Issued December 29, 2005 | Revised July 13, 2013

INSTALLATION WARNING!

These install details are provided to demonstrate a recommended installation method for Metro Roof panels and accessories.

The Details and information in this document reflect current roofing practices used in the United States. Installers of Metro Roof panels and accessories should have knowledge of roof structures, an understanding of how to work with stone-coated steel panels and accessories, and be experienced at working on sloped roofs.

Metro recommends installers of MetroTILE® products use a Metro Cutter, and have completed a 'SMART-Start On Site installer Training Orientation Program' (located at http://www.metroroofs.com/SmartStartTraining.cfm) for each profile installed. Metro does not consider its products to be "do-it-yourself" (D.I.Y.) mainly due to specialized cutting & bending tools used during installation.

INTRODUCTION

Installation Tools:
- Metro Installation Kit - 150lbs (68.1kg)
  - CUTTER - 40lbs (18.16kg)
  - FULL PANEL BENDER attachment - 62lbs (28.1kg)
  - FOOT BENDER - 48lbs (21.8kg)
- Hand Tools
  - 12-V Impact Driver
 - Red & Green Snips
  - 3" Hand Seamers

Other Tools:
- Nail Gun
- Hammer
- Tape Measure
- Caulking Gun
- String-Line

General:

These install details are designed to be used in conjunction with Metro's SMART-Start On-Site Installer Training Program. A certificate of completion is given to installers that complete the Metro SMART-Start On-Site Training Program for each Metro profile.

Metro Batten-Less install methods ensure the simplest application. Starting with the perimeter, flashing metals are installed, followed by the field panels, fitted from right to left, across the roof and up towards the ridge. Panels are measured and cut to fit areas around the perimeter of the roof; i.e. ridges, hips and valleys. Trim caps are then installed, followed by an overall quality reveiw of the entire roof.
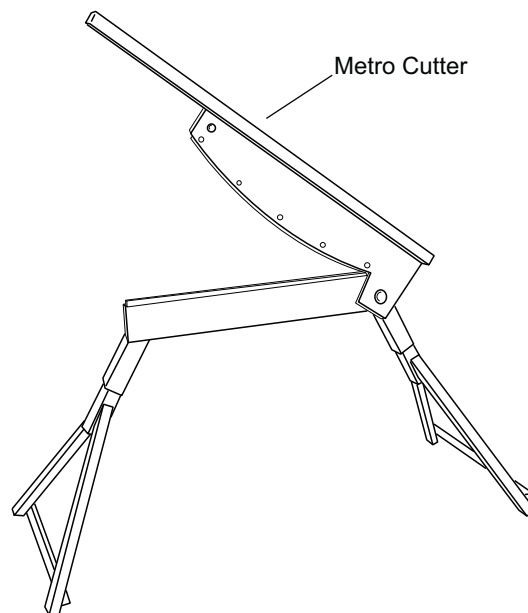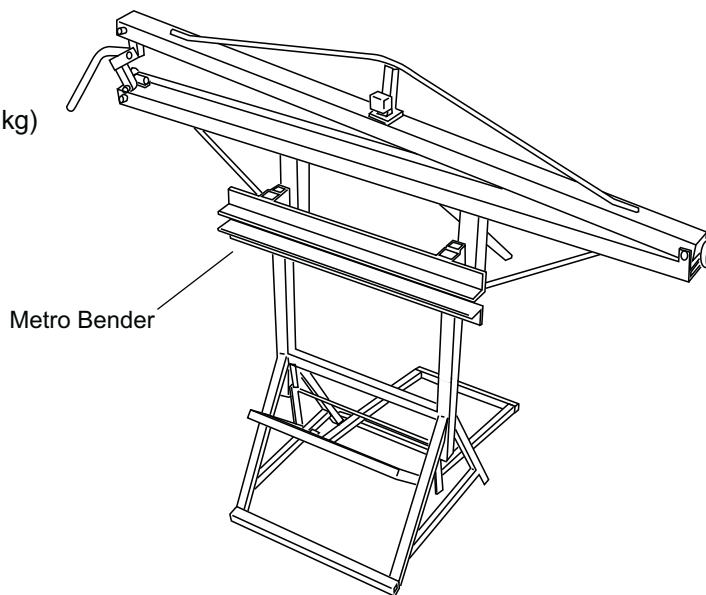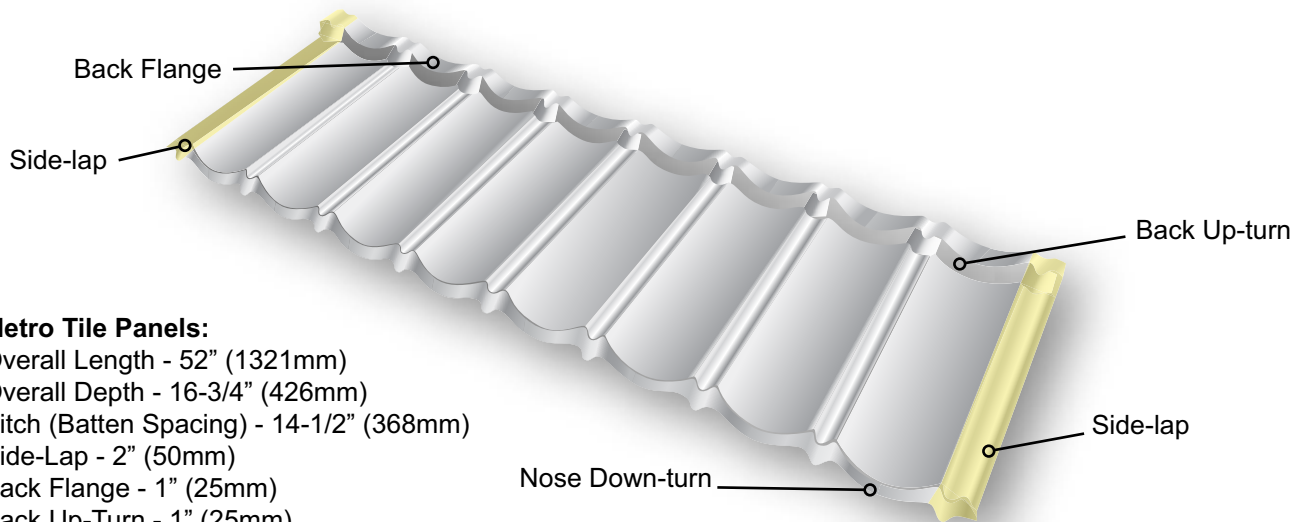
⚠️ *In cold climate zones with Cathedral Ceilings a Counter-Batten and Batten grid system is suggested to help prevent ice-damming.*

Metro Bender

Metro Cutter

Metro Roof Products

Back Flange

Side-lap

Back Up-turn

Nose Down-turn

Side-lap

Metro Tile Panels:
Overall Length - 52" (1321mm)
Overall Depth - 16-3/4" (426mm)
Pitch (Batten Spacing) - 14-1/2" (368mm)
Side-Lap - 2" (50mm)
Back Flange - 1" (25mm)
Back Up-Turn - 1" (25mm)
Panel Cover - 49-1/2" (1258mm)
Panels Per Pallet - 400-pcs
Panels Per Square (100 Sq Ft) - 20-pcs
(0.465 panels per Sq. M)

Materials:
Metro panels are produced from Aluminum-zinc alloy coated steel complying with ASTM A792.

Warranty:
Metro panels carry a limited warranty for fifty years. This limited warranty is transferable and does not cover damage due to improper handling or installation.

Packing and Storage:
A pallet of Metro panels contains approximately 20 squares. Care should be taken to store panels under a weather-proof cover or inside in an area free from moisture.

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

Fasteners:
All fasteners (Nails or Screws) used on a Metro roof shall meet or exceed the corrosion resistant standard as defined in ASTM B-117, (1,000-hr minimum Salt Spray Corrosion Resistance). Panel, Trim & Accessory fasteners shall be as follows:
NAILS - .131" dia X 2-3/8" long Ring Shank & coated Black.

For HVHZ (High Velocity Hurricane Zone) areas refer to local code requirements and/or Metro website (www.metroroofs.com) for details.

Testing:
Metro panels have been tested in accordance with local, national & international building codes. Testing has been conducted to evaluate fire, wind, penetration, water infiltration, and durability resistance. Information regarding specific tests and approvals can be obtained from Metro Roof Products.

Ventilation:
Ensure proper attic ventilation as prescribed per local codes. Either Smart Vents or Ridge venting can be installed to achieve adequate ventilation.

⚠️ **Dissimilar Metals:**
To avoid adverse corrosion effects caused by dissimilar metals, COPPER and LEAD flashings should not be used with Metro roof products and accessories. (refer to Metro SMARTbrief #02004)

Finish coating
Minor scuffing of Metro panels can be repaired with a Touch-Up kit from Metro Roof Products. Use the Touch-Up kit Metro basecoat (not caulking). Unfinished flashing materials can be painted with durable acrylic aerosol paints. Colored aerosol paints should never be sprayed on panels or accessories made by Metro Roof Products.
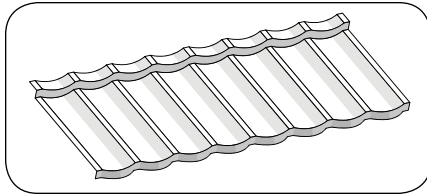
Roofing felt
Unless local conditions require otherwise, either one layer of type 30, or two layers of Type 15 lb. roofing felt or equal should be used with Metro panels.

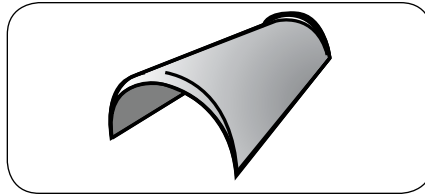⚠️ *Colored areosol paints should never be used on stone-coated panels & accessories.*
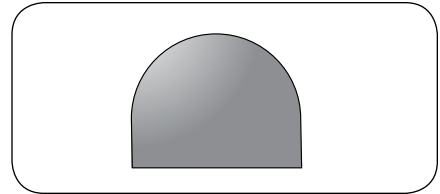
STONE-COATED ITEMS

MetroTILE®
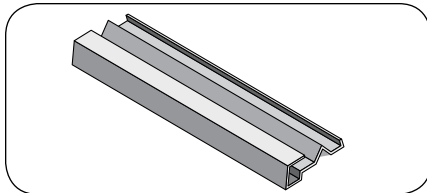52" x 16.5" (1320.8 X 419.1mm)
5.5 lbs. (2.49 Kg)

Barrel Trim Cap
14-1/2" x 6" (368 X 150mm)
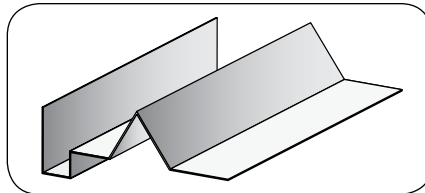1-lbs (0.45 Kg)

Barrel End Disc
6" x 4" (150 X 100mm)
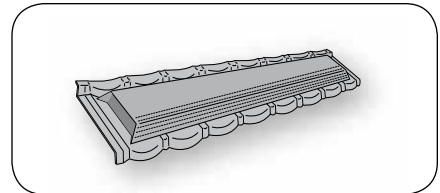0.15 lbs (0.06 Kg)

Rake Channel Tile
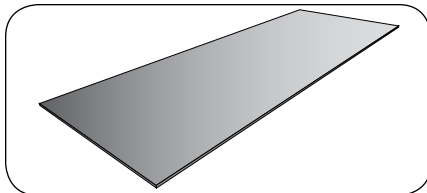79" X 2" X 1" (2006 X 50 X 25mm)
3-lbs (1.36 Kg)

Tile-Tile 'V'-Bat Riser
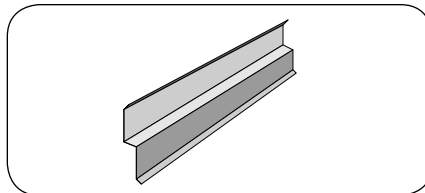79" X 2-3/4" (2006 X 68mm)
3.75 lbs (1.7 Kg)

MetroTILE® SMART Vent
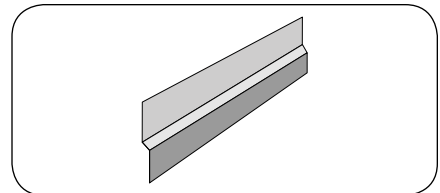79" X 2-3/4" (2006 X 69.85mm)
3.75 lbs. (1.7 Kg)
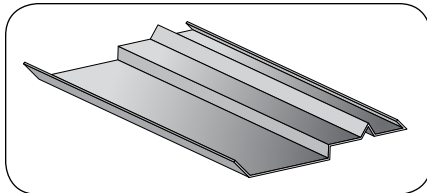
Flat-Stock Sheets
52" X 18" (1321 X 457mm) 5.7 lbs
(2.59 Kg)

Z-Bar (Small)
79" X1-3/8" X 1/2 X 1-3/8" (2006 X
35 X 13 X 35mm) 2 lbs (.90Kg)

Z-Bar (Large)
79" X 2-1/4" X 1" X 2-1/4" (2006 X
57 X 25 X 57mm) 2.5 lbs (1.14 Kg)

Tie-In Metal
79" X 4" X 2-1/2" X 3/8" (2006 X
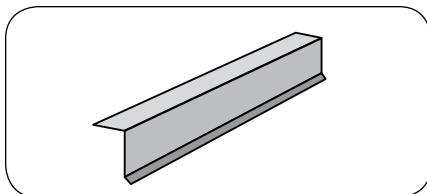100 X 64 X 10mm) 4 lbs (1.81 Kg)
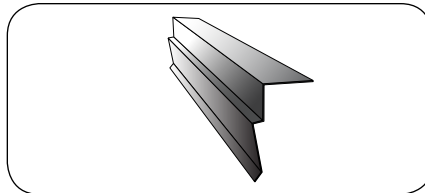
Tile Rake Metal
79" X 2" X 1-3/4" X 3/8" (2006 X 50
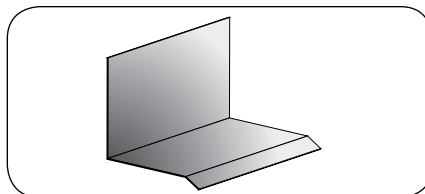X 45 X 10mm) 3.5 lbs (1.60 Kg)
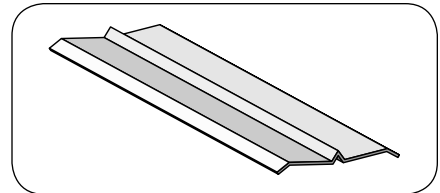
Valley Center Cover
79" X 4" (2006 X 100mm) 3.5 lbs
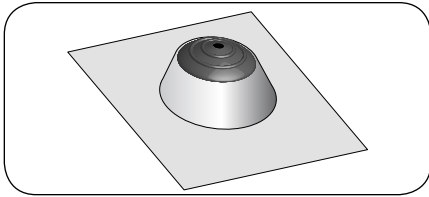(1.60 Kg)

FL Drip Edge
79" X 2" X 3-1/4"(2006 X 50.8 X
82.55mm) 3.3lbs. (1.49 Kg)

2.5" Head-wall
79" x 2.5" (2006 X 63.5mm) 3.3 lbs.
(1.49 Kg)

STONE-COATED ACCESSORIES
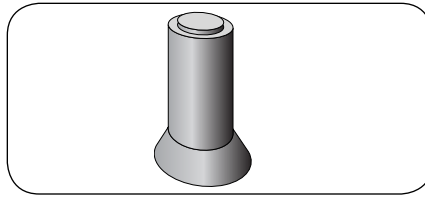
SMART-jack (2-Pipe-sizes SMALL base)
3-N-1 for 3-Inch Pipes (75mm)
12" X 16" (300 X 407mm) 1 lbs (0.45Kg)
3-N-4 for 4-Inch Pipes (100mm)
12" X 16" (300 X 407mm) 1 lbs (0.45Kg)
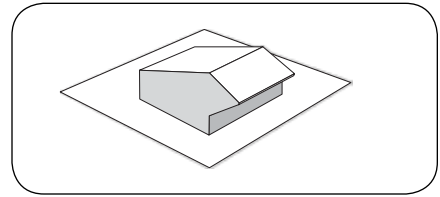**SMART-Jack (2-Pipe Sizes - LARGE Base**
3-N-1 for 3-Inch Pipes (75mm)
18" X 18" (457 X 457mm) 1.4 lbs (0.64Kg)
3-N-4 for 4-Inch Pipes (100mm)
18" X 18" (457 X 457mm) 1.4 lbs (0.64Kg)

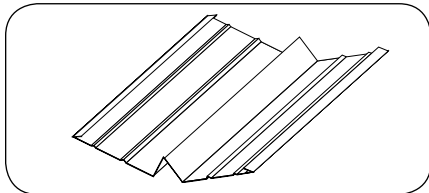**SMART-Sleeve
Pipe Cover**
16" X 4" (407 X 100mm) 1.65 lbs (0.75 Kg)

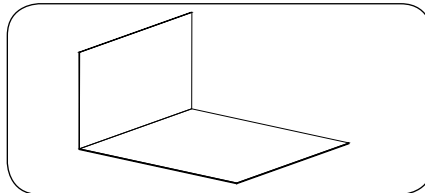**SMART-Box Vent (2-Sizes)**
Small 3-4-Inch (75-100mm) 2 lbs (0.95Kg)
Large 8-10-Inch (200-254mm) 5 lbs (2.27Kg)
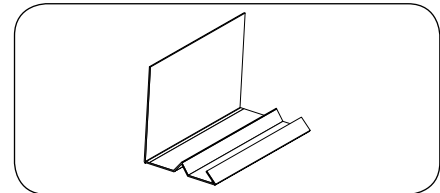
PAINTED ACCESSORIES

Double 'V' Valley Metal
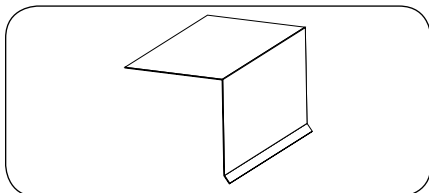120" X 20" (3048 X 508mm) 12.5 lbs (5.68 Kg)

CHIMNEY SADDLE (Two Sizes)
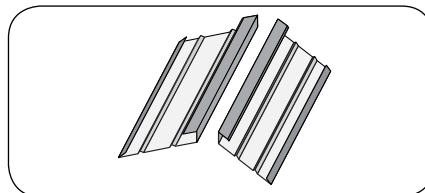120" or 60" X 18" X 4" (3048 or 1524 X 457 X 100mm) 13.5 or 6.75 lbs (6.13 or 3 Kg)

Side-Wall Under-pan
120" X 3-1/2" X 4" (3048 X 89 X 100mm) 5 lbs (2.27 Kg)

Drip Edge
120" X 1-1/2" X 1-1/2" (3048 X 38 X 38mm) 1.6 lbs (0.72 Kg)
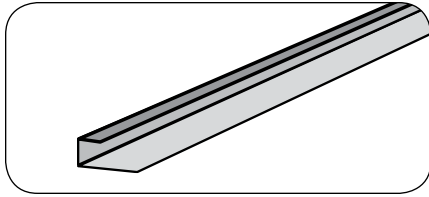
SMART-Valley (2 Pcs Reqd.)
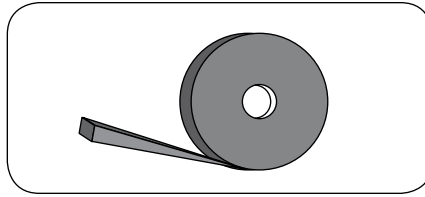120" X 9-1/4" X 1-1/2" X 1-1/2" (3048 X 235 X 38 X 38mm) 7.35 lbs (3.3 Kg)
* Requires Valley Center Cover & sealant tape.
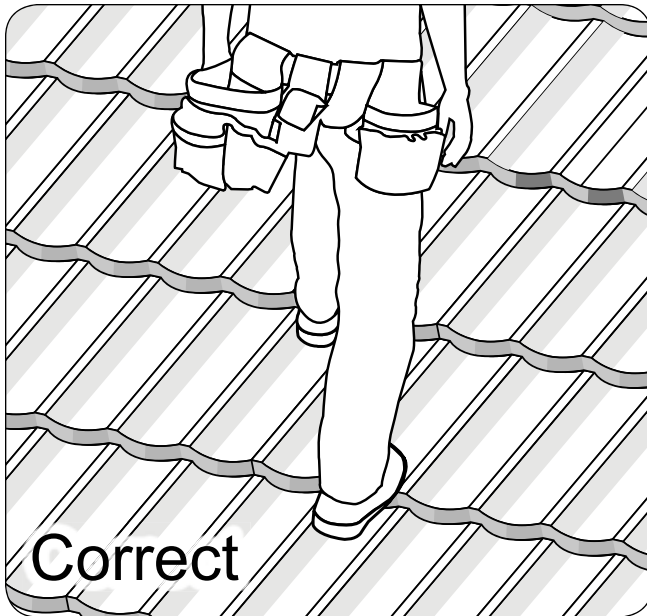
PAINTED OR BARE METAL ACCESSORIES

SMART-Gutter -Riser Metal
120" X 3/4" X2-1/2"
(3048X19X63mm) 1.9lbs.
Painted Black, Brown or White

SMART-XP-Foam Tape Roll
1" X 1-1/4" Exp X 19.68-ft
(25X32X6000mm) 1.0lb 24-Rolls /
Box

WALKING ON YOUR METRO ROOF


Correct

Incorrect

General Information

These install details are provided to demonstrate a recommended installation method for Metro Roof panels and accessories.The Details and information in this document reflect current roofing practices used in the United States. Installers of Metro Roof panels and accessories should have knowledge of roof structures, an understanding of how to work with stone-coated steel panels and accessories, and be experienced at working on sloped roofs. Metro recommends installers of MetroTILE® products use a Metro Cutter, and have completed a 'SMART-Start On Site installer Training Orientation Program' for each profile installed. Metro does not consider its products to be "do-it-yourself" (D.I.Y.) mainly due to specialized cutting & bending tools used during installation.
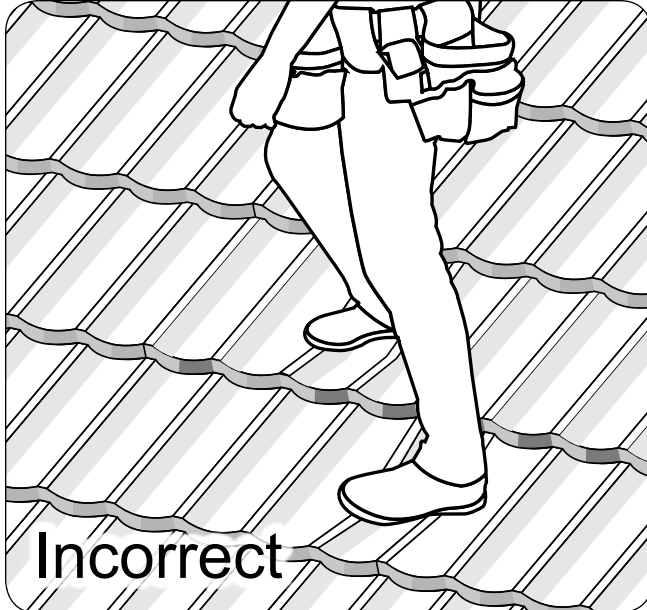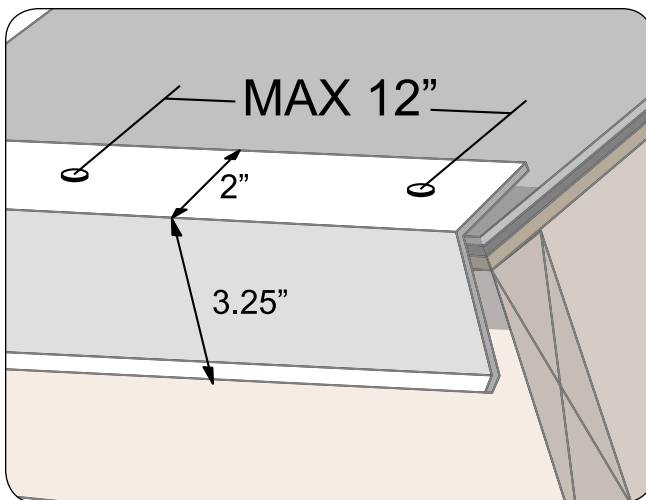
MetroTILE®

When walking on MetroTILE® your feet should be po-sitioned over the nose or front downturn of the panels. Light weight, soft-soled shoes are recommended fro good grip and feel.

Metro Roof Products

GENERAL
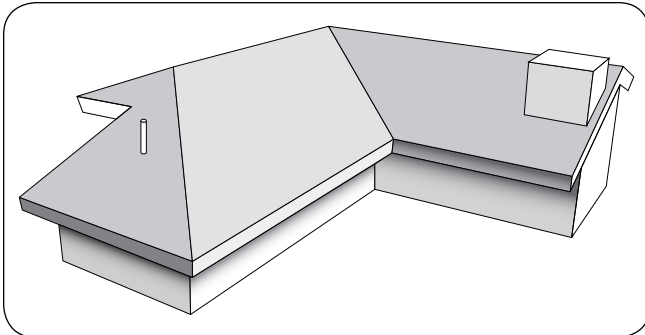
Metro Batten-less Tile panels are Installed on new or existing roofs pitched a minimum of 2-½:12 (12 degrees). An underlayment is to be installed as per local code and manufacturers instructions.

DRIP EDGE

MAX 12"

2"

3.25"

Install Drip Edge Metal across fascia. Drip Edge Metal may also be installed up Rakes when using Metro Rake Channel. If using Trim Caps on the Rake edges, install Metro Tile-Rake Metal edging up all rakes.

2"

3.25"
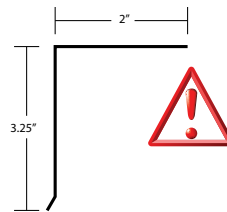
⚠️ *Florida and other high wind areas use the Metro FL-FASCIA Stone-Coated metal.*

For HVHZ (High Velocity Hurricane Zone) areas, perimeter flashings are fastened per local code

20" DOUBLE 'V' VALLEY

12" o/c

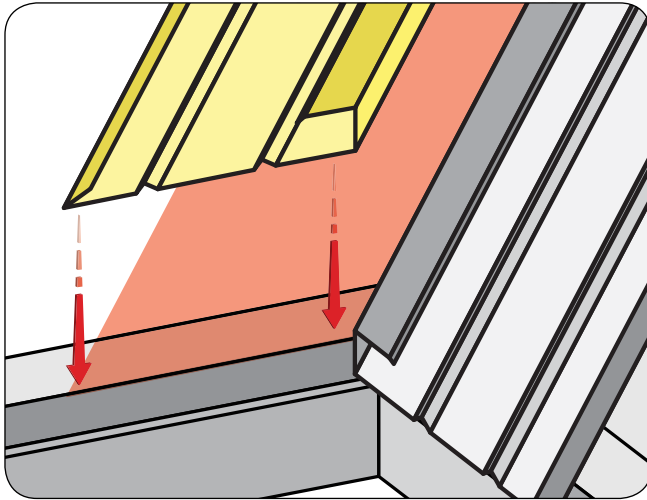⚠️ *Extend valley a min of 1" past the fascia/eave edge.*

1"
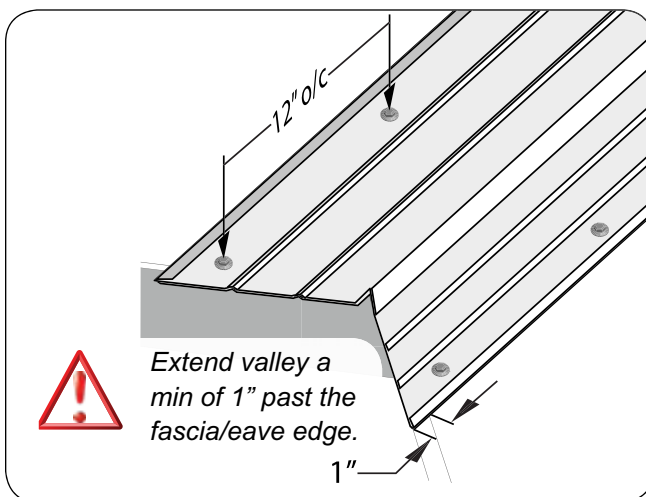
Install new 20" (508mm) Double V-Valley metal overlapping a minimum of 4" (100mm). Valleys are attached with washer & grommet screws in the outside locations as shown. Site fabricated clips may also be used to secure valley metal.

This valley metal allows for either an "Open" or "Closed" valley detail.
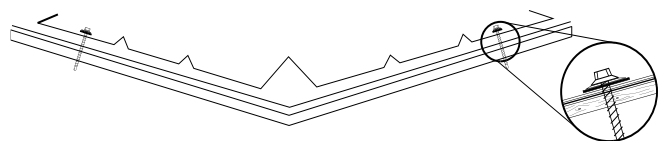
SMART-VALLEY

Metro SMART-Valley consists of,
a) 1-pc SMART-Valley (Use on left side)
b) 1-pc SMART-Valley (Use on right side)
c) 1-pc Valley Cover

Metro SMART-Valley uses 2-pieces per each 10-foot (3.05m) length of valley.

Estimating formula: Lin-ft of Valley divided by 9.75 X 2 = # of SMART-Valley required.

Install each side of the SMART-Valley as shown, fastening as normal for a valley pan. Tightly butt each SMART-Valley section together.

Metro Valley Cover
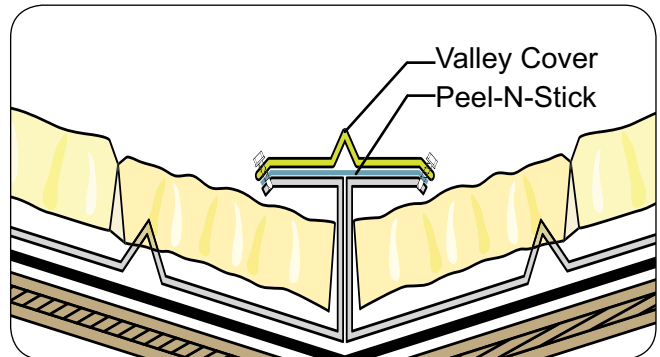Peel-N-Stick Material
Metro SMART-Valley Pan
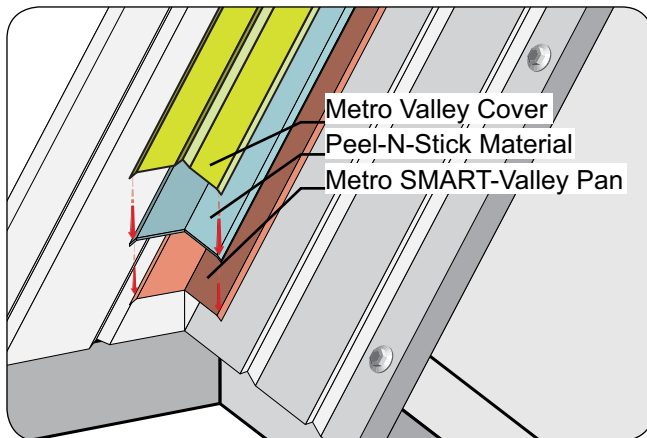
Install a strip (Min 4-in (100mm) wide) of Peel-N-Stick type material over the center seam as shown. Install Metro Valley Cover over the center seam with stitch screws. Vertical laps for both the Peel-N-Stick and the valley Cover are a min of 4-in (100mm)."

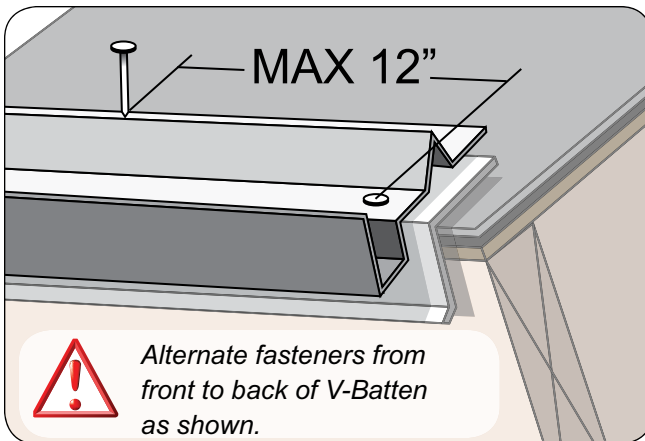Miter cut, and install the Metro panels beneath the overlapping Valley Cover to match the angle of the valley.
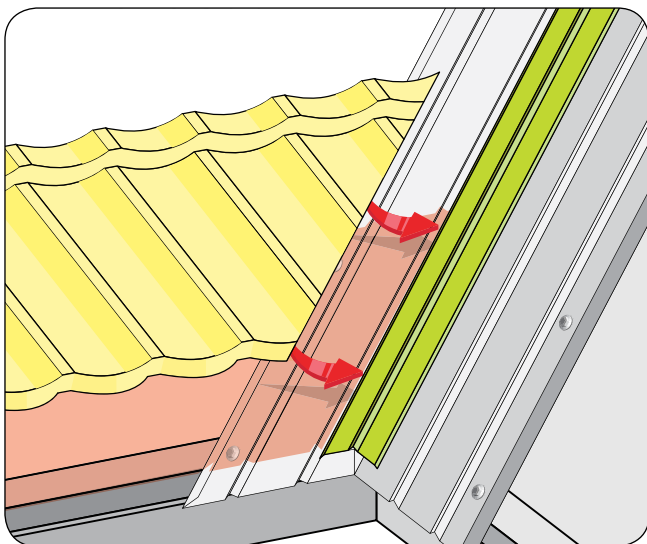
IMPORTANT NOTE:
When using the SMART-Valley with Metro Roman Tile it may be necessary to paint the inside of each valley pan section to prevent the inside surface from shining when viewing the roof

Valley Cover
Peel-N-Stick

Metro Roof Products

RISER METAL

MAX 12"

⚠️ *Alternate fasteners from front to back of V-Batten as shown.*

Use the V-Bat Riser Metal, which incorporates an integral "V" batten to provide panel support at the fascia. The V-Bat Riser Metal creates a 3/4" off-set from the fascia. The use of this riser requires standard Drip Edge, or Metro FL-Fascia metal to be installed onto the roof deck first. When the V-Bat Riser Metal intersects a Rake Channel or Valley it must be notched and bent as shown to allow water to exit the roof.

⚠️ *Alternative first row 3/4-inch riser options can be; 1X4 wood or plastic battens, Metro Gutter Riser, or Cobra mesh material.*
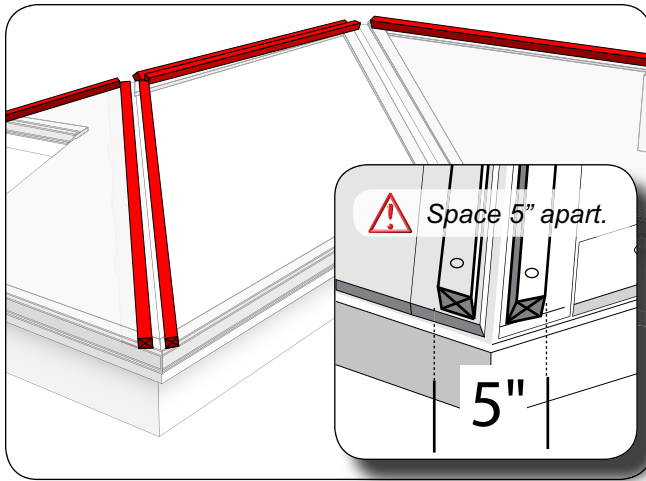
RISER METAL -VALLEY METAL INTERSECTION

1

90°

2

⚠️ *Bird-stop metal extends into valleys as shown.*
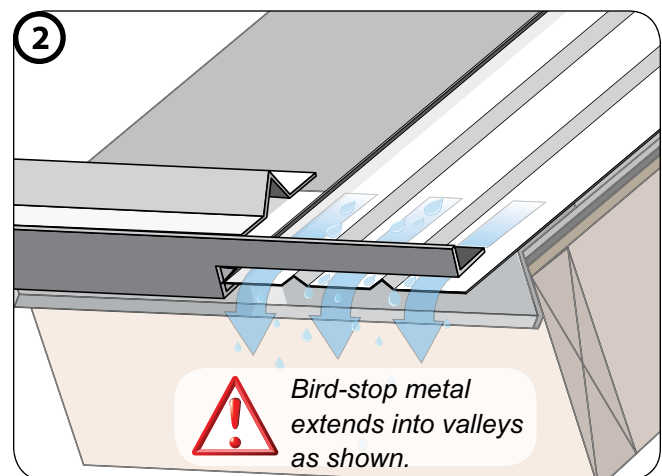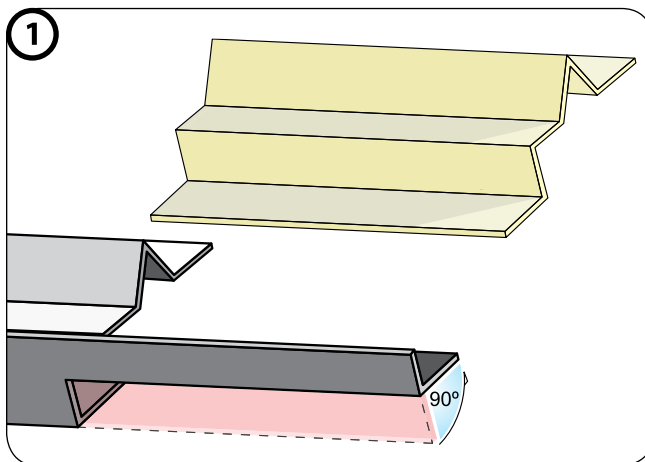
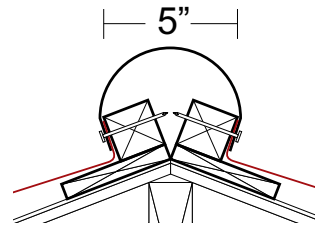## INTERNAL VALEY CORNER NOTCHING DETAIL
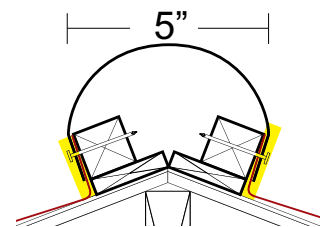
3

4
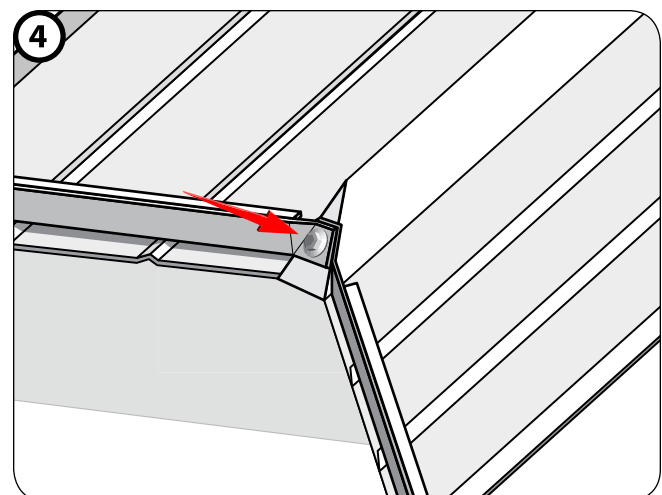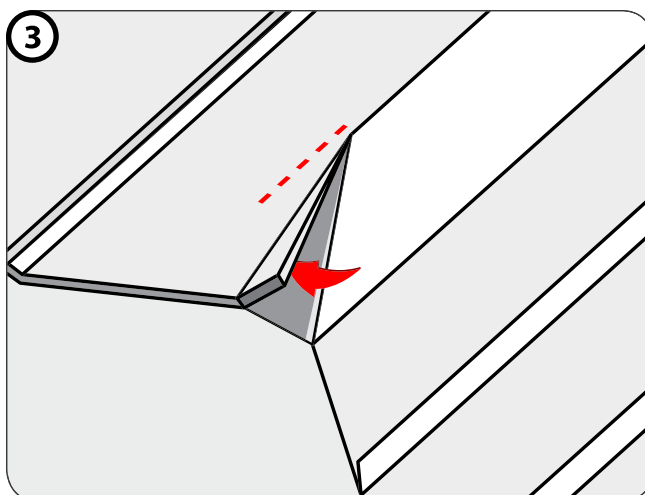
HIP & RIDGE BATTENS (ALTERNATIVE)

2"x2" ridge battens or double stacked 1"x4" pcs. are used to provide approximately 1½" of build-up height for hip and ridge pcs. Hip battens (2"X2" (50X50mm) are installed onto 1" X 4" (25X100mm) support battens as shown, so panels can be cut, bent & fitted against the battens.
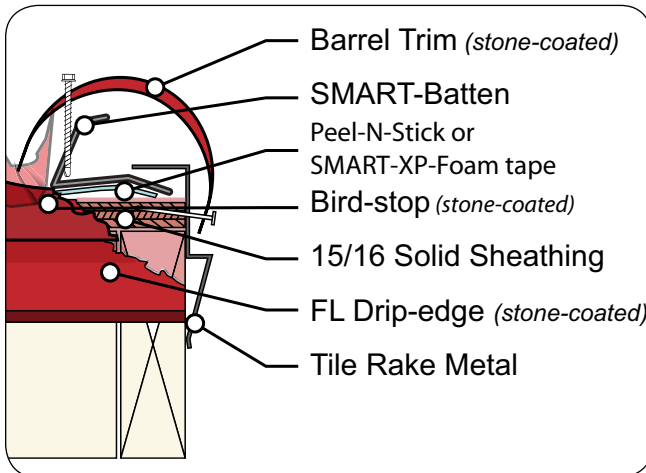
⚠ *Space 5" apart.*

5"

RIDGE

5"

HIP

5"

TILE RAKE METAL- TRIM CAPS UP RAKE

Barrel Trim *(stone-coated)*

SMART-Batten
Peel-N-Stick or
SMART-XP-Foam tape

Bird-stop *(stone-coated)*

15/16 Solid Sheathing

FL Drip-edge *(stone-coated)*

Tile Rake Metal

Metro Tile Rake Metal is installed along rake edges as shown. This rake edge metal aids in the alignment of Metro Trim Caps. The Metro Trim Caps install over the rake build-up and folded-up Metro panels.

Fasten

Fasten

RAKE METAL

Shake Rake Channel

"V"-Batten
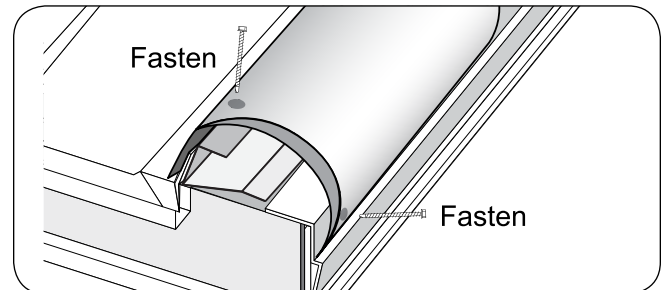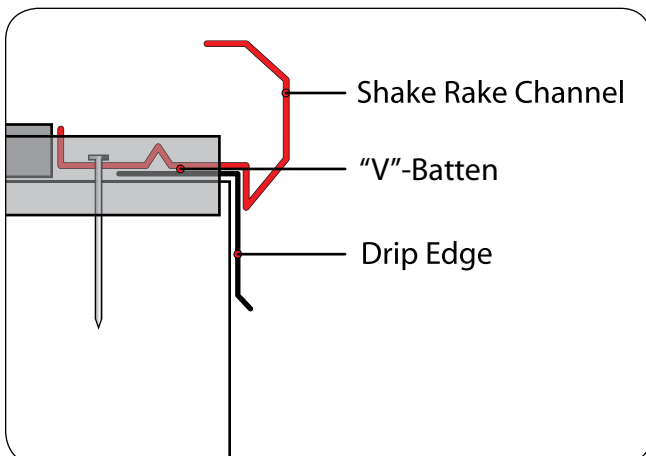
Drip Edge

Install Metro panels over Drip Edge using fasteners placed in the outside channel as shown. If fasteners do not have a sealing washer, apply a bead of sealant around each one. Rake metal is notched to lap at joints a minimum of 2" (50mm) overlap in water channels.

⚠ Lap 2" (50mm) minimum to prevent leakage through seams.
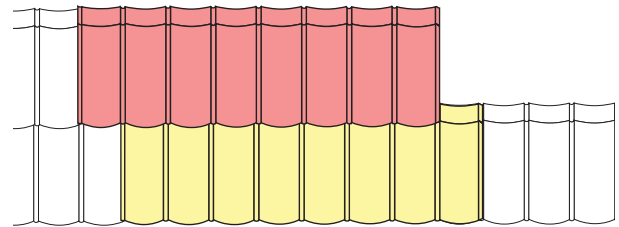
Metro
Roof Products
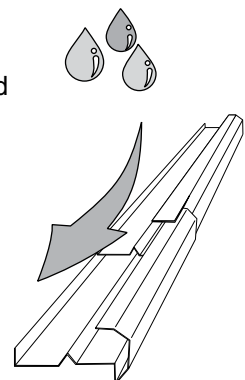
PANEL LAYOUT
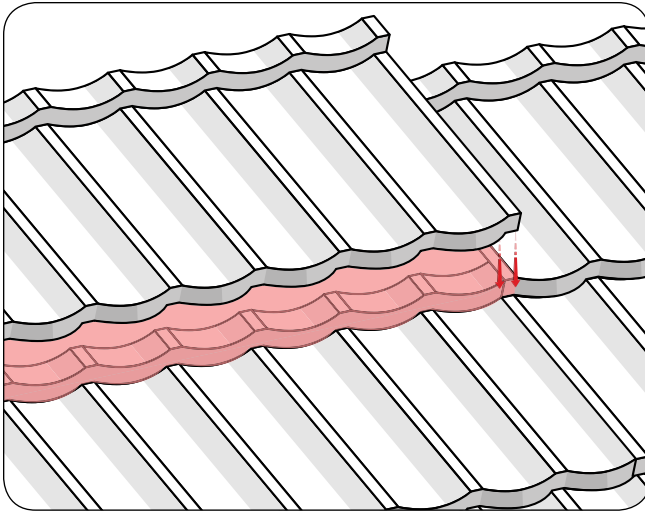
Metro Tile panels have a 2" (50mm) side-lap and two staggered locating points along the back of each panel as shown.

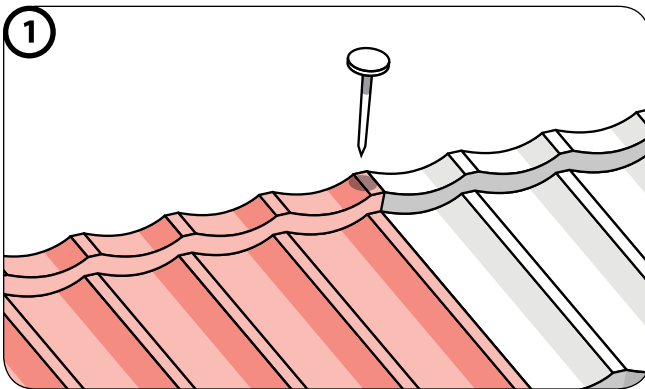Tile panels are staggered and placed according to their locating points.
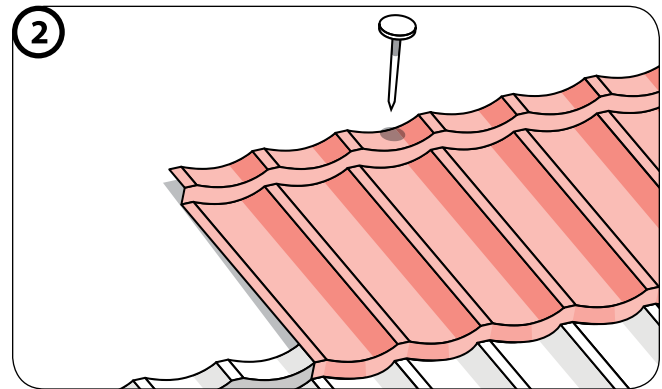
⚠ *Metro Tile panels can-not be straight laid*
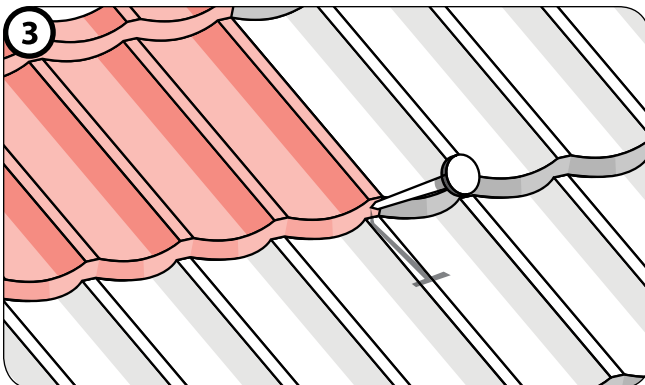
FASTENING SEQUENCE

⚠ *Fasten panels in sequence as shown, failure to follow this procedure may result in panels being misaligned.*
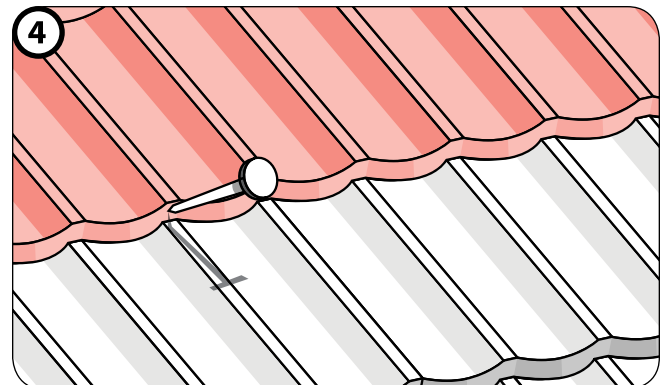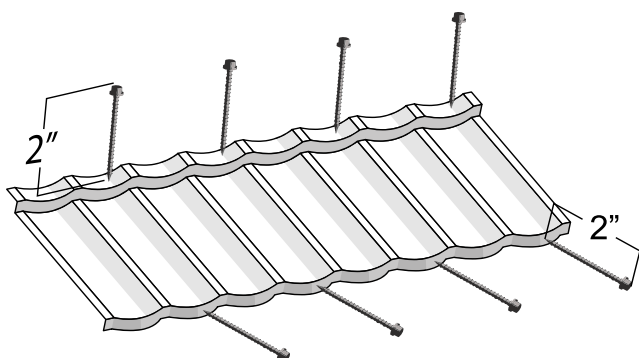
①

Fasten top right corner

②

Fasten top left corner

③

Fasten bottom right corner

④

FASTENING LOCATIONS

2"

2"

Refer to Metro's High Velocity Hurricane Zone (HVHZ) fastening details found in Metro's Florida Building Code HVHZ Approval FL-6710 for details.

The "Standard" fastening pattern for Metro Batten-Less panels uses four (4) fasteners across the back flange and four (4) across the front nose down-turn.
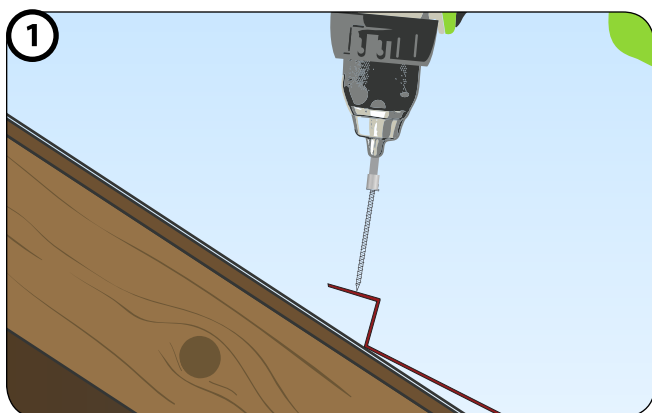
All fasteners used on a Metro roof shall meet or exceed the corrosion resistant standard as defined in ASTM B-117, (1,000hr minimum Salt Spray Corrosion Resistance).
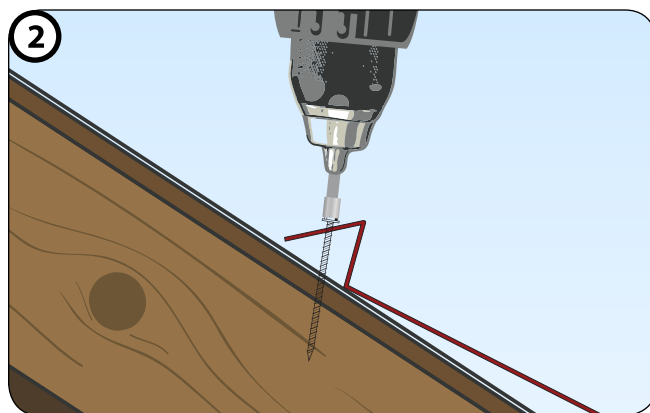
Panel, Trim & Accessory fasteners shall be as follows:
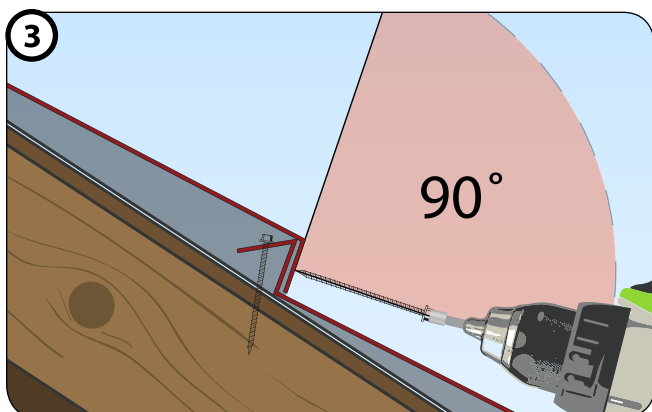**SCREWS:**
#10- 2" or 2-1/2" long, 1/4" Hex Head.
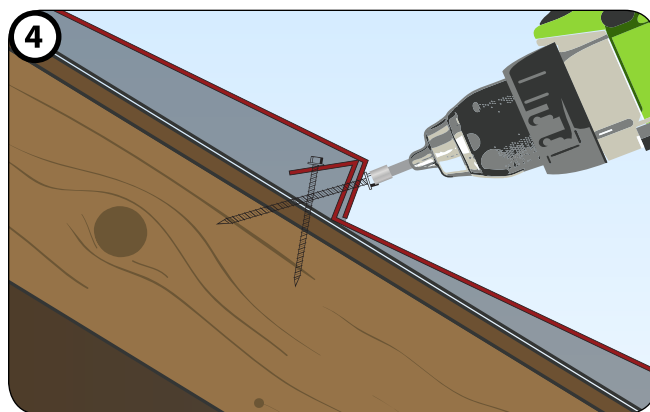
FASTENING BATTEN-LESS TILE PANELS - SCREWS

1

Panel back flange is fastened vertically into roof deck.

2

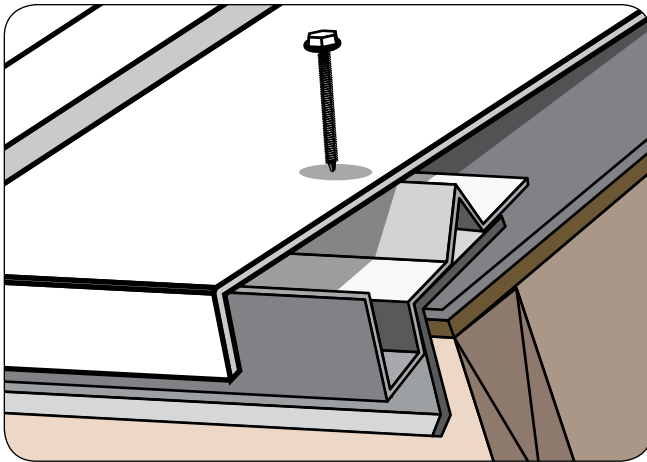Panel back flange is 'seated' down onto roof deck.

3

90°

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

4

Once fastener has penetrated the nose, angle the screw to penetrate the back up-stand of the panel beneath and into the deck.

Indicates critical areas of installation

1ST ROW FASTENING

Fasten the First course up from the fascia through the top of the panel as shown. Top panel fastening is also acceptable behind Metro SMART-Vents, Chimneys and Skylights as necessary. Use fasteners with self-sealing rubber washers covered by a dome cap or seal fasteners then cover with Metro touch-up kit.

⚠ *Use the Metro "Touch-up" kit to cover each top nose fastener at the fascia.*

RIDGE PANELS

2"
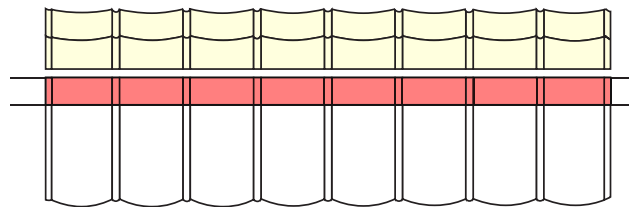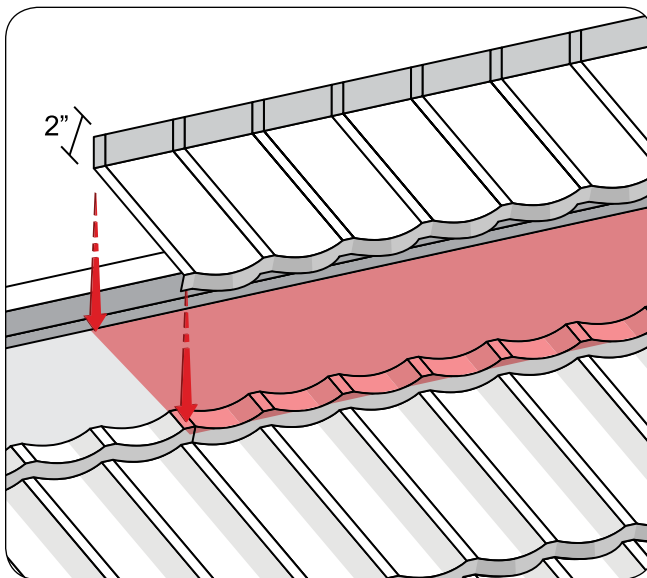
⚠ *Deduct 1/4" (12mm) from actual measurement to ensure a tight fit.*
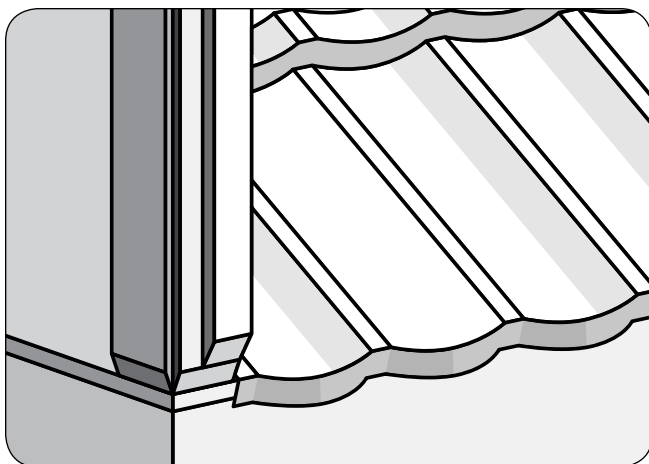
Measure, cut and fold up panels 2" (50mm) beyond ridge line. Install ridge section panels placing additional fasteners through the up turned flange into ridge board as shown.
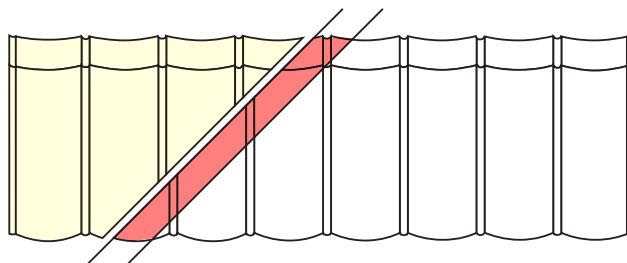
⚠ *Always fold full panels at ridges before cutting off the excess. The cut & bent ridge panels may need to be bowed in the center after pinning each end of the panel as you install them.*
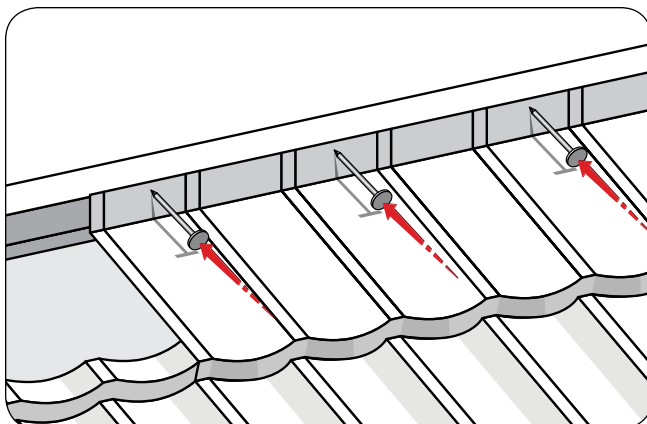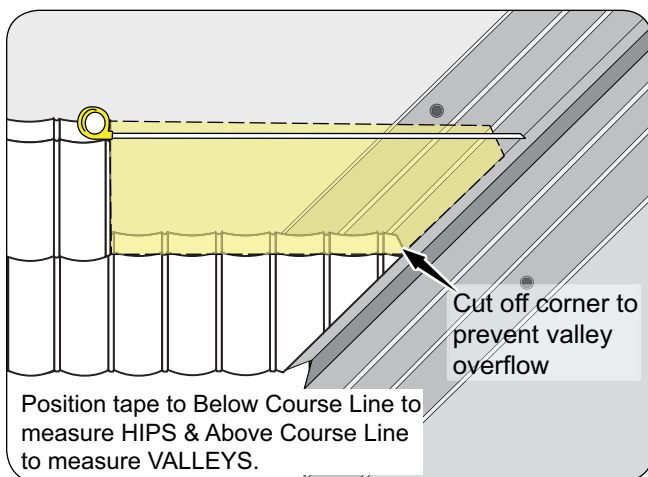
HIP PANELS (OPTIONAL)

Measure, cut and fold up panels 2" (50mm) at the hip line. Install hip section panels similar to other panels placing additional fasteners through the up turned flanges as shown into hip board.

⚠ *At hips, use either a full panel or a cut section long enough to obtain the hip cut.*

⚠ *Always deduct 1/2" (12mm) from your measurements for Hip & Ridge cuts to ensure they fit easily.*

VALLEY CUTS

Cut off corner to prevent valley overflow

Position tape to Below Course Line to measure HIPS & Above Course Line to measure VALLEYS.

Stitch Screw

Panel
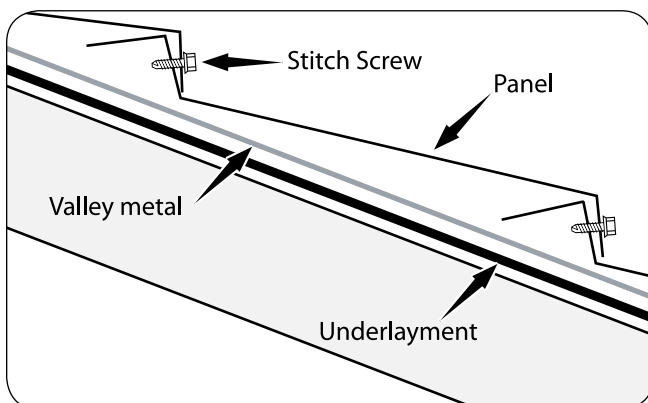
Valley metal

Underlayment

Measure, mark & cut panels to fit tightly against valley center (reverse 'V'). Fasten valley section panels to roof decking similar to the other panels without penetrating valley flashing.

Stitch panels together that lap over valley metal with corrosion resistant screws (#8 x 1/2" long (12.7mm)) making sure to not penetrate valley flashing.

Valley cut sections can be turned down 3/4" (20mm) into valley pan, for extra rigidity.

Install a Metro Valley Cover metal down the center of the valley lapping each section a minimum of 4" (100mm). The valley cover is fastened to each panel course where it intersects the valley.
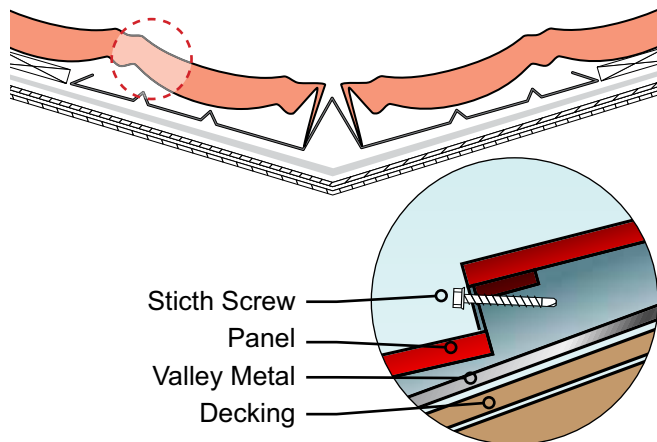
⚠ *Make sure you do not penetrate the valley metal, use small Stitch screws to secure the valley cover.*

⚠ *Start the 1st panel 12" (300mm) from the Valley edge. This allows for a valley cut section that can be securely fastened to the roof deck without penetrating the valley pan.*

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CLOSED VALLEY

Install a Metro Valley Cover metal down the center of the valley lapping each section a minimum of 4" (100mm). The valley cover is fastened to each panel course where it intersects the valley.
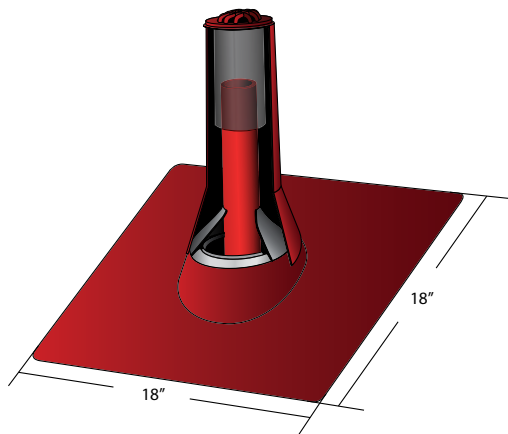
⚠️ *Make sure you do not penetrate the valley metal, use small Stitch screws to secure the valley cover*

Sticth Screw
Panel
Valley Metal
Decking

⚠️ *Use stitch screws or short fasteners to prevent penetration of the valley pan.*
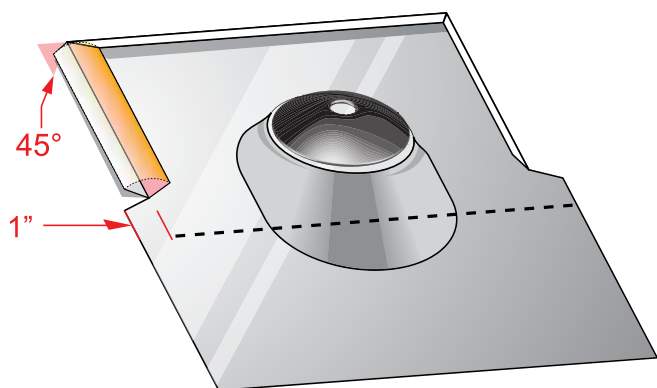
3-IN-1 SMART-JACK

The Metro 3-in-1 SMART-jack is a moldable stone-coated roof flashing that can be used on most roof vent pipes, 1" to 3" in. dia. Apply sealant under 3-in-1 SMART-jack to keep it secured to panel beneath.

18″

18″

⚠️ *If a vent location prevents SMART-jack 3-in-1 from being able to fold up and over the panels back flange, the Metro 'Sandwich' method should be used*

SMART-JACK PREPARATION

To maintain good weather protection the edges of the SMART-Jack flashing should be folded/bent up as shown to deflect any moisture onto the flashing and out onto the panel below.

45°

1"

Dotted line represents pipe penetrating through the course line, requiring SMART-Jack to be positioned between upper & lower panel courses.

## PIPE FLASHING - SMART-JACK & SMART-SLEEVE METHOD
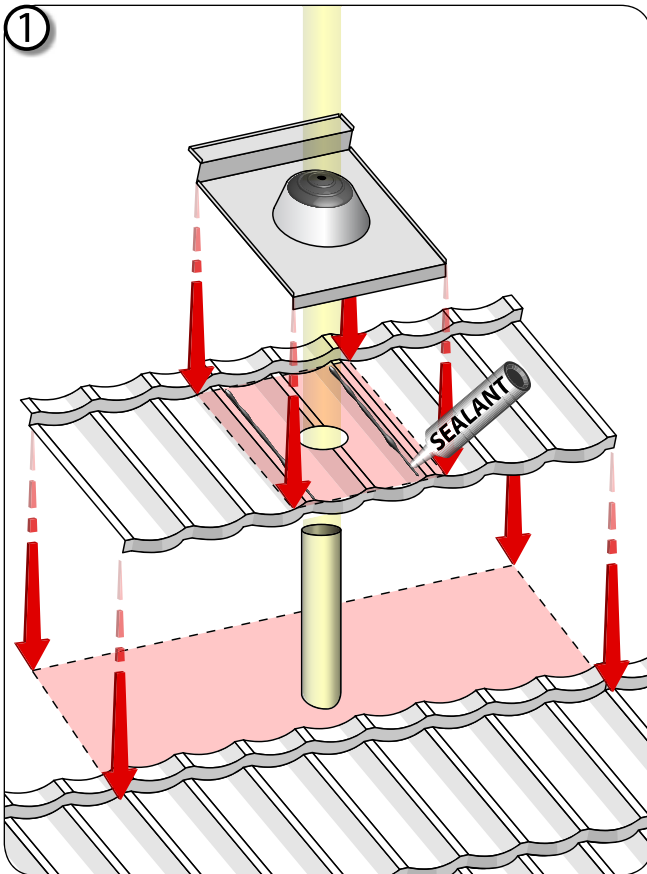
Cut a pipe sized hole in the covering panel as shown. Install covering panel and apply a bead of sealant on each side and around the hole of the pipe as shown. Slide the SMART-Jack flashing over the pipe and seat it into the sealant and conform the SMART-Jack Flashing to the panel contours.
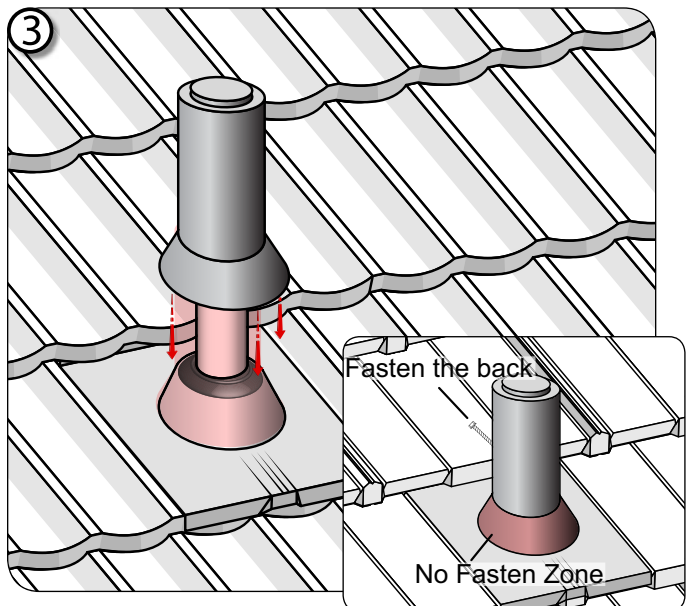
Universal single size fro most pipes on a roof;
1-4 (Fit pipes 1" - 4" (25-100mm) in dia.

⚠️ *To avoid adverse corrosion effects caused by dissimilar metals, COPPER and LEAD flashings should not be used with Metro roof products and accessories*
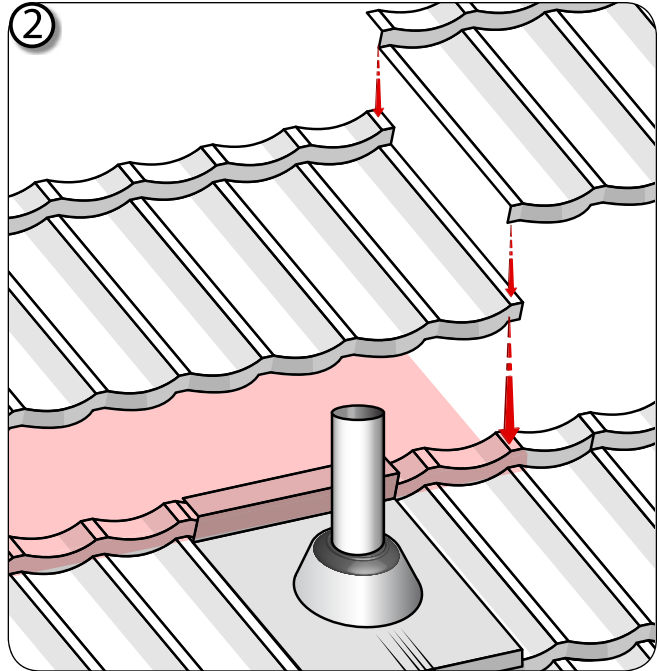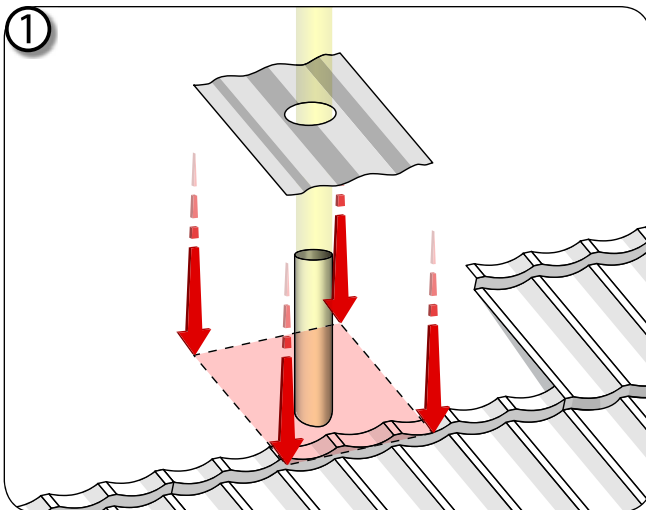

Install subsequent course above the SMART-jack flashing.


Fasten the back

No Fasten Zone

For added protection and appearance, SMART-sleeves are cut to conform to the panels and are installed over pipes. SMART-sleeves are fastened with a screw through the back of the SMART-sleeve into the pipe.
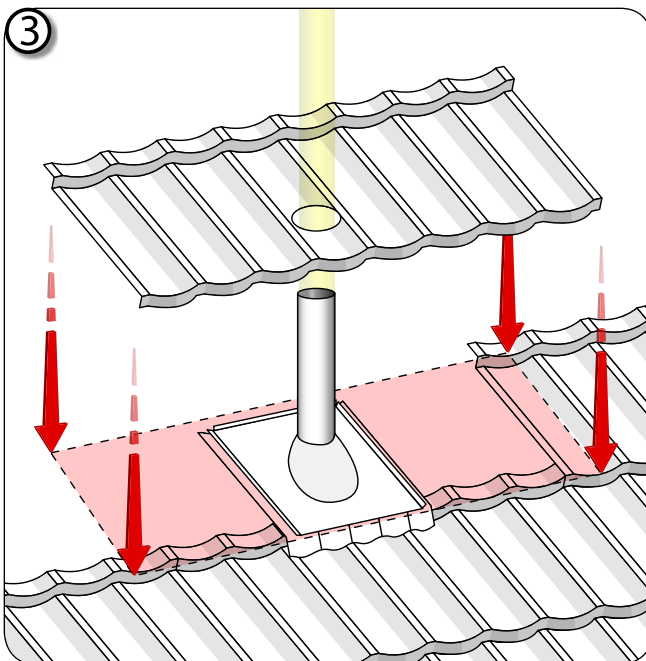
## PIPE FLASHING - UNDERPAN SANDWICH METHOD - SMART-JACK

①

Cut 'Under-Pan' flashing around Vent Pipe as shown. Bend front edge of 'Under-Pan' over rear of under lapping panel.
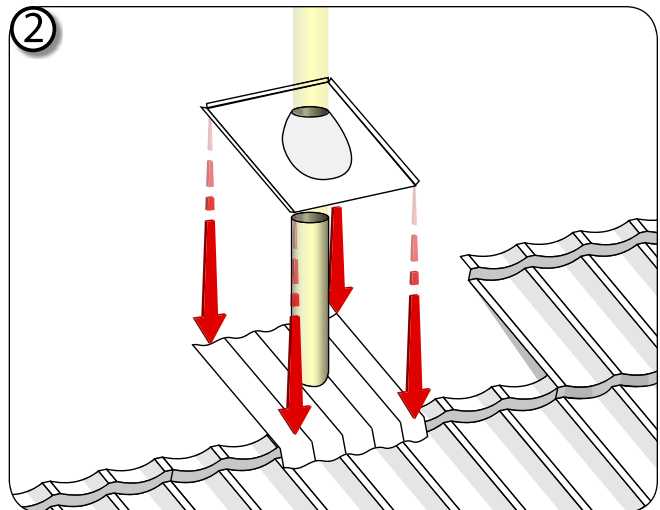
②

Install pipe flashing over 'Under-Pan'.

③

Cut a hole in the covering panel to fit the cone of the Pipe Flashing.

Dissimilar Metals

⚠️ *To avoid adverse corrosion effects caused by dissimilar metals, COPPER and LEAD flashings should not be used with Metro roof products and accessories*
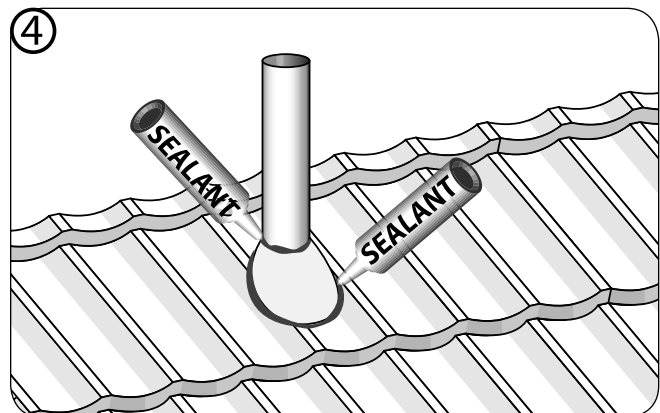
④

Seal Vent Pipe around bottom of cone and around pipe flashing as shown.

Pipe
SMARTjack
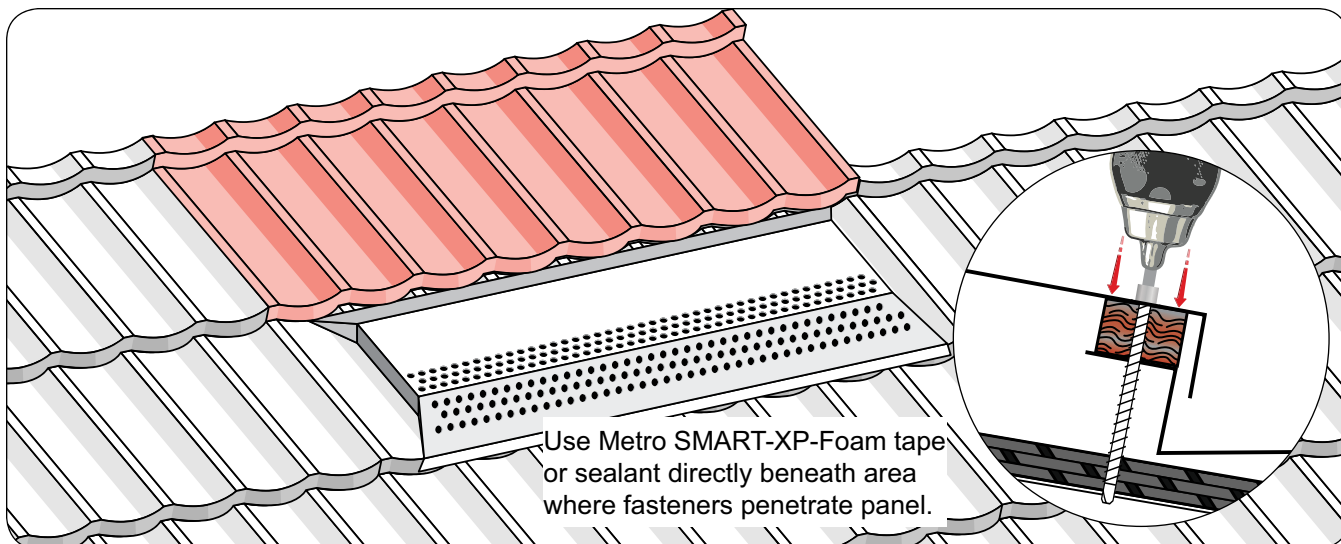Panel
Underpan
Underlayment
Decking
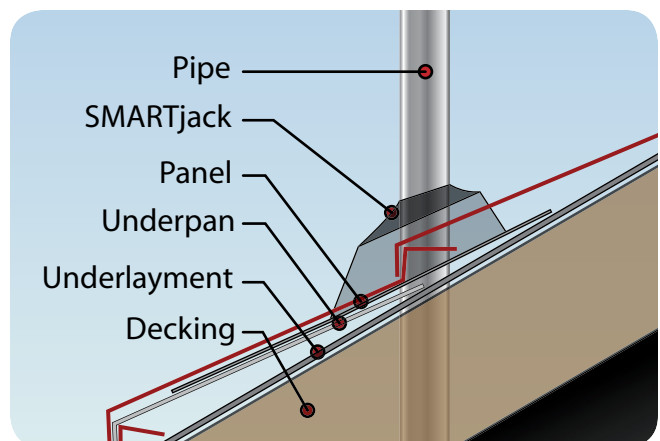
SMART-VENT - BATTEN-LESS TILE-II

Metro SMART-vents are used in place of regular panels on the first full course down from the ridge where ventilation is required. The vents are installed similar to panels after cutting ventilation hole in decking (approximately 8" x 30"). A Metro SMART-vent provides approximately 82 sq. inches of Net Free Vent Area (NFVA). care should be taken to adequately ventilate the building. Building codes require a minimum NFVA of 1/300 the area of the space to be ventilated (attic).


Seal Back up-turn Prior to overlaying panel.

Secure SMART-vent with screws (#10x2" HH) (50mm)
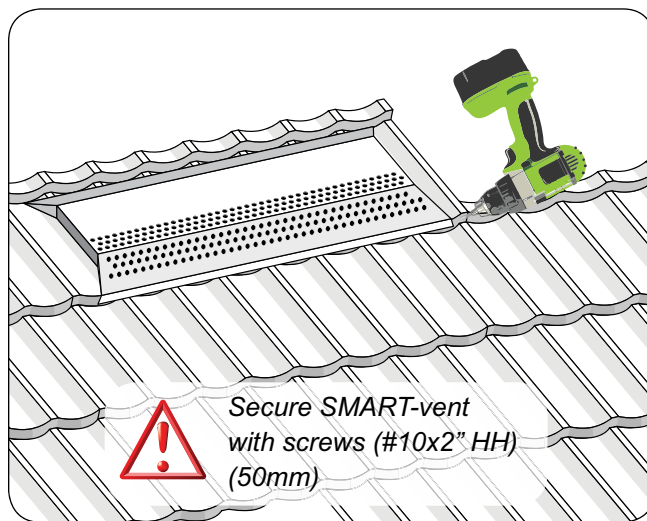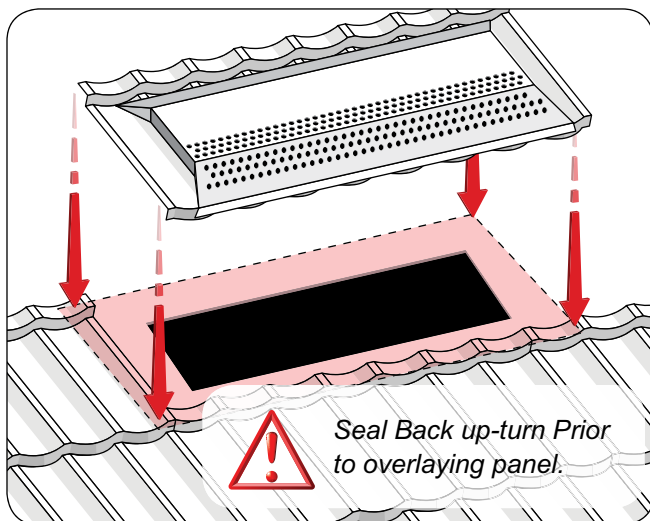
To prevent rodents and other vermin from entering attic space, the roof deck ventilation hole should be covered with 1/4" wire mesh.

Always check local codes and ensure you have adequate intake ventilation for the quantity of exhaust SMART-vents you are installing.

Use Metro SMART-XP-Foam tape or sealant directly beneath area where fasteners penetrate panel.

Top panel fastening is acceptable behind Metro SMART-Vents, Chimney's & Skylights as shown. Use fasteners with self-sealing rubber washers covered by a dome cap or seal fasteners then cover with Metro touch-up kit.

**Metro Roof Products**

CHIMNEYSADDLE PREPARATION
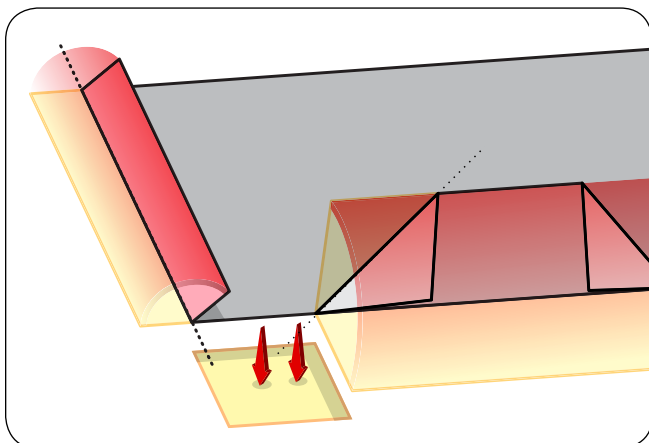
On the sides of the Chimney Saddle create side-hems to deflect water down the sides of the chimney.

CHIMNEY FLAT-STOCK PREPARATION
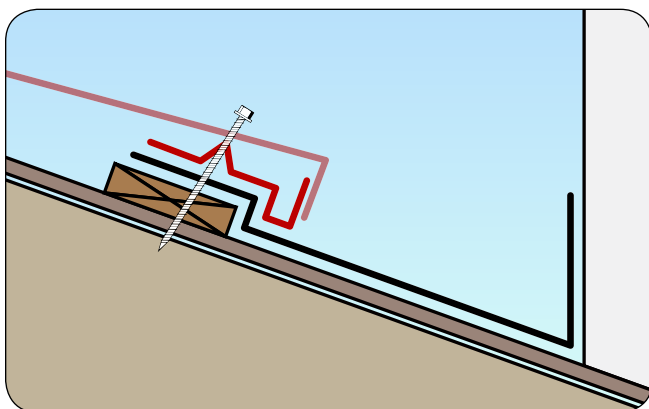
Use a V-Bat Riser Metal piece as shown to elevate the panel to the correct roof plane height. Fasten as shown with the panel nose being fastened into the V-Bat Riser.
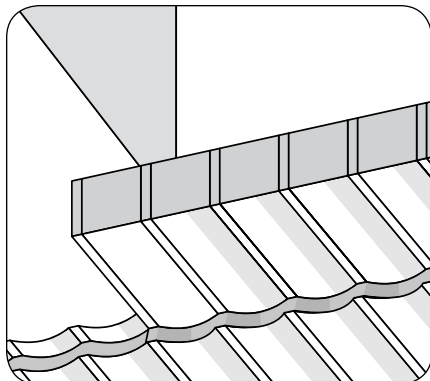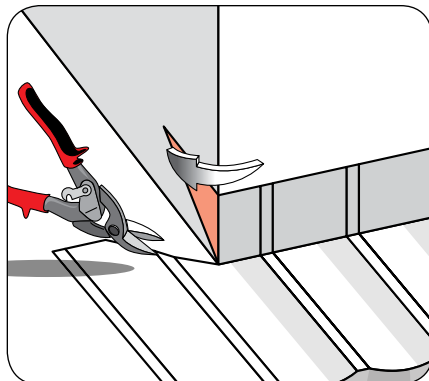
CHIMNEY FLAT-STOCK W/ FOAM CLOSURE
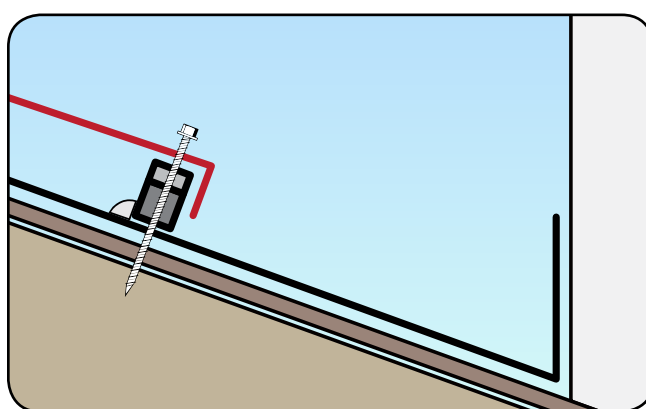
Position the Foam strip in a bead of sealant and fasten as shown. Use Metro Touch-up kit to seal top fasteners.

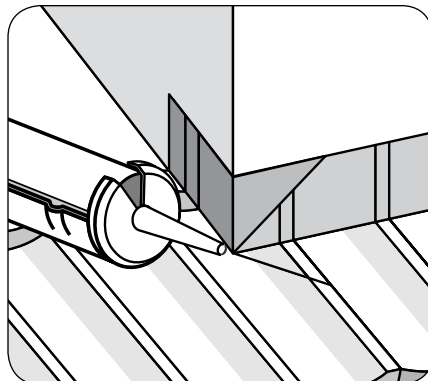**Metro** Roof Products

CHIMNEY / SIDE-WALL / HEADWALL

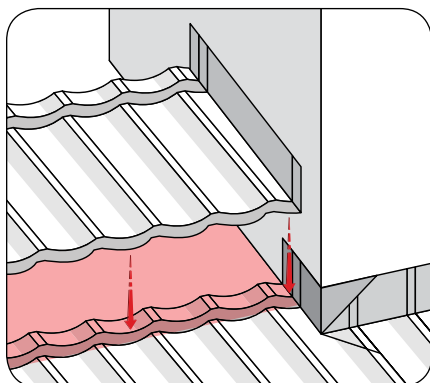The following details apply to any square cornered protrusion through roof.

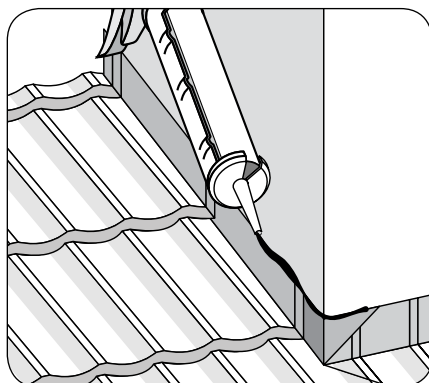Measure, cut, and fold up panel 2" from the back of the panel to the front of protrusion.

Cut a 45 degree angle as shown and fold tabs around protrusion.
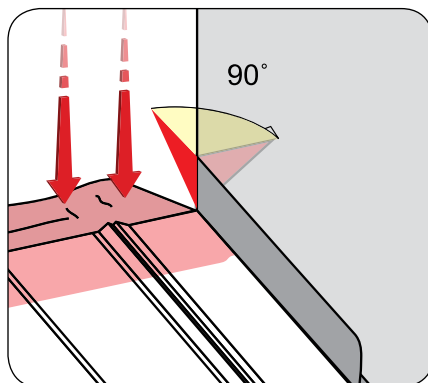
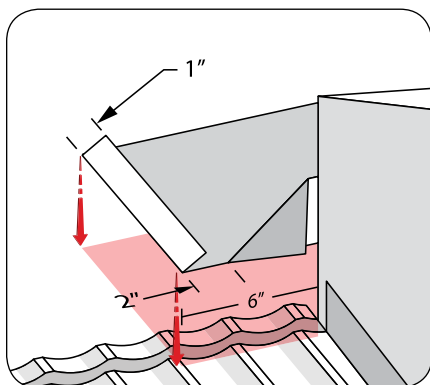Cut and fold up panels 2" at sides of protrusion as shown.

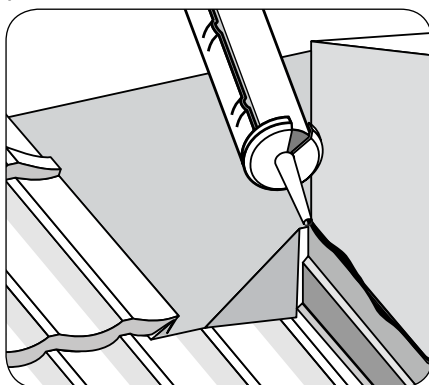Install subsequent panels with a 2" bend up nested against the protrusion.

Seal around perimeter of folded panels prior to fastening them to the protrusion.

Flatten the back flange of the panel intersecting the top of the protrusion.

Install chimney saddle metal at back of chimney as shown. Extend Saddle metal a minimum of 4" past each side of protrusion.

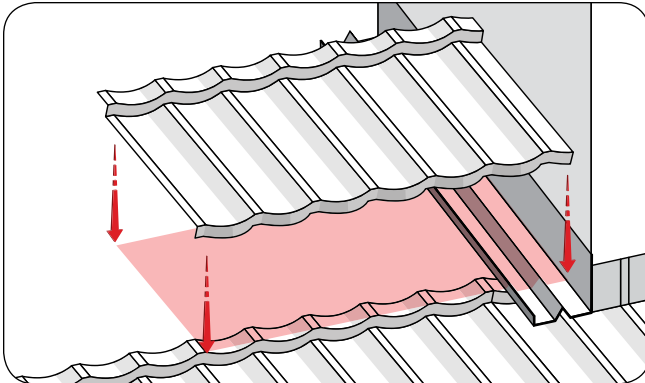Install and seal 'Z'-bar flashing metal over folded sections as shown.

Install a strip of Metro SMART-XP--Foam tape across back flange of panel beneath Chimney saddle as shown.
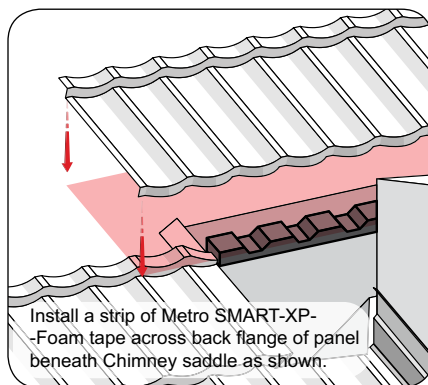
For added protection install a foam weather block as shown to seat the panel onto.
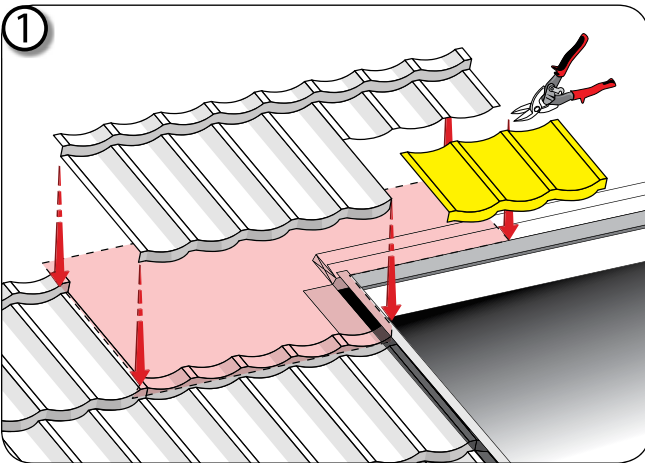
SIDE-WALL UNDER-PAN METAL

An alternate flashing method is to use side-wall Under-pan metal as shown. This can then be counter flashed using the Metro Counter Flashing metal or standard 'Z'-bar metal weatherproofed over the up stand of the side-wall under-pan metal.
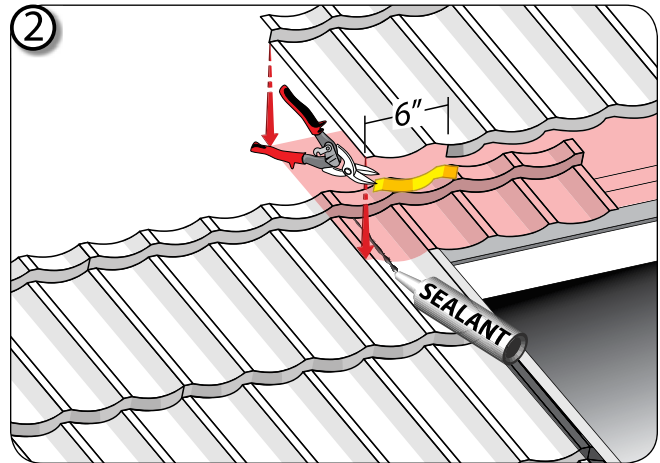
⚠️ *Fold up nose of panel where under-pan metal exits on top of field panels below.*
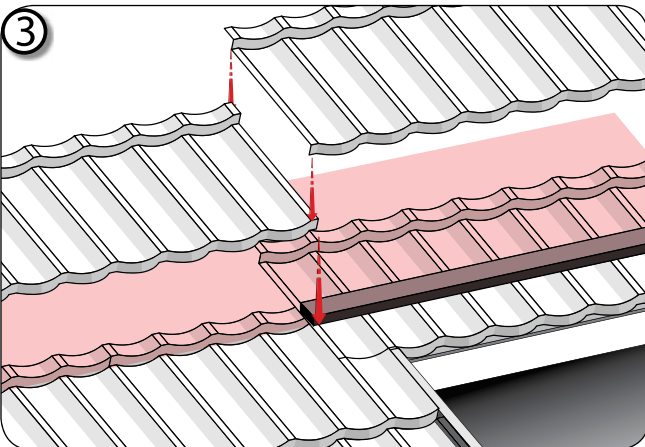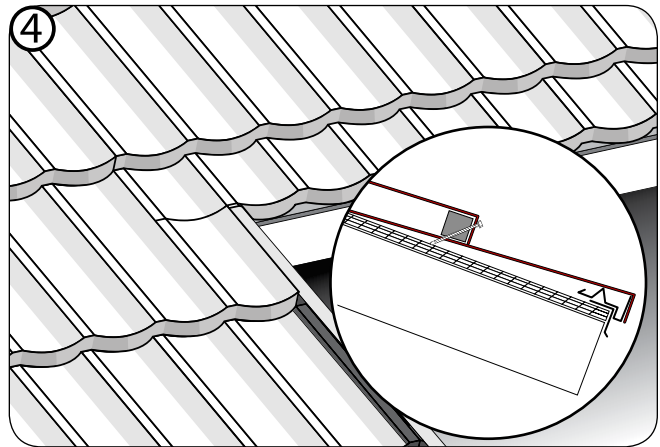
SHORT COURSE

① Cut the overhanging portion of the panel where it intersects with the stepped fascia as shown.

② Lap over the first cut-panel with a new full panel and cut & remove the section as shown.

③ Apply either a bead of sealant or a strip of Metro SMART-XP-Foam tape along the top surface of the lower panel, just behind the dotted course line.

④ Finished slip-course detail with all parts in place

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TRIM CAPS

HIP/RIDGE INTERSECTION
Install hip caps from the bottom using 2 fasteners per trim cap. Overlap trimcaps at hip/ridge intersection. Cut and fit the ridge cap over both intersecting hip caps as shown.

RIDGE CENTER CAP
At the center of a ridge line, a small/short ridge cap as shown can be made where cap pieces arrive from different directions.

Attach end disc with stitch screws.

90°
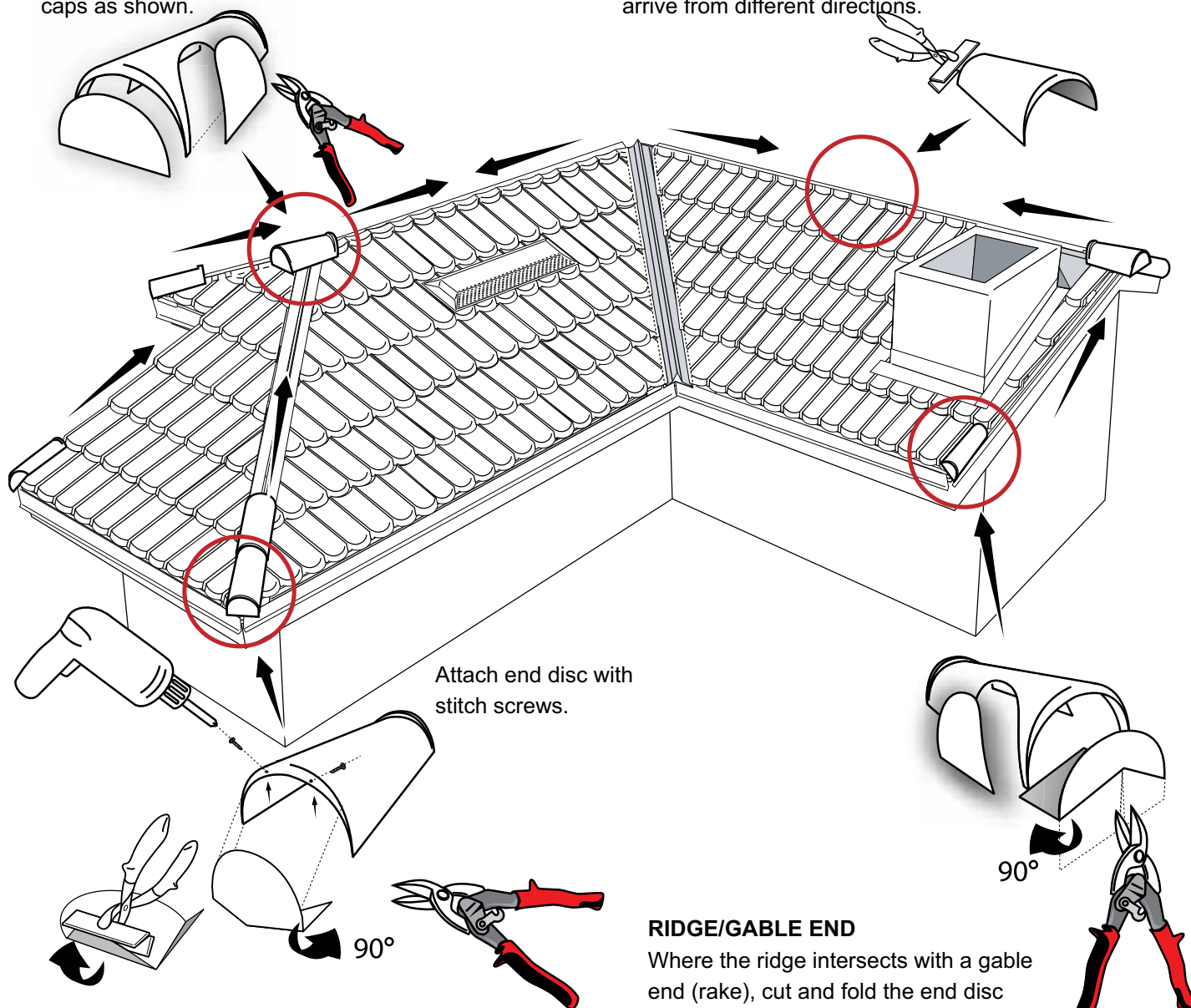
HIP CORNER
Notch & fold the end disc as shown to form a closed 3-dimensional end cap. Fit end disc to bottom hip corner with stitch screws and install balance of trim caps up the hip. To maintain a straight line of trim caps, fasten only 1-side of the ridge or hip and then fasten the other side.

90°

RIDGE/GABLE END
Where the ridge intersects with a gable end (rake), cut and fold the end disc as shown to follow the Rake Channel sections previously installed.

⚠️ *After installing trimcaps at intersections, seal cut edges and apply Metro basecoat and stone chip to provide a complete stone coat finish.*