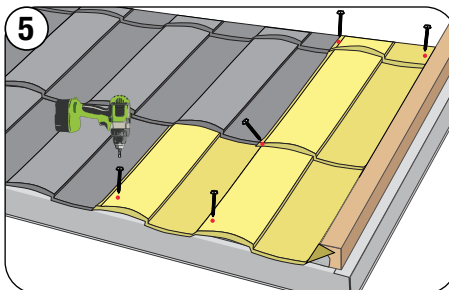
Apply measurements to the full panel and mark the Bend Line. Add 1.5" (38 mm) and mark the Cut Line.



After cutting and bending, stack each piece in the correct order so they are easily accessible for easy installation on the roof.



Mark, cut and bend up rake panels and install starting from the eave up to the ridge.



Fasten as a regular field panel.



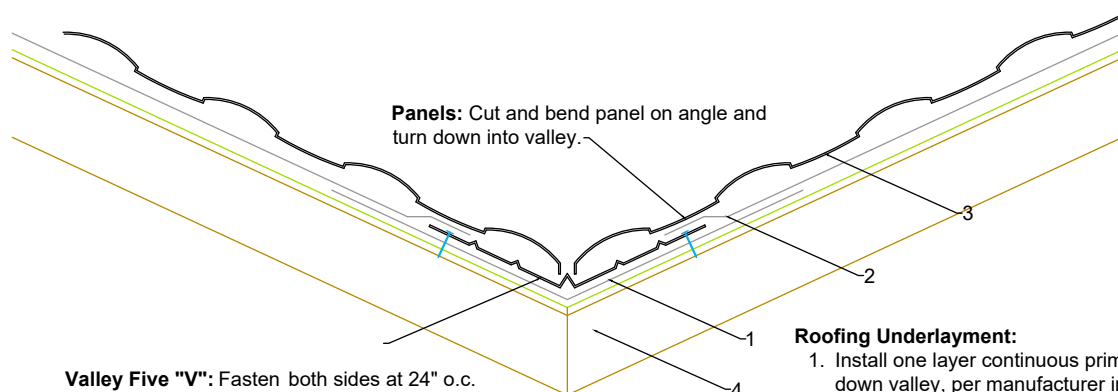
Any fasteners that penetrate through the top of the panel must be sealed and stone-chipped.



RAKE PANELS INSTALL



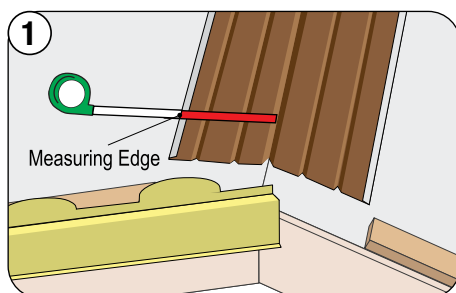
VALLEY PREP & INSTALL (Closed Valley without Tray)



Valley Five "V": Fasten both sides at 24" o.c. minimum. Fastener to penetrate decking a minimum of 3/4". Extend valley 1/2" minimum beyond fascia.

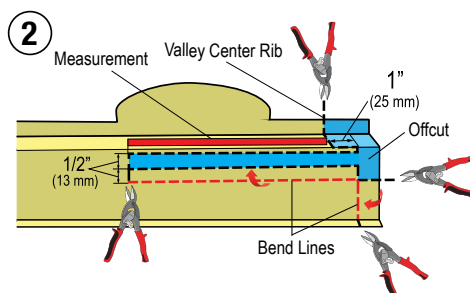
Roofing Underlayment:

1. Install one layer continuous primary underlayment down valley, per manufacturer instructions.
2. Install underlayment per manufacturer instructions, per code requirements.
3. Install field panels to prevailing building code.
4. Install BirdStop, notched as needed for valley drainage. (not imaged for clarity)

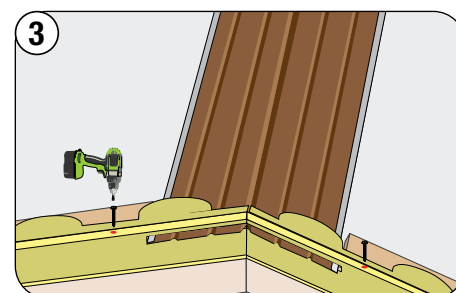


Position Valley Five 'V' at the center of the valley. Measure Valley Five "V" from the edge of the Valley to the center rib.

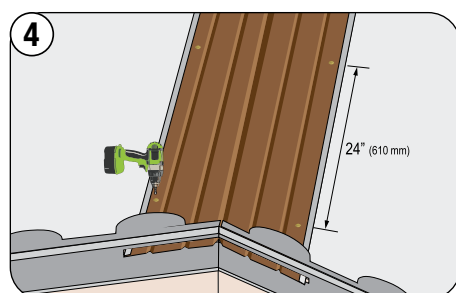
For Opened Valley, measure from the edge of the valley metal to the second rib.



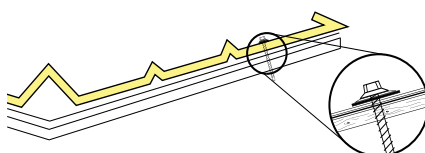
Apply measurement to the BirdStop. Cut and Bend, as shown.



Install BirdStop on top of the Valley, as shown. **When fastening BirdStop, do not penetrate Valley area.**



Fasten Valley Five 'V' with washer and grommet screws in the outside locations a minimum of 24" o.c. (610 mm) up both sides.



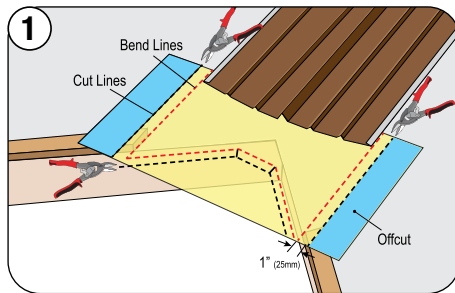
When fastening through the valley metal, fasteners must have a rubber washer covered by metal cap to ensure a seal around the fastener location.



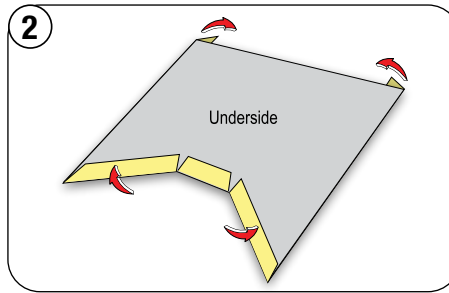
VALLEY INSTALL WITHOUT TRAY



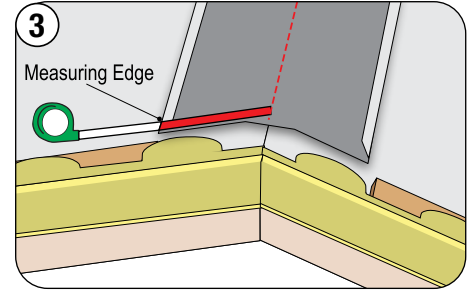
VALLEY PREP & INSTALL (Closed Valley with Exit Tray)



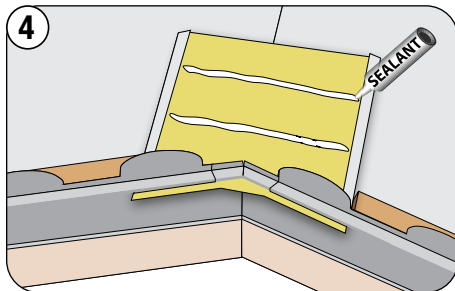
Position Valley Five 'V' at the center of the valley. Place half a Flat Sheet under the Valley. Extend Flat Sheet a minimum of 1" (25 mm) past eave. Mark, cut and bend, as shown.



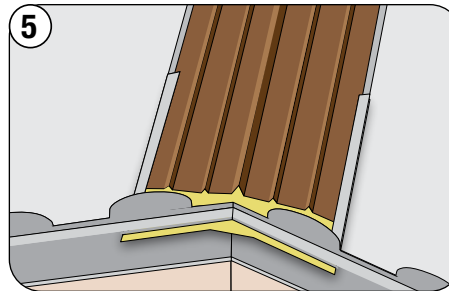
Hem both sides of the folded Flat Sheet to fit around outside edges of the Valley.



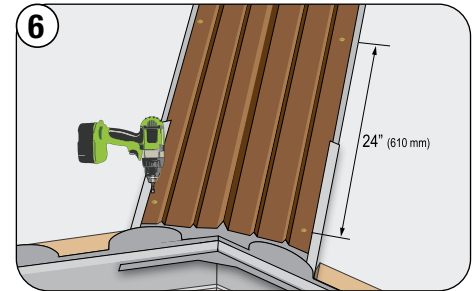
Place the Exit Tray at the middle of the valley and measure the distance from the edge to the valley center line, as shown. Apply the measurement to the BirdStop. [See page 12, Step 2.](#)



Insert Exit Tray into the BirdStop. Apply Sealant, as shown.



Insert Valley Five 'V' into the Valley Exit Tray. **For Opened Valley:** Offcut BirdStop from the second rib to the center rib on both sides.



Fasten Valley Five 'V' with Valley Screws in the outside locations a minimum of 24" o.c. (610 mm) up both sides.

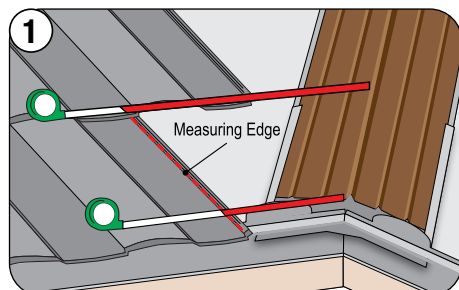


VALLEY INSTALL WITH EXIT TRAY

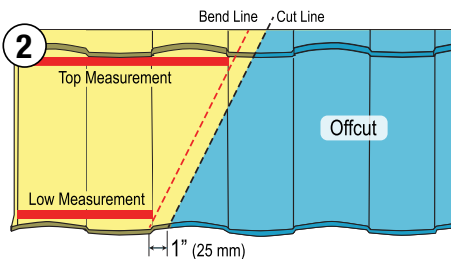


VALLEY PANELS INSTALL

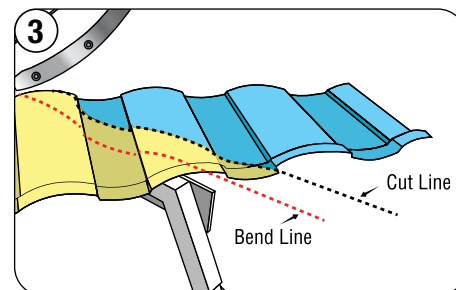
LEFT SIDE



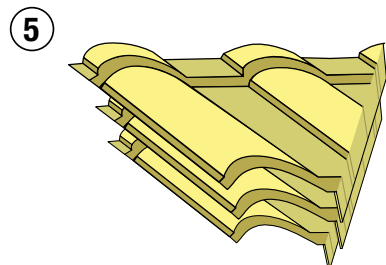
Measure each panel row across the top and bottom of the valley cut to the second rib of the Valley Five 'V' to ensure the angle is correct.



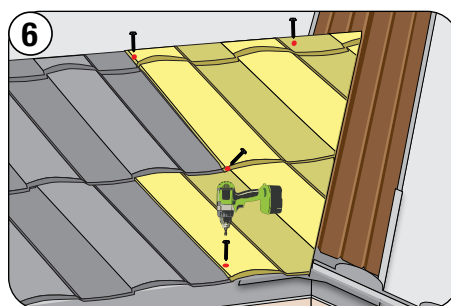
Apply Measurements to the full panel and mark as a Bend Line. Add 1" (25 mm) and mark as a Cut Line.




Use the Unified Steel's Cutter, start the cut from the nose edge of the panel to the back up-turn.

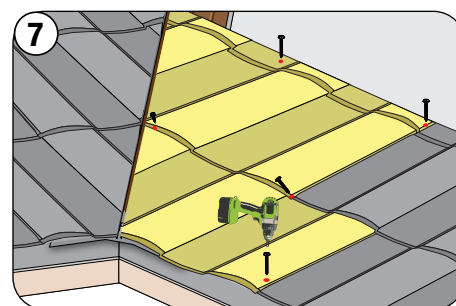


After bending the cut section, start stacking each one as shown. Be sure to keep them in the correct order so they are easily accessible for installing in the correct spot on the roof.



Install valley panels starting from the eave. Fasten as regular field panels.

 **Do not penetrate Valley metal with panel fasteners. Use 0.75" *Stitch Screws* over the Valley metal.**

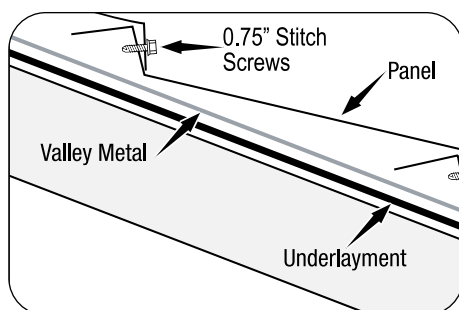


Finish valley panels installation on the right side of the Valley. Fasten, as shown.



Any fasteners that penetrate through the top of the panel must be sealed and stone-chipped.

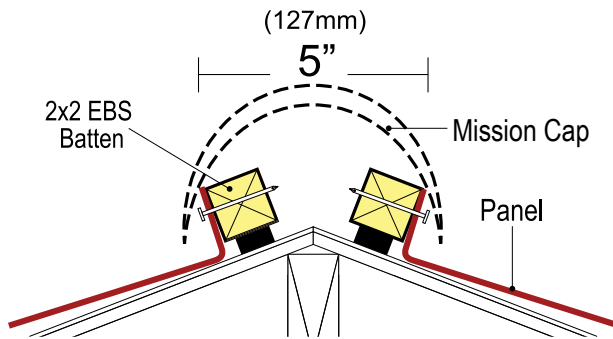
PANEL FASTENERS OVER VALLEY



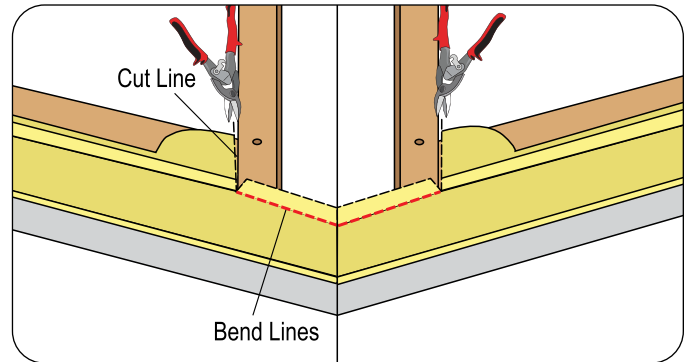
VALLEY PANELS INSTALL



HIP PREP & INSTALL

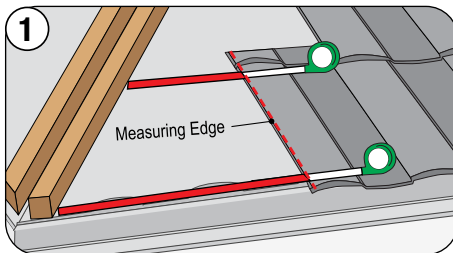


Install 2x2 EBS battens 5" (125 mm) apart.



Cut and bend BirdStop at the hip area, as shown.

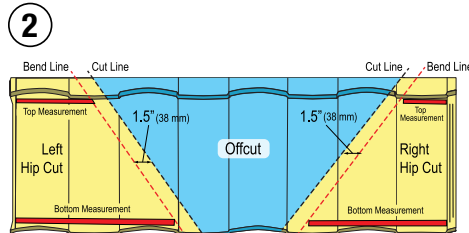
HIP PANELS INSTALL (Right Side shown)



Measure and record the top and bottom of each hip cut (do this for the entire hip length on both the right & left side of the hip center line).



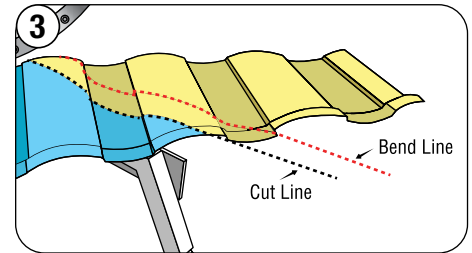
Always **DEDUCT 1/2"** (13 mm) from actual measurements to ensure an easy fit of hip cuts.



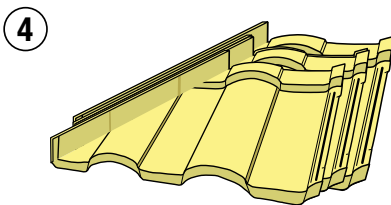
Apply measurements to the full panel and mark the Bend Line. Add 1.5" (38 mm) and mark the Cut Line on the other side.



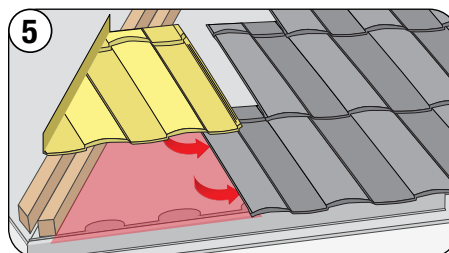
When measuring the hip panel cut, make sure to keep the tape measure in the same "plane" as the panels and parallel to the panel nose or back up-turn.



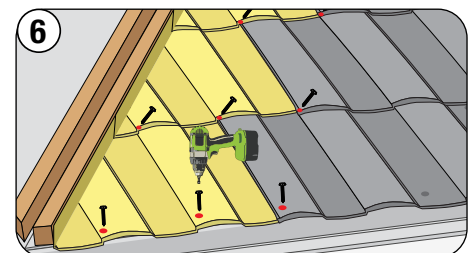
Using the Unified Steel Cutter, start the cut from the nose edge of the panel to the back up-turn.



After bending the cut section, start stacking each one, as shown. Be sure to keep them in the correct order so they are easily accessible for installing in the correct spot on the roof.



Install hip cuts under the full panel.



Fasten, as regular field panels.



Any fasteners that penetrate through the top of the panel must be sealed and stone-chipped.

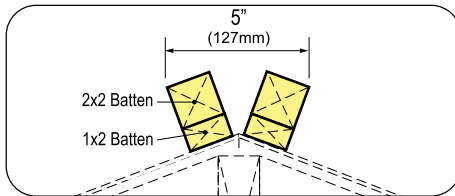


HIP PANELS INSTALL



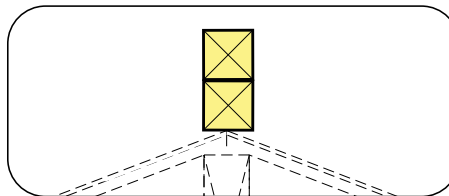
RIDGE PREP & INSTALL

OPTION 1: SIDE BY SIDE STACK

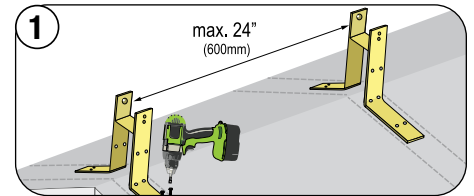


Ridge battens can be positioned side by side, or vertically stacked as shown, using 2x2 battens. **Note:** For Vertical Stack third batten may be needed, depending upon roof pitch and panel layout.

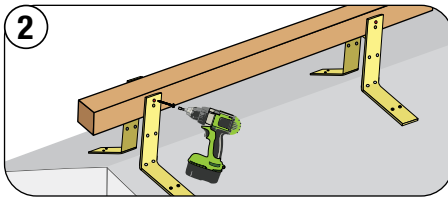
OPTION 2: STACK



OPTION 3: RIDGE RISER



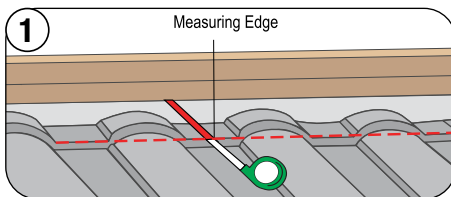
Install Ridge Riser Brackets no greater than 24" (600 mm) apart for non-High Velocity Hurricane Zone (HVHZ) areas.



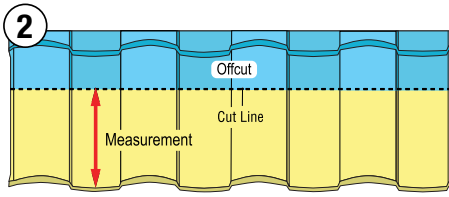
Place a 2x2 wood nailer board into Ridge Riser Brackets. Fasten wood nailer to Ridge Riser Brackets with a #8 min. 0.75" (19 mm) screw or roofing nail.

► See Ridge Riser Brackets Installation Guide.

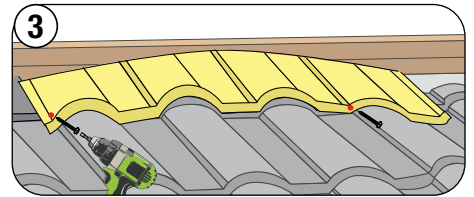
RIDGE PANELS INSTALL



Measure the top row from the back-flange upstand to the ridge batten.

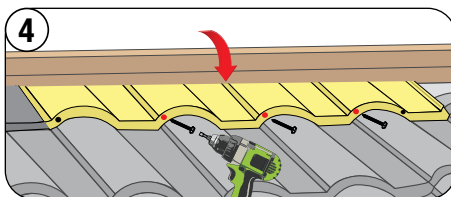


Apply measurements to each full panel and mark the Cut Line.

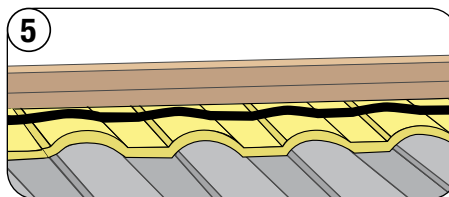


Fasten left end of the panel first, then right end, as shown.

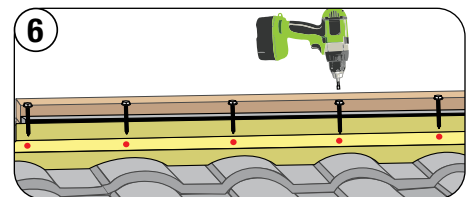
⚠ DEDUCT 1/2" (13 mm) from actual measurements to ensure an easy fit of Ridge cuts.



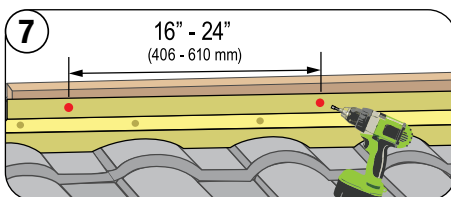
Push the ridge panel cut down to align with the panel below. Finish fastening of the ridge panel.



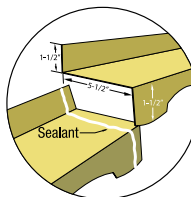
Place EmSeal Foam Tape (shown) or Foam Closure Strip at the top of the ridge cut.



Install Top Row metal and fasten trough the top flange, as shown.



Fasten Top Row to the ridge batten every 16" - 24" (406 - 610 mm).



Overlap Top Row 2" (50 mm). Apply a bead of Sealant between two overlapping Top Row pieces.



Any fasteners that penetrate through the top must be sealed and stone-chipped.



RIDGE PREP & INSTALL

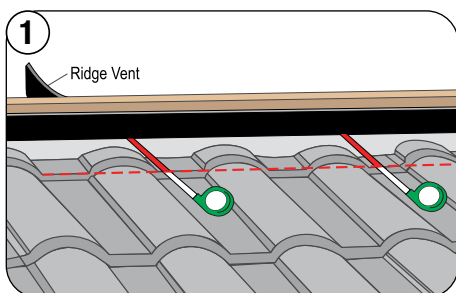
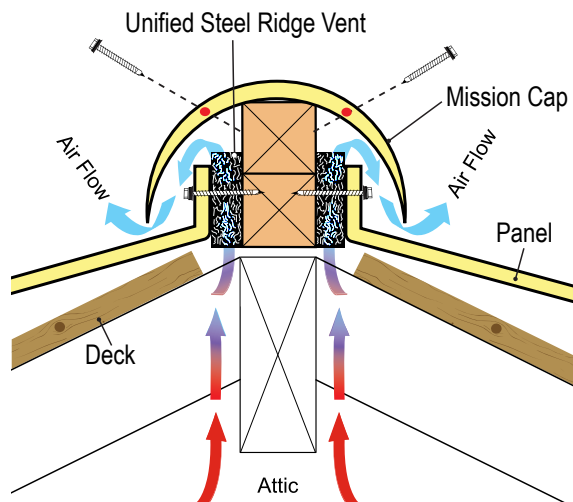
RIDGE PANELS INSTALL



RIDGE VENT INSTALL



Maintain 1/2" (13 mm) space between Mission Cap and panel for air flow.

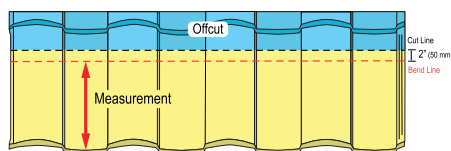


Measure the top row from the Back-Flange upstand to the Ridge Vent material.



DEDUCT 1/2" (13 mm) from actual measurements to ensure an easy fit of Ridge cuts.

2

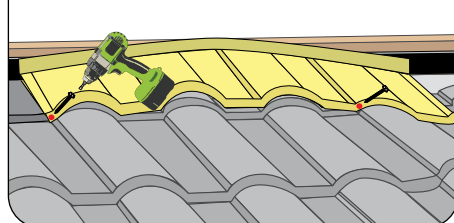


Apply measurements to each full panel and mark as Bend Line. Add 2" (50 mm) and mark as Cut Line.

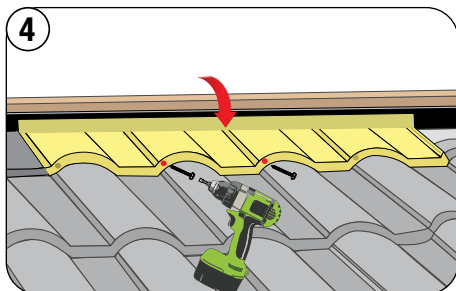


Always bend the ridge panels before cutting, as they deform slightly in the bender.

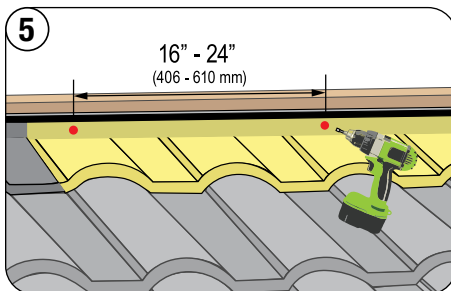
3



Bend and cut panels. Align the panel properly. Fasten left end of the panel first, then right end.



Push panel down to fit coursing properly. Continue fastening ridge panel.



Fasten to the ridge batten every 16" - 24" (406 - 610 mm).



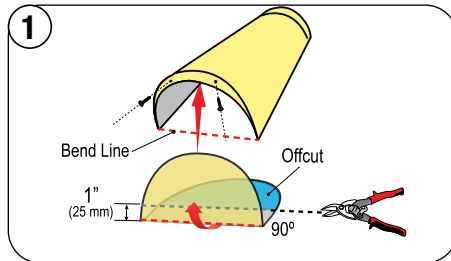
DO NOT compress the Ridge Vent when fastening panels into the ridge batten. Make sure the air-flow path from the attic space is not restricted. Refer to vent manufacturer's specifications for the correct slot-width to be cut on either side of the ridge.



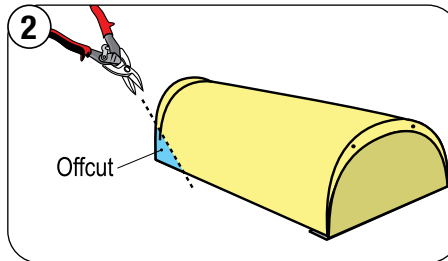
RIDGE VENT INSTALL



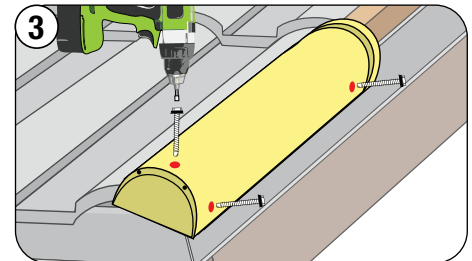
MISSION CAP INSTALL ON RAKE



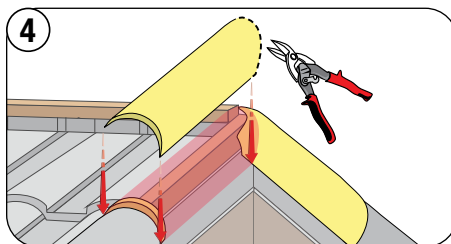
Insert the End Disk into Mission Cap and fasten with stitch screws. Bend End Disk at 90 degrees. Mark and cut to fit around the nose of the panel at the rake edge.



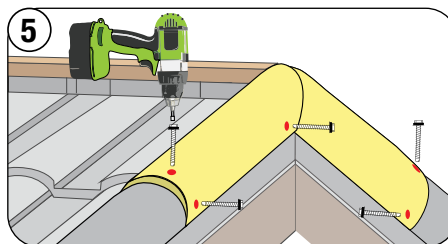
Notch inside corner of the first Starter Cap, as shown, to allow it to fit on the bottom panel course.



Fit the rake Starter Cap at the eave and fasten into the rake batten and into the side of the rake rafter, as shown.



Fit each cap up the rake until it intersects with the ridge. Mark, cut and fit the final rake cap at the ridge.

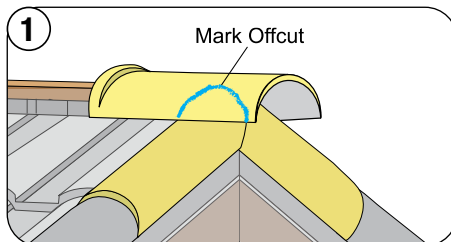


Fasten at the top and sides. Use the Touch-Up kit to finish this detail.

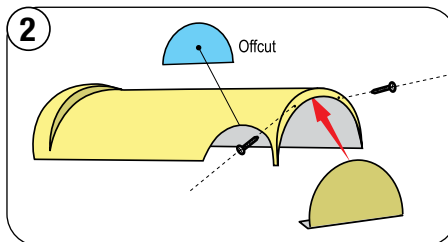


Any fasteners that penetrate through the top of Mission Caps must be sealed and stone chipped using the Touch-Up kit.

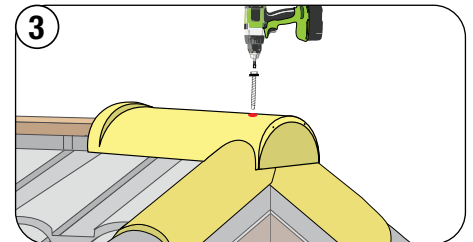
MISSION CAP INSTALL AT RAKE / RIDGE INTERSECTION



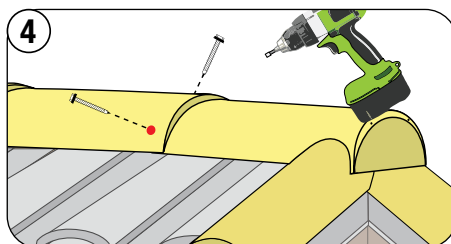
Position the Ridge/Rake Starter Cap as shown and scribe the profile of the rake caps on either side.



Cut out the rake cap profiles on each side and fit an end disc into the Ridge/Rake Starter Cap.



Fasten the Ridge/Rake Starter Cap through the top into the ridge batten.



Install Ridge Mission Caps across and fasten through the nose on both sides, as shown.



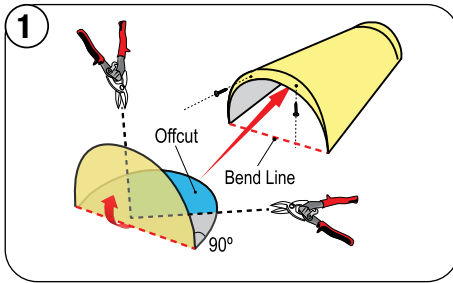
Any fasteners that penetrate through the top of the panel must be sealed and stone-chipped.



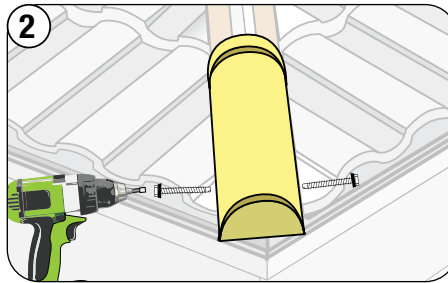
MISSION CAP INSTALL ON RAKE



MISSION CAP INSTALL ON HIP



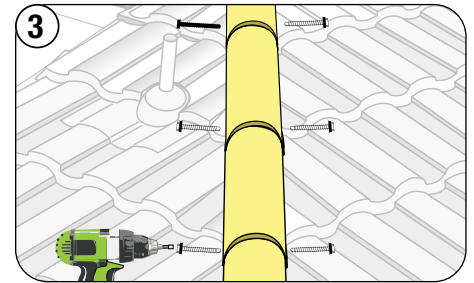
Insert the End Disk into Mission Cap and fasten with stitch screws. Bend End Disk at 90 degrees. Mark and cut at 45 degrees to fit around hip corner.



Fasten the Starter Cap through the sides.



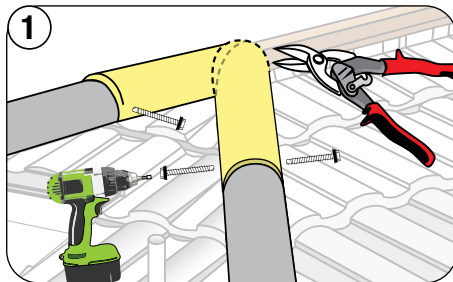
Starter Cap End Disks should always be bent at a 90 degree angle to form 3-D effect.



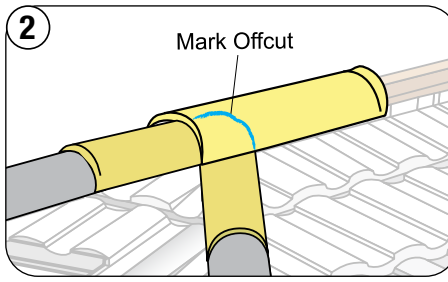
Fit each Mission Cap up the hip, making sure to keep the caps straight. Fasten through the sides into the hip batten, as shown.

MISSION CAP INSTALL AT HIP / RIDGE INTERSECTION

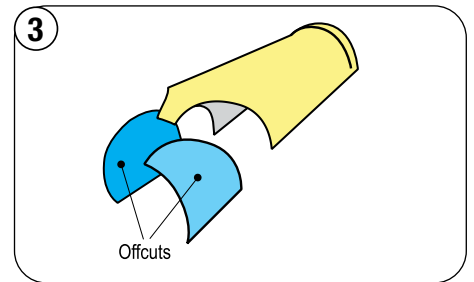
When two hips intersect, it's necessary to mark and cut them so they intersect tightly and allow the ridge caps to cover over the two hip caps, providing a finished detail at this Mission Cap intersection.



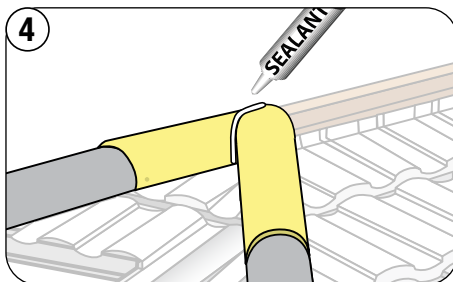
Position the two hip caps at the ridge intersection. Mark and cut them to fit by overlapping each other. Fasten, as shown.



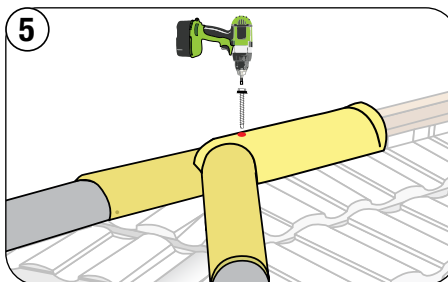
Position the ridge cap over the intersecting hip caps and scribe the hip cap profiles on both sides.



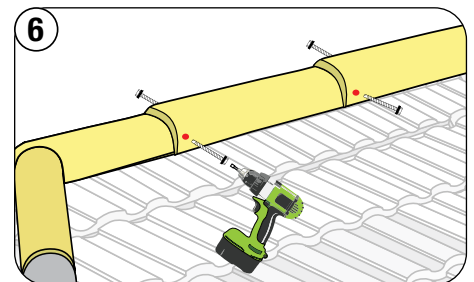
Cut out the ridge cap scribed lines to fit over the two intersecting hip caps.



Apply a bead of Sealant along the intersection.



Fit the ridge cap and fasten into the ridge batten. Use the Touch-Up kit to seal fasteners.



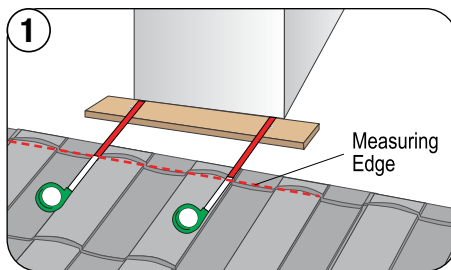
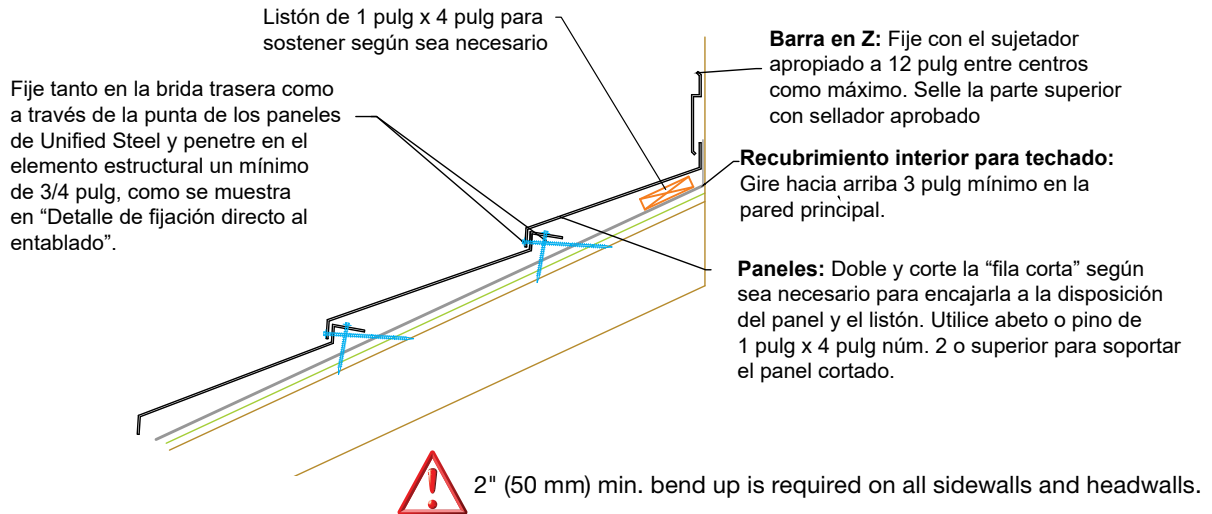
Continue Installing Mission Caps on the ridge. Fasten with 2 fasteners, one on each side, to the ridge batten.



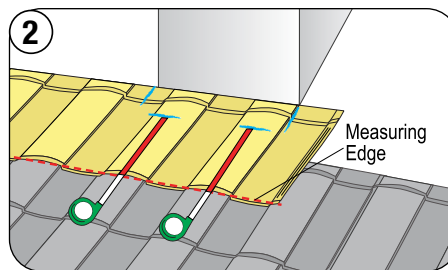
MISSION CAP INSTALL ON HIP / RIDGE



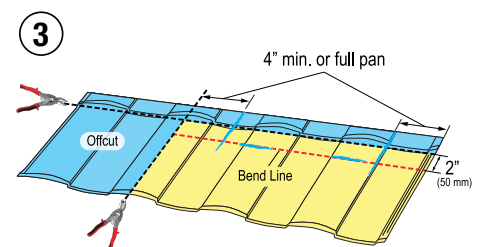
CHIMNEY / SKYLIGHT / HEADWALL / SIDEWALL DETAIL



1 Measure panel from the back-nose down to the front of Chimney/Skylight.



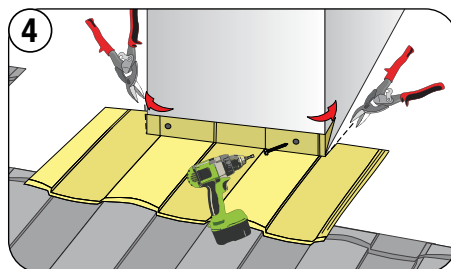
2 Align the front panel with the course below and the correct layout pattern for the profile. Mark the sides of the chimney and mark the measurements from Step 1.



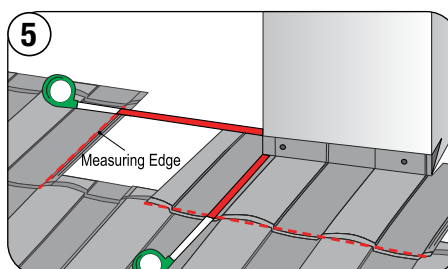
3 Apply the measurements to a full panel. Bend the entire length then cut off the excess.



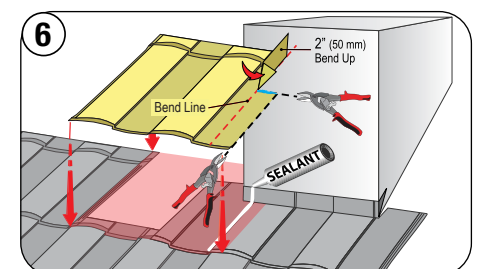
Make sure panel is cut a minimum of 4" (100 mm) past the width of the Chimney/Skylight on each side.



4 Fit the front panel flashing section as shown and cut at a 45 degree angle from each side. Bend the corners around the Chimney/Skylight.



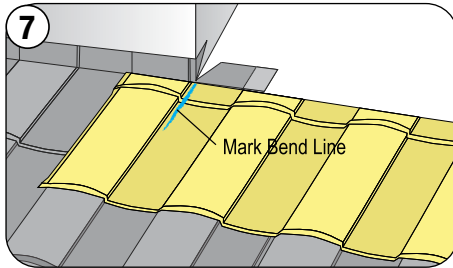
5 Measure the distance from the panel overlap to the Chimney/Skylight and mark on the left-side panel as a Bend Line. Add 2" (50 mm) and mark as a Cut Line. Measure the distance from the panel nose to the front of the Chimney/Skylight and mark another Cut Line.



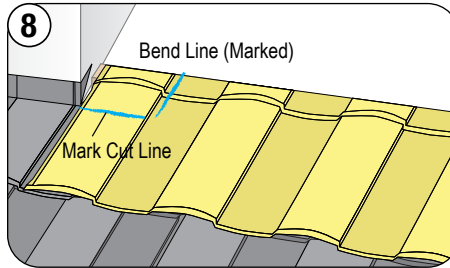
6 Cut and bend up the panel, as shown. Bend the corner around Chimney/Skylight. Apply Sealant and fit the left-side panel aligning it with the field panels already installed.

Continue on Next Page

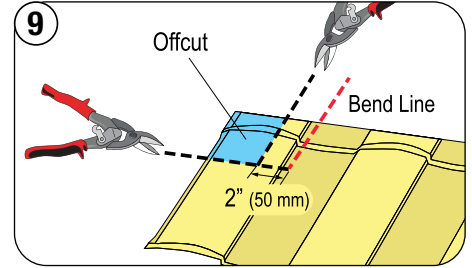
CHIMNEY / SKYLIGHT / HEADWALL / SIDEWALL DETAIL (cont.)



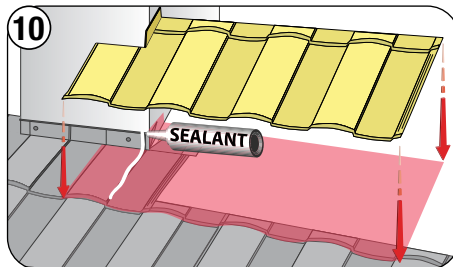
Align side panel with the course below and the correct layout pattern for the profile and mark the Bend Line aligned with the Chimney/Skylight side edge.



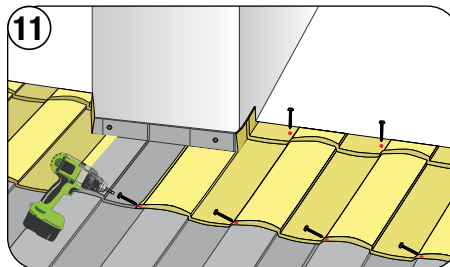
Place marked panel to the side of the chimney, align with the front panel and mark Cut Line, aligned with the chimney front edge.



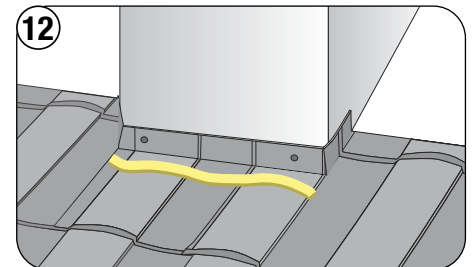
Add 2" to the left of Bend Line and mark as Cut Line. Cut and bend panel according to marked lines.



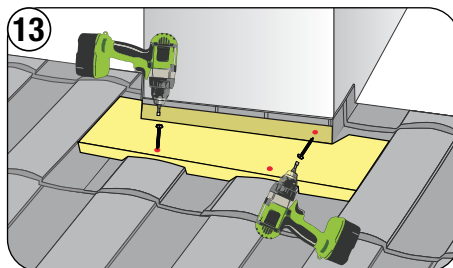
Apply Sealant and fit the side panel aligning it with the field panels already installed.



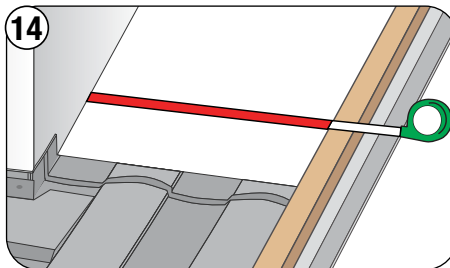
Fasten panels the same way as field panels.



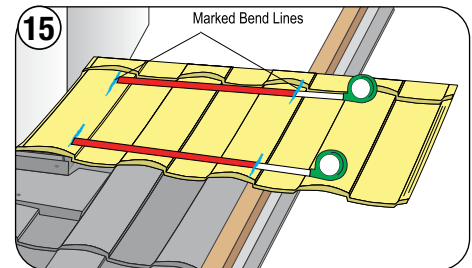
Place EmSeal tape or Foam Closure Strip across top of front panel section as a weather block.



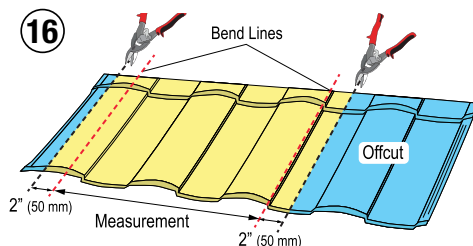
Install Top Row metal. Fasten, as shown.



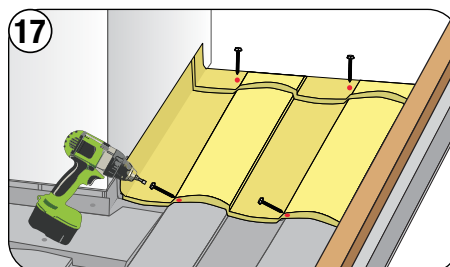
Measure the distance from the side of the Chimney to the rake batten.



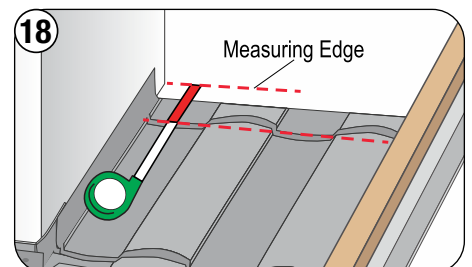
Align a full panel or panel section to the panel profile and mark the measurements.



Apply Bend Line measurements to the panel. Add 2" (50 mm) to mark Cut Line.



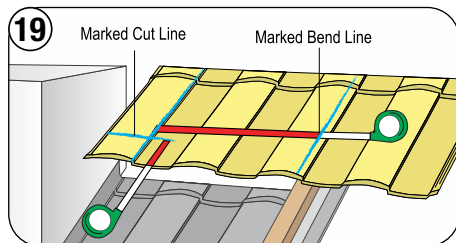
Install the side sections on both sides of the chimney and fasten as regular panels.



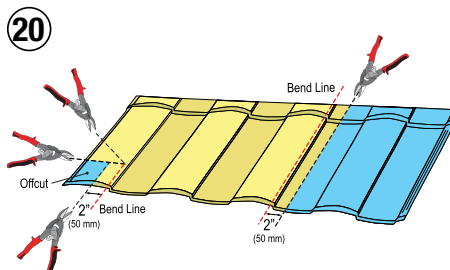
Measure from the Back-up Turn to the back of the Chimney/Skylight.

Continue on Next Page

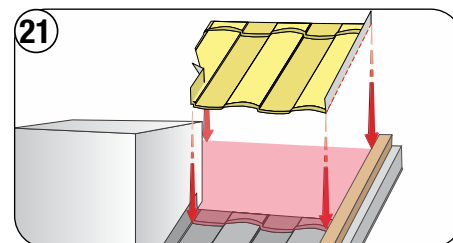
CHIMNEY / SKYLIGHT / HEADWALL / SIDEWALL DETAIL (cont.)



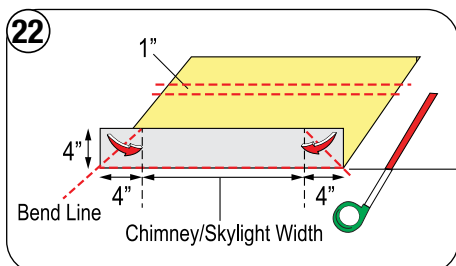
Align a full panel or panel section to the panel profile. Apply the previous measurement and mark as Cut Line. Measure the distance from the Chimney/Skylight to the Rake batten and make as Bend Line.



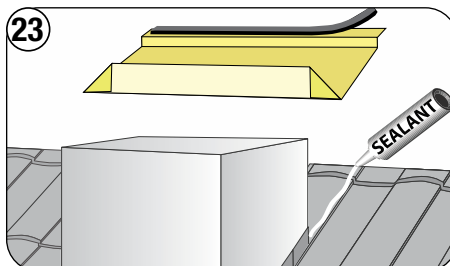
Cut and bend the panel, as shown.



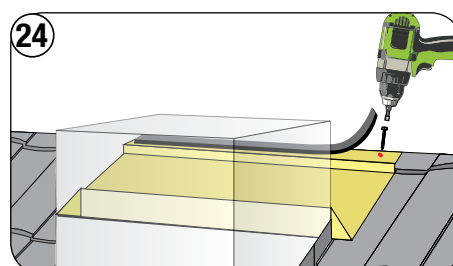
Install side panels on both sides, insuring they are sitting firmly on the back support batten.



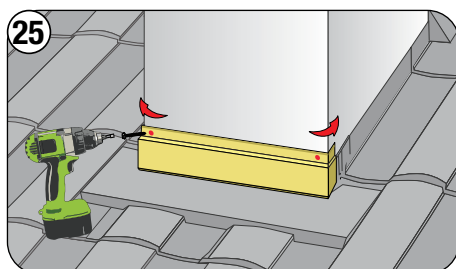
Using a section of Flat Sheet, mark and bend it up 4" (100 mm) minimum, forming a saddle flashing for the back of the item being flashed. Make sure it is 4" (100 mm) wider on each side of Chimney/Skylight.



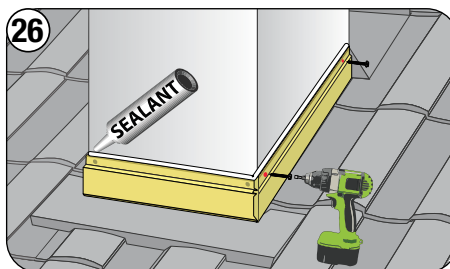
Apply Sealant down both sides of the panel in line with the chimney width. Apply an EmSeal tape to the back-flange of the Saddle.



Fasten each end of the Saddle through the back-flange under EmSeal tape.



Measure, cut and bend Z-Bar metal, starting across the front.



Complete Z-Bar installation up both sides, scribed to the Chimney saddle. Apply Sealant along the top edge of the Z-Bar.

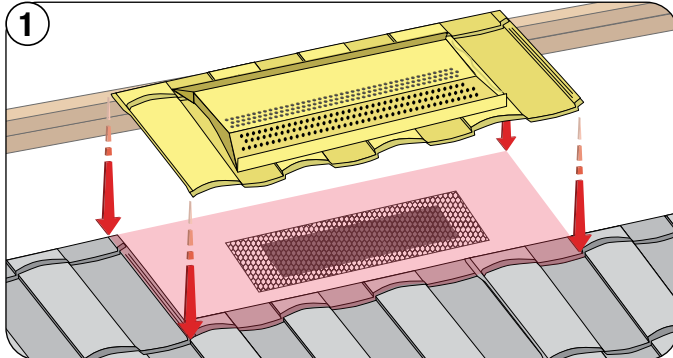


CHIMNEY / SKYLIGHT DETAIL

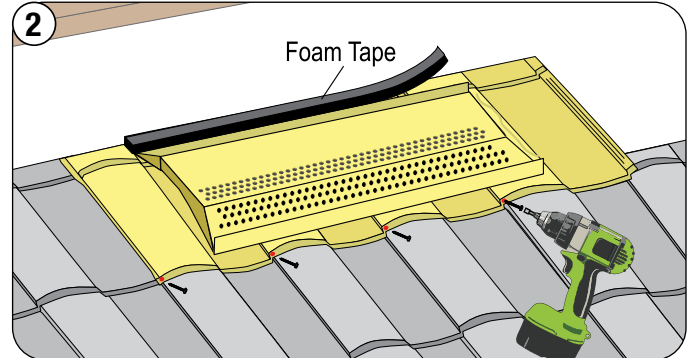


EZ VENT INSTALL (Off Ridge Ventilation)

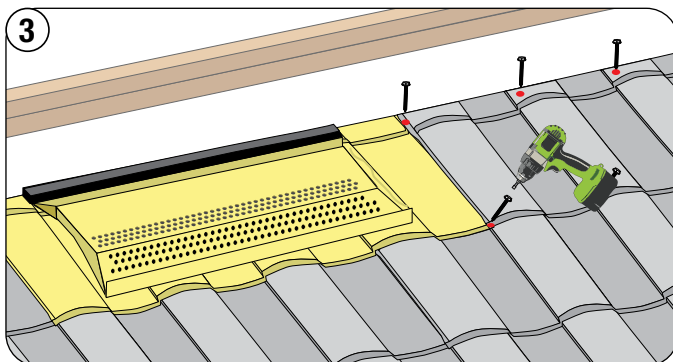
Barrel-Vault EZ-Vents are used in place of regular panels on the first full course down from the ridge where exhaust ventilation is required. Care should be taken to adequately ventilate the building. Check with the local codes for correct Net Free Vent Area required for attic ventilation.



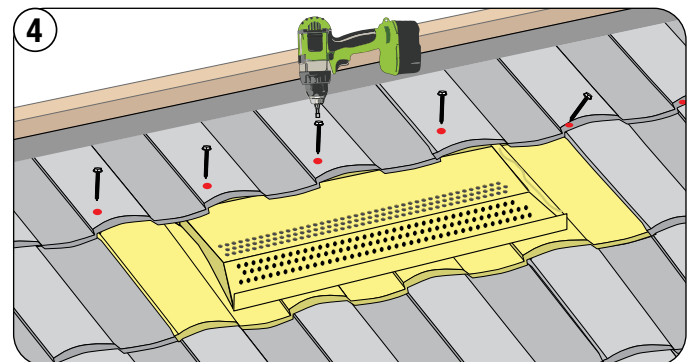
1 Cut a hole in the decking, approximately 5" x 30" (127 x 762 mm). Cover the hole with metal mesh (0.125" (3 mm) square) to prevent pests/insects from entering the attic. Install the EZ-Vent unit overlapping as field panels.



2 Install EmSeal tape across the back edge where the ridge panel will overlap across the EZ-Vent. This provides additional weather protection across the back of the EZ-Vent. Fasten through the nose, as field panels.



3 Continue installation of the panels in the row. Fasten as regular field panels.



4 Fasten the ridge panel course above the EZ-Vent through the top of the panel.



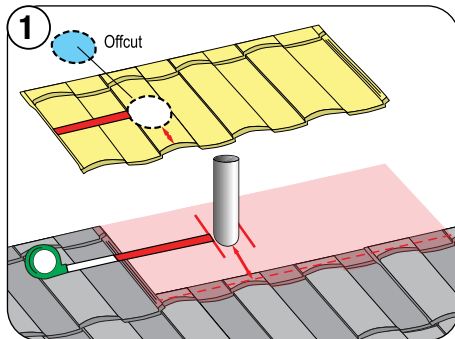
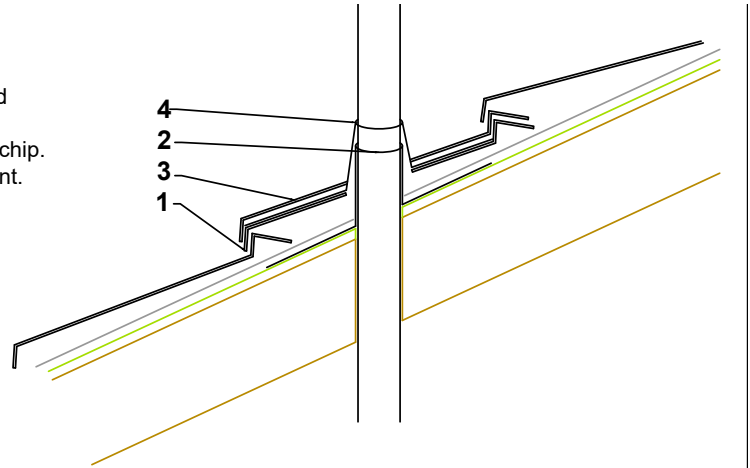
EZ VENT INSTALL



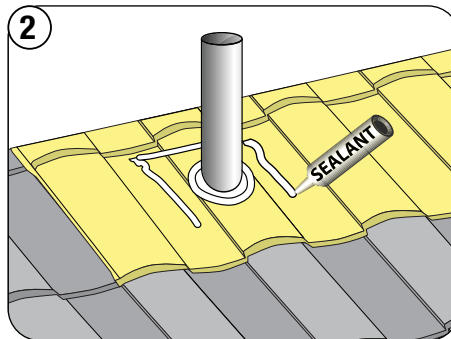
PIPE VENT INSTALL - Sandwich Method

Double Pan/Sandwich Method:

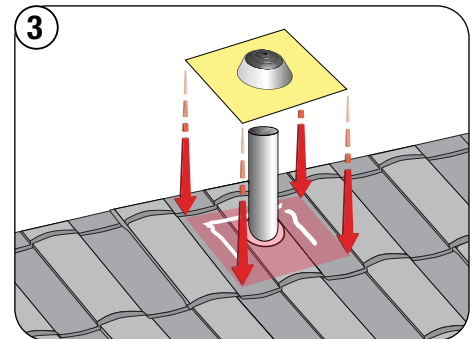
1. Bottom pan, lose cut.
2. (If dry-in state is required.) Galvanized base flashing sealed with roofing underlayment.
3. Top pan, tight cut, seal with approved sealant and granule chip.
4. Granule coated pipe flashing, seal top with approved sealant.
5. Fasten panels as normal. (fasteners omitted for clarity)




Measure, mark and cut the lower panel to fit around the vent pipe.

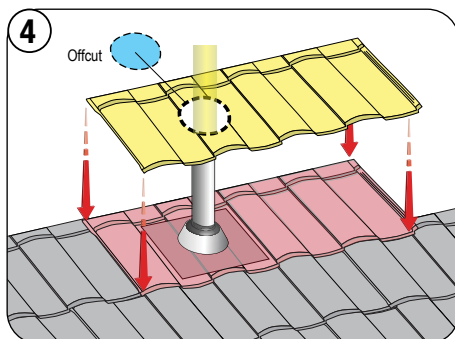


Install base panel to fit around the vent pipe. Apply a bead of Sealant at the back, on each side and around the hole of the pipe, as shown.

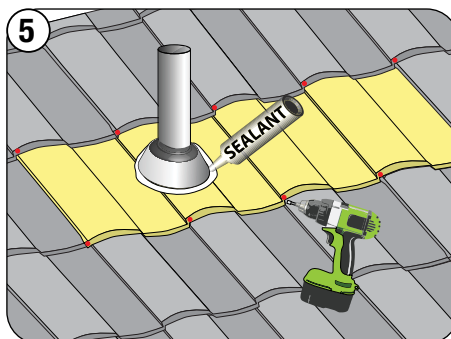


Position Pipe-Jack flashing over the pipe. Press the Pipe-Jack flashing firmly over the contours of the panel.

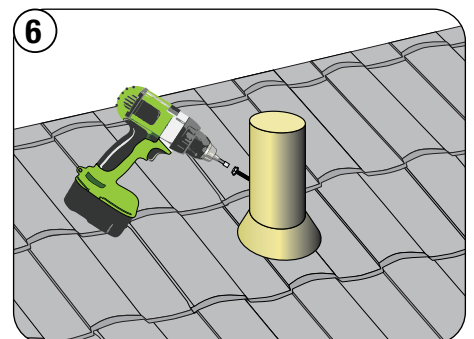
 Trim Pipe Jack base, as needed, to fit panel course.



Measure, mark and cut the top cover panel around the cone base to fit around the flashing cone. Continue installing panels in a row.



Install top panel and fasten as field panel. Apply Sealant around the Pipe-Jack.



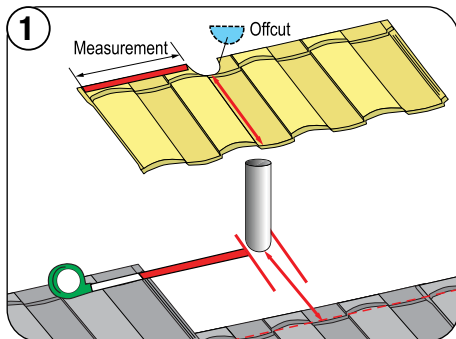
Install and fasten the Pipe-Sleeve through the back of the sleeve into the pipe. Make sure to fasten at least 2" (50 mm) above the Pipe-Jack cone.



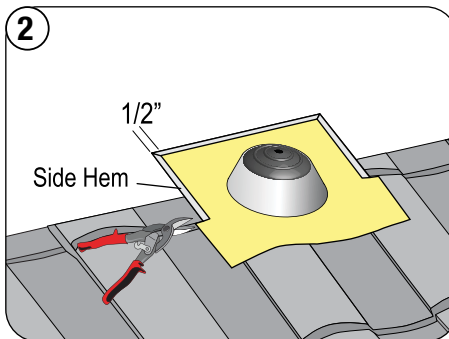
PIPE VENT INSTALL - SANDWICH



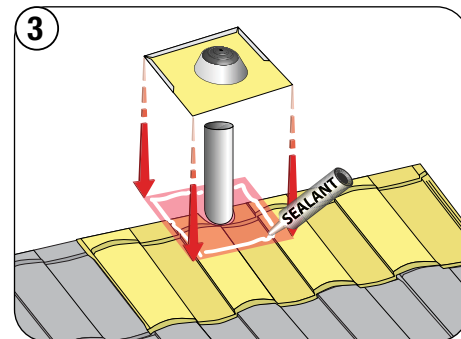
PIPE VENT INSTALL - Split Course Method



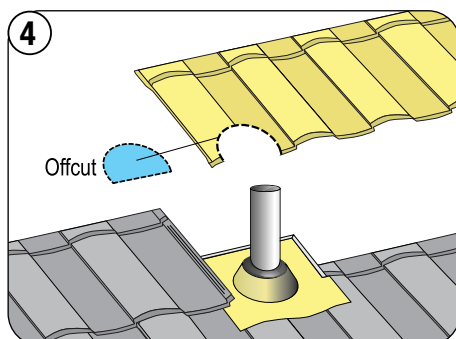
Measure and cut lower panel to fit around the vent pipe. Install panel.



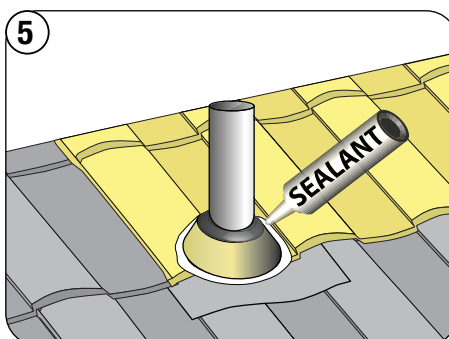
Place Pipe Jack on the panel to the side of the pipe and make 1/2" (13 mm) cuts in line with the back up-turn of the panel. Hem the edges, as shown.



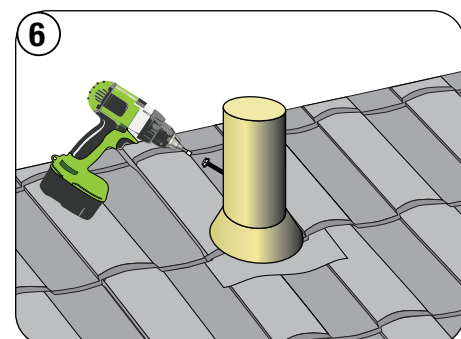
Apply Sealant to the area where the Pipe-Jack will be installed.



Install full panel to the side of the pipe. Mark the top panel to where the flashing cone base will align, cut out this piece to allow the panel to fit around the flashing cone.



Apply Sealant and stone chip around the flashing cone.



Install and fasten Pipe Sleeve from the back into the PVC pipe to finish the detail.



PIPE VENT INSTALL - SPLIT COURSE

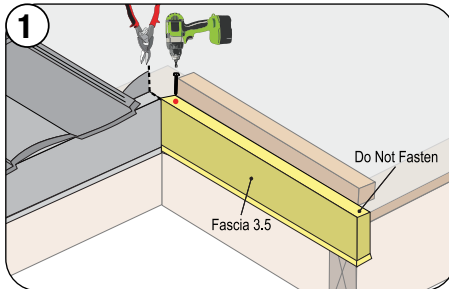


SHORT COURSE DETAIL

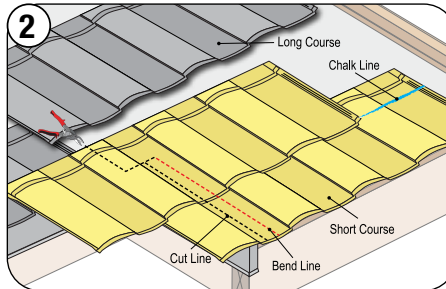
Always start panel laying from the longest eave length and work towards the short course area where the eave line steps down. Work down to keep panels correctly interlocked and aligned over the short course area.



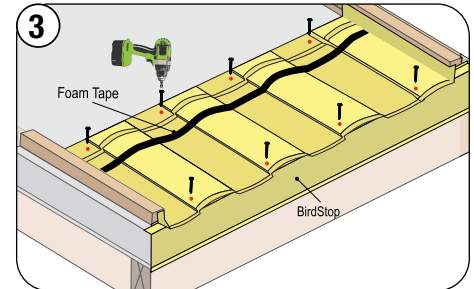
For best results, have Short Courses at the eave line.



Install Fascia 3.5" at the Short Course rake. Do not fasten at the rake/eave corner. Install rake batten on top.



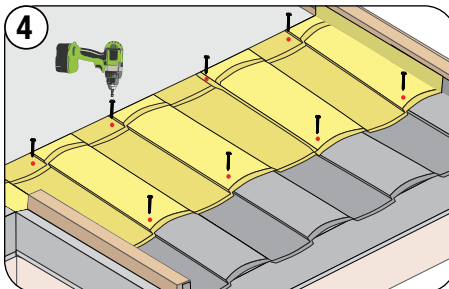
Place Long Course panel. Do not fasten. Properly align panels underneath to follow correct panel layout. Extend Short Course panel 1/2" (13 mm) past the eave. Mark the Bend Lines at the rake batten edge, and Cut Line, as shown. Mark the horizontal line on the Short Course panel aligned with the nose down-turn of the panel above.



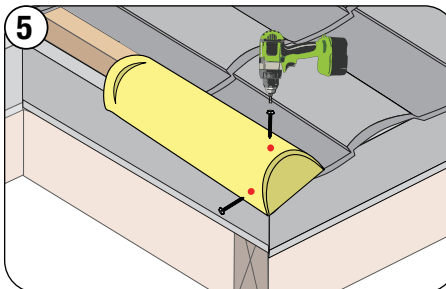
Add 1.5" (38 mm) to the marked Bend Lines and mark as Cut Lines. Cut and bend panels. Install the Short Course panel. Install BirdStop at the eave. Finish the row. Fasten panel through the top at the eave. Apply EmSeal foam tape just above the marked chalk line.



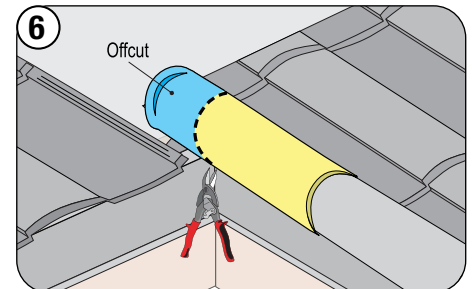
Panel to be positioned so the pan section of the panel is 1/2" (13 mm) past the eave.



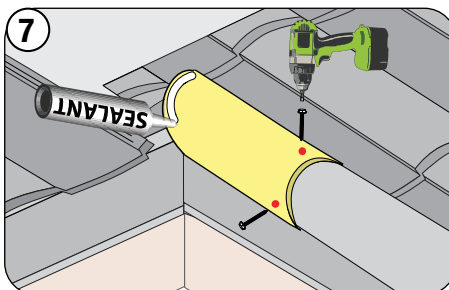
Install panel above the Short Course eave panel. Fasten through the top into EmSeal foam tape.



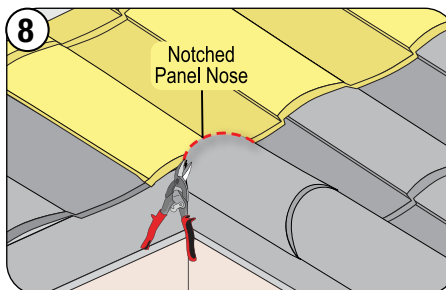
Form and install Mission Cap Starter (End Cap) and fasten through the top into the rake batten and on the side, as shown.



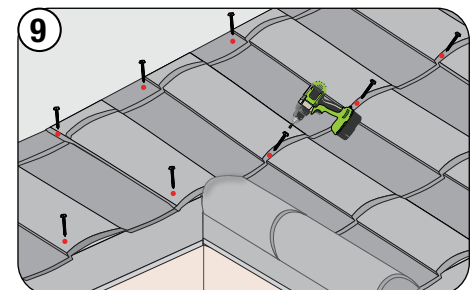
Place next Mission Cap on top of the Starter Cap at the corner intersection. Mark and cut, as shown.



Fasten Mission Cap cut into the rake batten and on the side. Apply a bead of Sealant on top, as shown.



Install Long Course panel and notch the nose down-turn to fit Mission Cap.



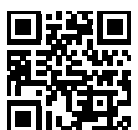
Finish installation of the Long Course and fasten as regular panels. Fasten through the top at the eave.



SHORT COURSE DETAIL

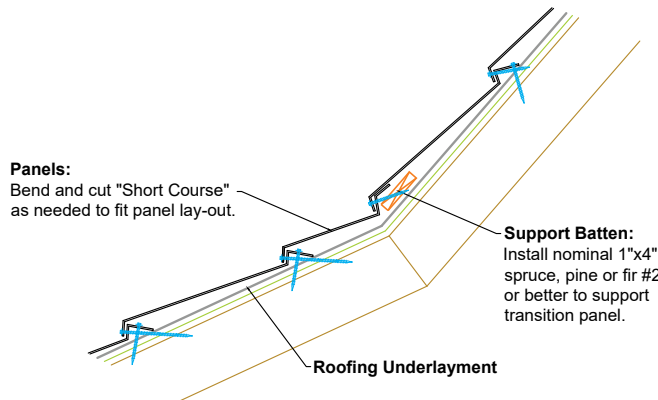


Any fasteners that penetrate through the top of the panel must be sealed and stone-chipped.

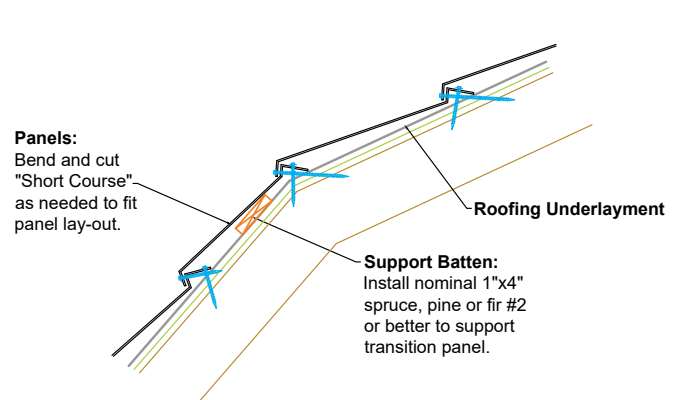


SPECIAL TRANSITION DETAILS

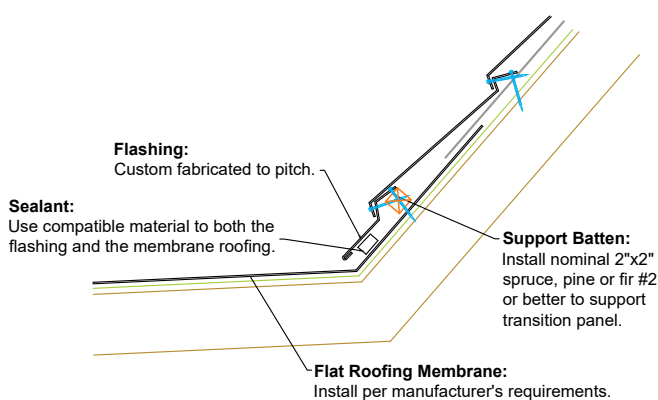
LOW TO HIGH



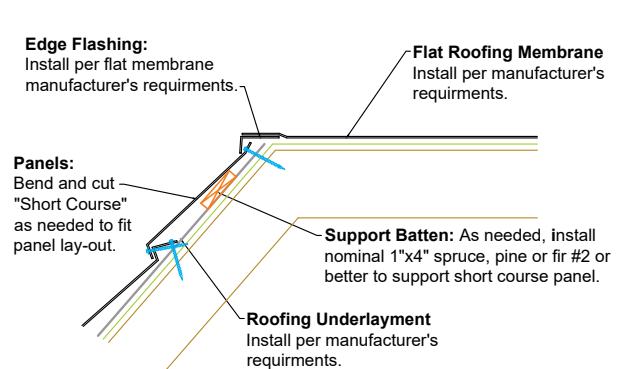
HIGH TO LOW



FLAT TO STEEP



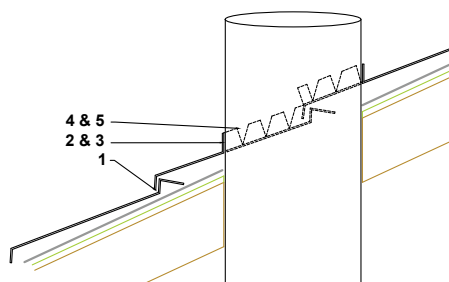
STEEP TO FLAT



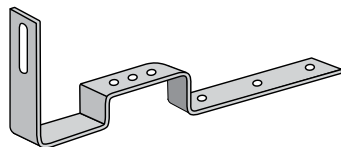
LARGE ROUND ROOF PENETRATION

Large Round Roof Penetrations: (Similar to mid-panel penetration)

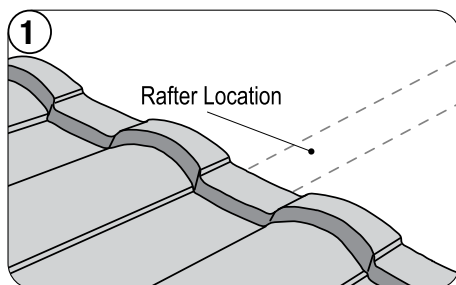
1. Cut panels with minimum, 1" added for turn-up.
2. Bend extra material up.
3. Press tabs tightly to the penetration.
4. Apply caulking at all cut edges to seal to penetration.
5. Apply granules into caulking.
6. Fasten panels as normal. (fasteners omitted for clarity)



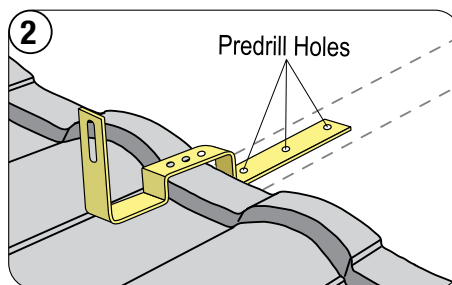
SOLAR MOUNT INSTALL



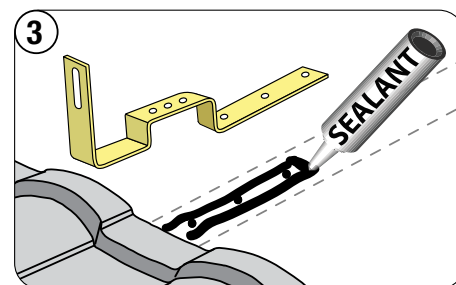
Solar Roof Mounts are installed without making any penetration through the Unified Steel® panels. This is achieved by bending the nose of the upper cover panel directly above the Solar Roof Mounts so the bracket easily exits between the panel courses and when the cover panel is fastened the system does not require any flashing to provide a weather seal around the bracket.



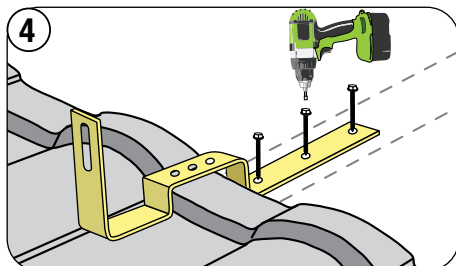
1 Find and mark the location of the rafter beneath the roof deck.



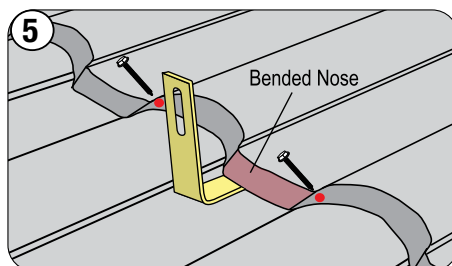
2 Place the Solar Roof Mount and predrill holes using 3/16" Drill Bit.



3 Apply a bead of Sealant beneath Solar Roof Mount mounting foot and in each hole.



4 Install Solar Roof Mount with mounting foot embedded in Sealant and fasten with lag bolt screws, per local code.



5 Install the panel above the Solar Roof Mount. Bend the panel nose where it intersects with the Solar Roof Mount to ensure a tight fit. Fasten the panel through the nose, as regular field panels.



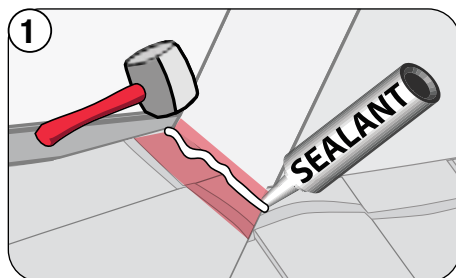
Depending on rafter location it may necessary to place a pad of peel-n-stick material or Wakaflex® strip beneath each Solar Roof Mount where it canter levers out onto the panel beneath to prevent abrasion.



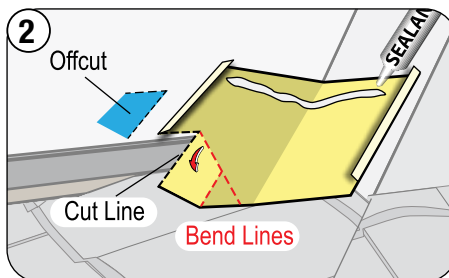
SOLAR MOUNT INSTALL



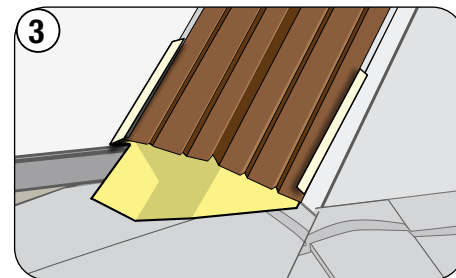
DORMER VALLEY EXIT



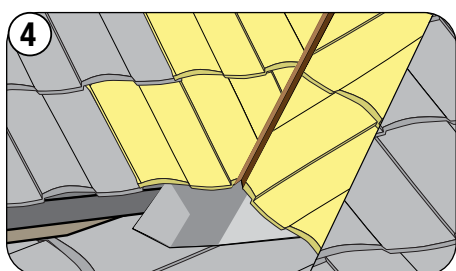
1 Flatten back flange against the roof deck and apply Sealant.



2 Form the stone coated Flat Sheet as an extension and exit tray for the upcoming valley. Apply Sealant, as shown.



3 Install Valley metal over and onto the stone coated Flat Sheet and embed the Valley into the Sealant.



4 Install valley panel cuts (closed Valley) to complete the dormer roof section.

VALLEY EXIT WITH WAKAFLEX® FLASHING

OPTIONAL

Where a typical standard metal valley flashing transitions onto an adjoining roof plane, a Wakaflex flexible extension may be added to make certain that moisture flows from the valley and onto the courses of roof tiles below. The following necessary steps are provided to prevent water migration under the roof panels.



Wakaflex should be painted or stone coated to match the panel color.

1. Cut Wakaflex of equal width of the valley metal plus additional amount to allow. Wakaflex to cover 1" minimum past the highest portion of a panel on both sides.
2. With top surface facing up fold forward completely 6" one end of the Wakaflex (butyl strip side is now facing upwards) place under the lower end of the valley metal.
3. Remove the 5-1/2" strip protective release film to expose butyl, press butyl strip firmly onto the bottom side of valley metal. This will prevent any windblown moisture under the valley metal.
4. Form the other portion of Wakaflex on top of the panel, remove the protective release film and form Wakaflex to top side of profile panel ensuring a complete bond.



VIDEO ONLINE

VALLEY EXIT DETAIL





Metal Roofing, Nationwide

800-728-4010
bestbuymetals.com