# Sapphire Install Guide

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## Overview

### FIG. 1

**CROSS-SECTION**

Overall width = 46.5"
Coverage width = 43.25"

7-¼"

Rib Height = 1.75"

**LENGTH CROSS-SECTION**

Length = from 3 ft. to 19.5 ft.

3"

13-¾"

Varies

1.75"
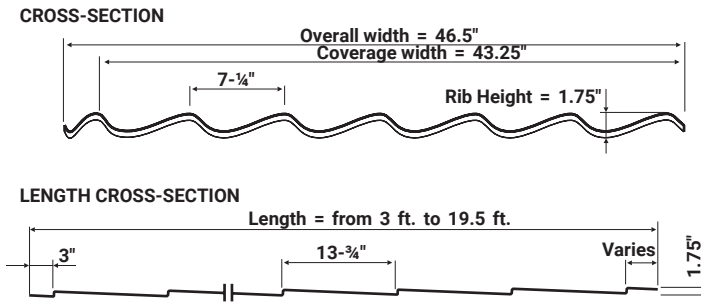
This installation guide presents guidelines for installing Sapphire metal tile roofing.

Panels and trim are manufactured from 26 gauge steel, coated with a Galvanized substrate, primer, and finally a high quality baked on enamel Kynar 500® paint system.

Panels are cut to your specified lengths from 3' to 19' 6" long.

## Application, Roof Slope, Requirements

Sapphire metal tile roofing is most commonly used in residential applications, although it also performs well on light commercial projects, providing an authentic European tile look with the strength of steel.

Sapphire panels require a minimum 3:12 slope for proper rain runoff.

Along with these instructions, follow all local building codes while installing Sapphire.

## Offloading and storage

A forklift, boom, or liftgate (for shorter panels) is preferred to offload material. If offloading by hand, ensure you have enough people to support each section of the panel. Do not drag sheets against each other or the ground. If you scratch panels while moving, clean and coat the damaged section with touch up paint.

Special attention should be paid when storing in heated warehouses. Sheets should be stored in dry and airy rooms. The packages are not to be put directly on the ground, but on blocks about 8" high. Sheets intended for longer storage should be inspected and then individual sheets separated by spacers to provide free air circulation.

**ATTENTION!**
Sheet metal roofing tile should be installed on the roof no later then 6 months from the manufacture date to avoid warranty loss. The manufacturing facility shall not be liable for any damages of coating of sheets stored against this installation manual. Before assembly of sheet metal roofing tiles please check color shades.

## Installation Considerations

**Decking and Underlayment:**
Sapphire should be installed over solid OSB or plywood sheathing. We recommend any underlayment suitable for metal roofing, including but not limited to 30 lb felt, synthetic underlayment, or ice & water shield. For valleys and eaves, an ice & water shield is encouraged.

**Existing Roof:**
Sapphire may be installed over existing shingles - check with your local building code to ensure compliance.
Complete inspection of existing roofing deck should be done prior to installing new metal panels. In addition, at least 3 rows of shingles should be removed in order to check for the water damage. If there is any damaged plywood, it needs to be replaced and covered with a metal roofing underlayment.

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Underlayment should be installed prior to flashing and panels - overhang down fascia and up walls at least 1 inch: more if possible.

The lower and upper end of panels should be sealed using either universal or expanding closures. This includes both straight cuts like ridges and hips as well as angled cuts like hips and valleys. For gable rakes and sidewall, closures are optional but do provide added weather protection.

**FIG. 2**

Sapphire metal tile panels - best practices

PANEL UPPER END

Panel Endlap

90°

L
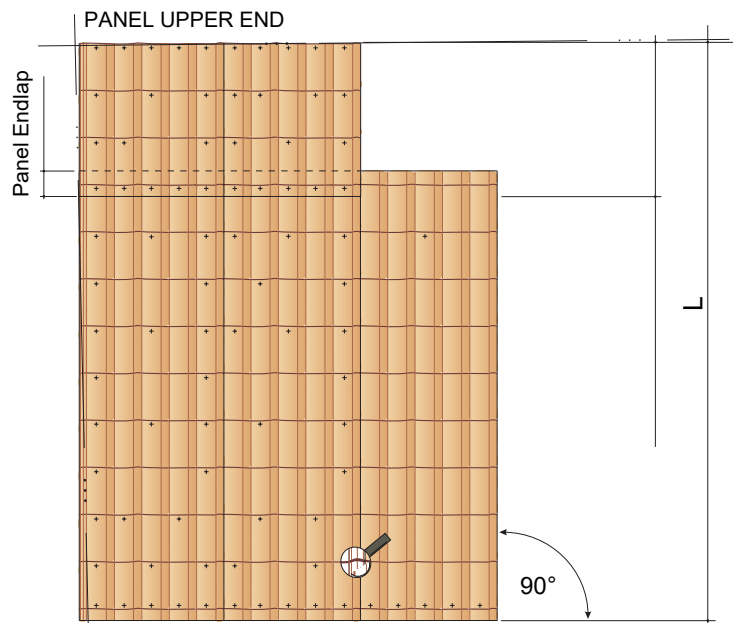
PANEL LOWER END - Panels must stay square to the eave, regardless if the roof is out of square.

In this scenario, panels would be installed in this order: 1, 2, 3, 4, 5

**Panel Installation** – Fig. 2.

Before installation check to ensure roof is square. When not square, always follow the eave. Panels must stay square to the eave/lower end of the panel. The upper end and sides of panels are typically covered by flashing later, thus reducing the visual issues created by out-of-square roof lines.

Sapphire panels are typically installed from right to left, overlapping the previous sheet as you go.

Sometimes it's more convenient to install sheets from left to right. To do so, after installation of the first sheet, the next sheet is tucked under the previous one and its position is checked in relation to the eaves. After preliminary installation of the next sheet, the previous one can be fastened.
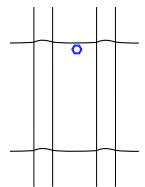
When installing multiple rows of panels, the preferred endlap location is at a panel step.

Water Channels
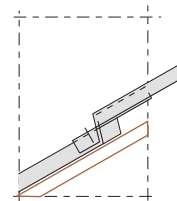
Sheet endlap          Sheet sidelap          Fastener Placement

Fasten roofing panels using wood screws.

Screws should be fastened in the lowest place of the tile valley. Use a drill with torque control to ensure fasteners aren't over or under fastened. The estimated number of screws needed is 70-80 pieces / SQ (100 sq ft) of roof area. Exact number needed will vary depending on flashing quantity.

Panels should be fastened on each barrel at:
- Eaves
- Ridge
- Panel Endlaps
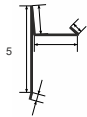- Gable Rake and Sidewall edges
- Valleys

**ATTENTION!** To ensure enough materials to properly flash around chimneys and skylights, add at least one extra panel for each of these protrusions. Alternately, increase the panel length in those areas by 13-3/4" (one barrel step).

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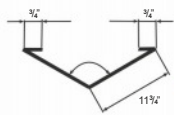
FIG. 3

Typical flashings and accessories

### Gable trim

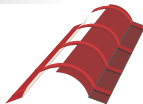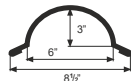5
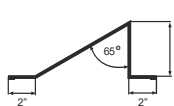
*Overall length: 8'*

### Fascia

5"

1"

*Overall length: 8'*

### Valley

³/₄"    ³/₄"

11³/₄"

*Overall length: 8'*

### Rounded ridge cap

3"

6"

8½"

*Overall length 6' 6", Effect. length 6' 4"*

### Snow barrier

65°    4"

2"    2"

*Overall length: 8'*

### Snow guards

*Overall height: 2.5"*

### Eave flashing

3"

*Overall length: 8'*

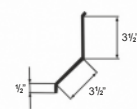### Side wall flashing

½"

3½"
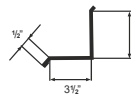
*Overall length: 8'*

### Plain ridge cap

*Overall length: 8'*

### End wall flashing

3½"

½"    3½"

*Overall length: 8'*

### Foam closures

*Options: universal at 48" or expanding at 13' 2"*

### Fasteners

*Galvanized steel, #10, 5/16" Hex head, Neoprene gasket*

### Touch Up Paint

*For touching up small scratches/nicks*

## Flashing

Fig. 3 shows typical flashing made of the same material and color as roofing sheets. Flashing may also be field fabricated using flat sheets

**ATTENTION!** Do not use flashings (including chimney caps, gutters etc.) made of copper or lead. These materials react with the zinc coating under the paint and cause premature corrosion.

Flashing serves two basic functions:
1. Weather tightness
2. Aesthetics

## Eave Flashing – Fig. 4
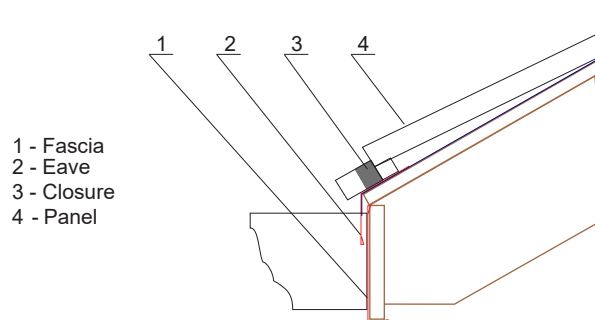
Eave flashing directs rainwater to the gutter

Eave flashing is placed into the gutter and is installed after installation of gutter system.

## Fascia – Fig. 4

Fascia trim protects the fascia board and are installed before gutter system.

## FIG. 4

Eave Flashing and Fascia

1    2    3    4

1 - Fascia
2 - Eave
3 - Closure
4 - Panel

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**Chimney flashing.** – Fig. 5 and 6.

Chimney flashing is important - poor construction at chimneys is the most common cause of roof leaks.
Fig. 5 shows an example of flashing of chimney located at a distance of less than 5' from roof ridge. In such case the belt of flashing behind chimney is covered with roofing sheet.

**ATTENTION!** The sheet in this place should be longer at minimum by one tile step to allow panels to lap below and above (behind chimney).

The side aprons of flashing should overlap beyond the full tile barrel of the roofing sheet.

Flexible EPDM lineal flashing may also be used for chimney flashing. In such case, any metal flashing serves only as a decoration to hide the lineal flashing.
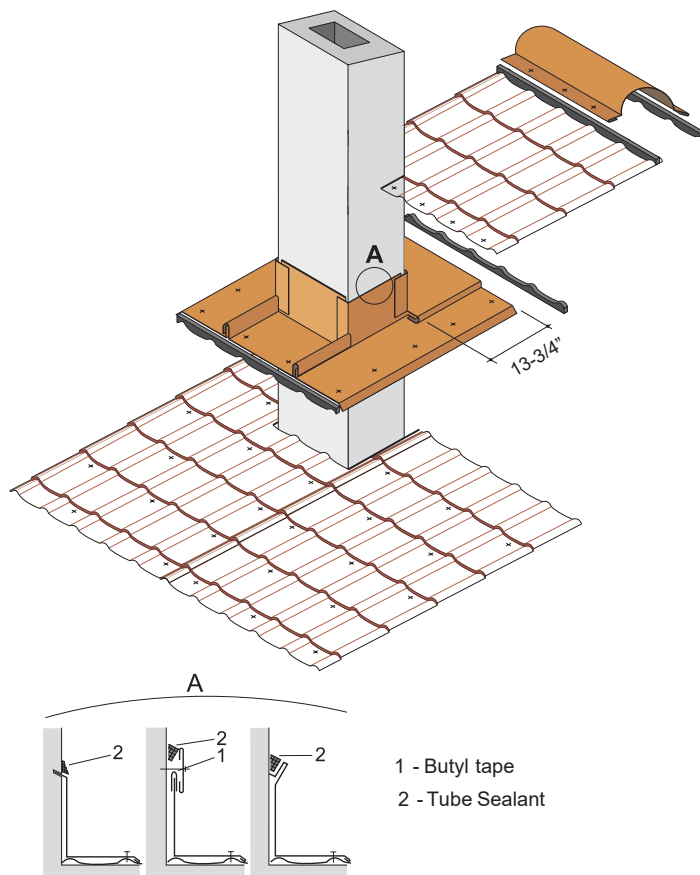
**FIG. 5**

Example of flashing of chimney which is located at a distance of less than 5' from roof ridge
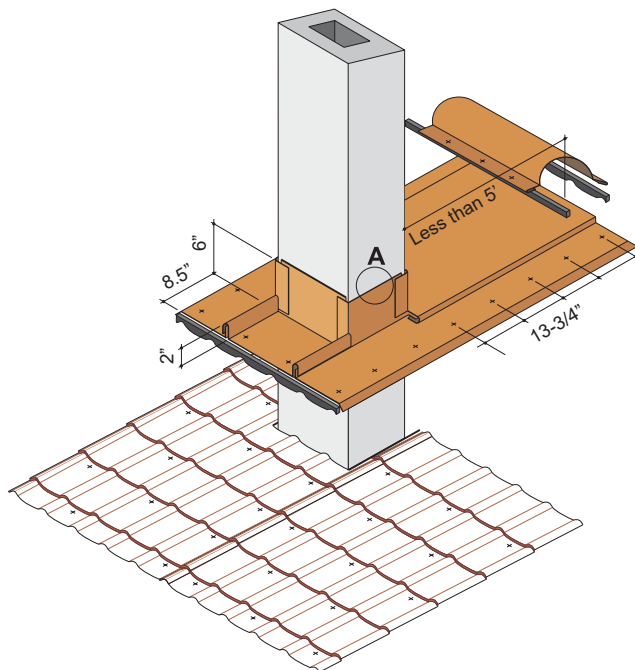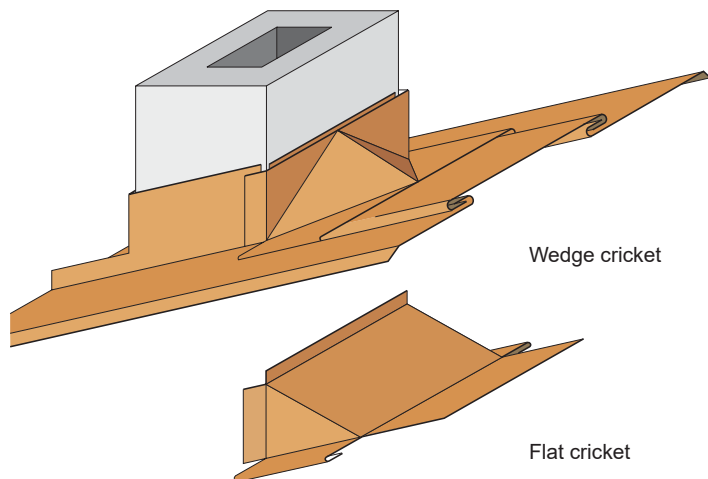


**FIG. 6**

Example of flashing of chimney, which is located at a distance of more than 5' from roof ridge



A

1 - Butyl tape

2 - Tube Sealant

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FIG. 7

Example of design and installation of crickets.



Wedge cricket

Flat cricket

**Chimney crickets.**– Fig. 7.

Crickets should be installed on roof slopes inclined more than 30°, behind chimneys. They protect the back of chimney by diverting water around it.

**Valley.** – Fig. 8.

Located at the lower junction of two roof slopes. Their task is to direct rainwater it into gutter. Install before roofing metals.
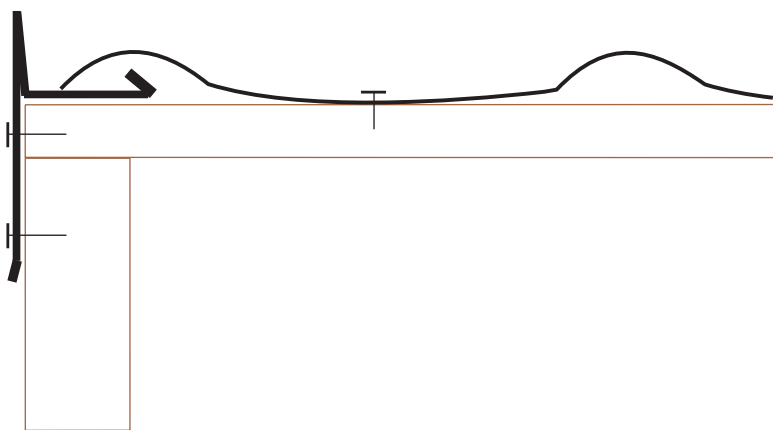
**FIG. 8**

Example of use of valley



Closures

2-3"
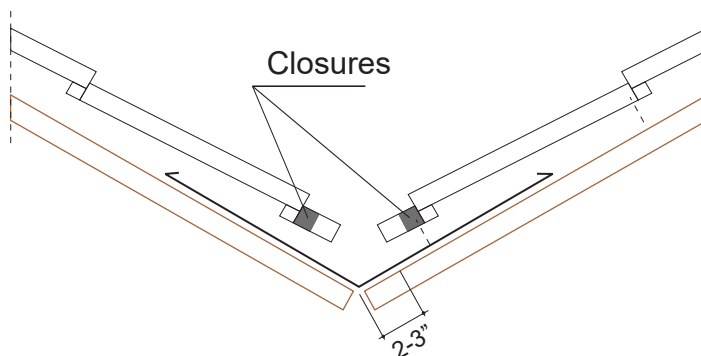
**FIG. 9**

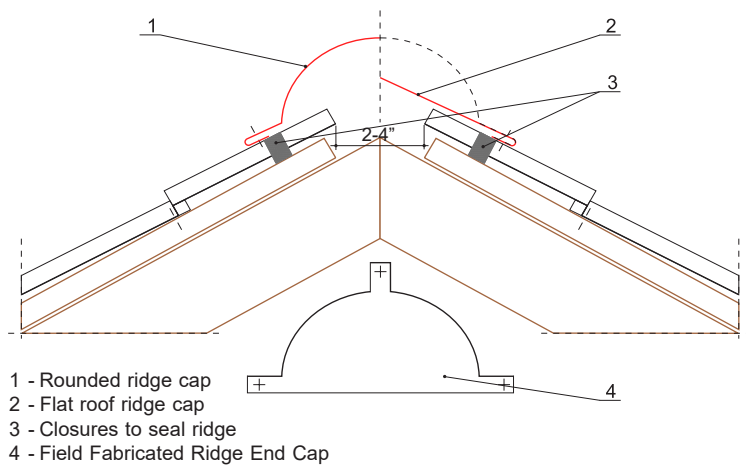Gable trim Detail



**Gable Trim.** – fig. 9.

Gable Trim protects and finishes the side edges of the roof.
Fig. 12 shows how the gable trim is installed, with the panel then going over top of it.

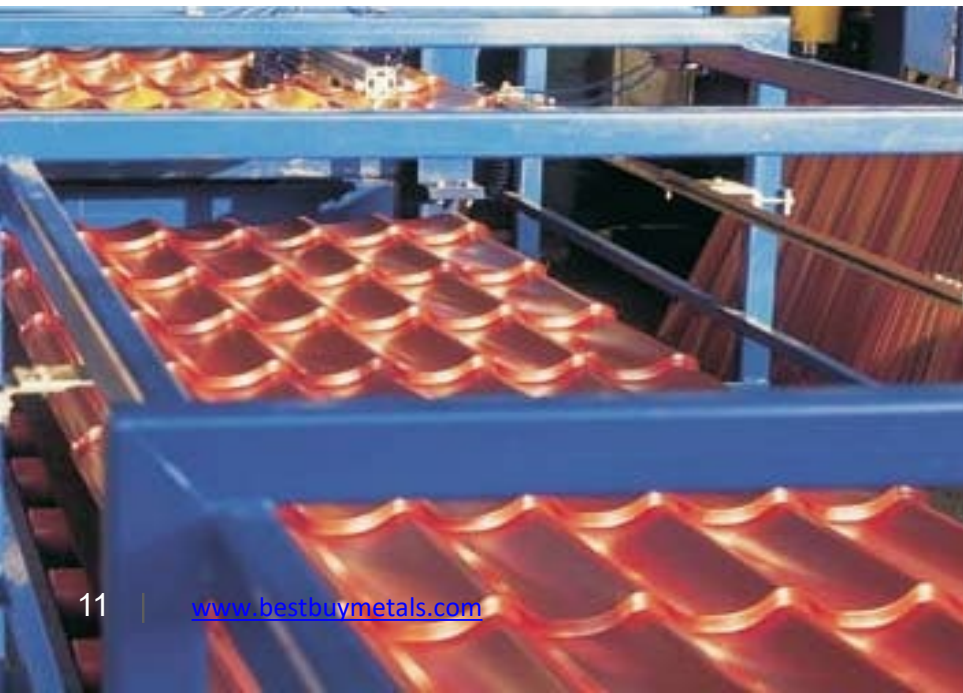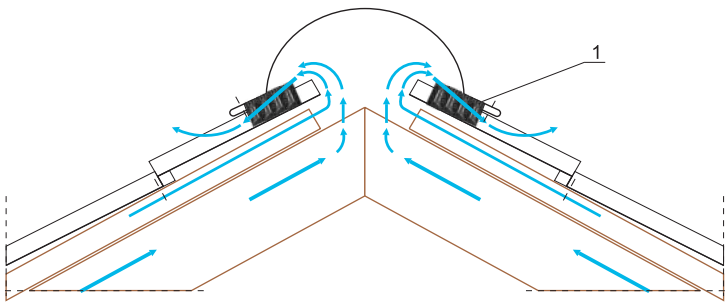# Sapphire Installation Guide

FIG. 10    Example of Non-Vented Ridge



1 - Rounded ridge cap
2 - Flat roof ridge cap
3 - Closures to seal ridge
4 - Field Fabricated Ridge End Cap

**FIG. 11**

Example of Vented Ridge
1 - Ridge vent material



**Roof ridges.** – Fig. 10.

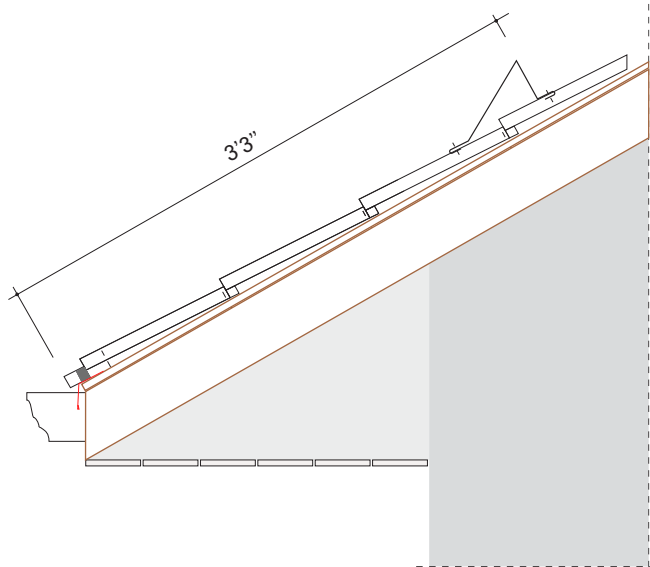The ridge cap protects the roof top and edges, where two roof slopes meet at an upward angle.

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**FIG. 12**

Example of snow barrier installation
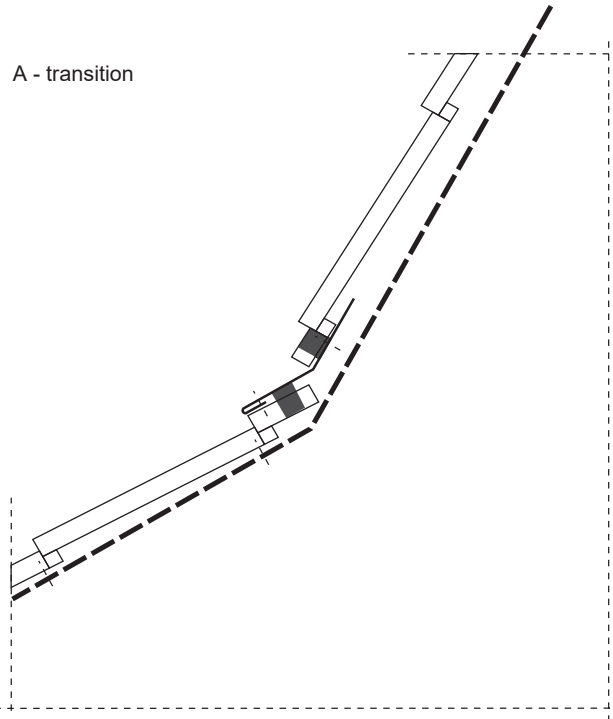


3'3"

**Snow barriers.** – Fig. 12.

The need for snow barriers depends on local weather conditions.

Depending on rain intensity and weather changes they can be installed in one row or in several rows in the distance of about 3' 3" from the eaves, at the height of rafter support (rafter plate).
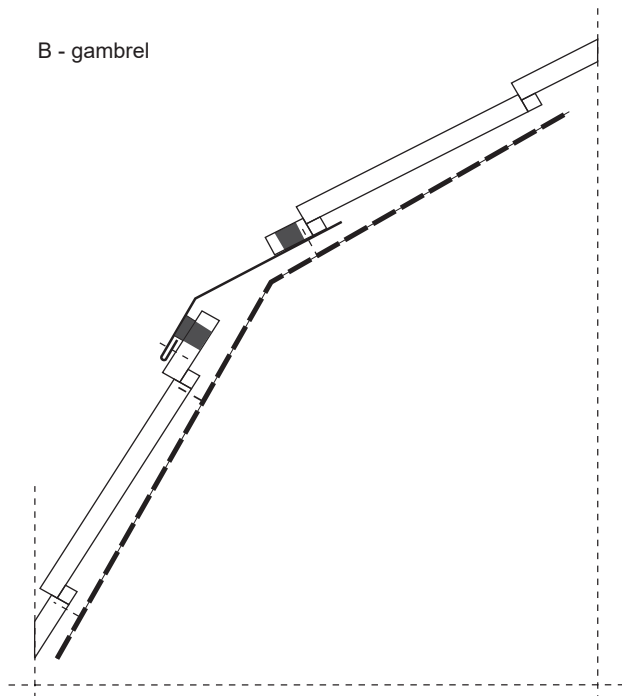
**FIG. 13**

Examples of transition and gambrel roof slope changes

A - transition

B - gambrel

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**ATTENTION!** Roof edge flashings are subject to more wind uplift and should be fastened at a minimum spacing of 1' 1".

**Flashing of vent pipes, ventilators, antennas, etc.**

Round protrusions are sealed with EPDM metal roofing boots. These feature an aluminum base to conform to Sapphire® panels: seal with roof sealant and fasten with screws.

**FIG. 14**
Example of endwall and parapet flashing.
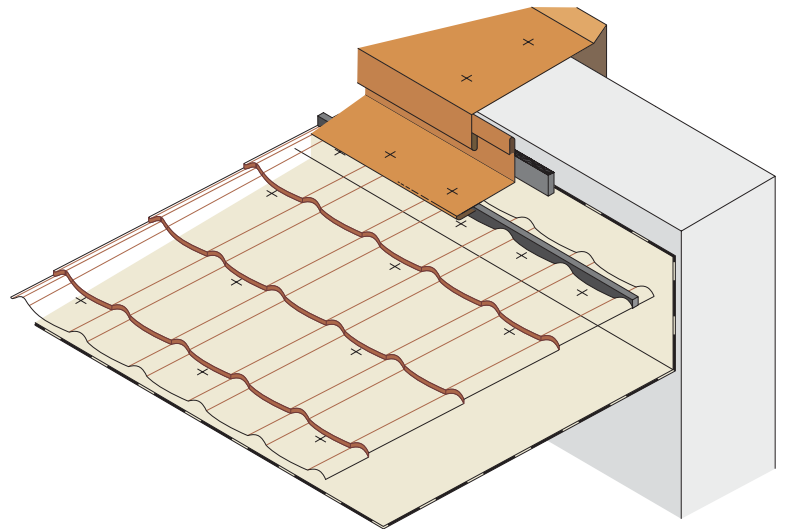


**Maintenance**

Sapphire does not require special maintenance. However, the following are important:

- Remove leaves from roof surface as decaying causes discoloration of the organic coat of sheets
- Remove layers of industrial dust (e.g. originating from limestone processing plants, cement plants, steelworks and mines), which causes damages of the coat of sheets.
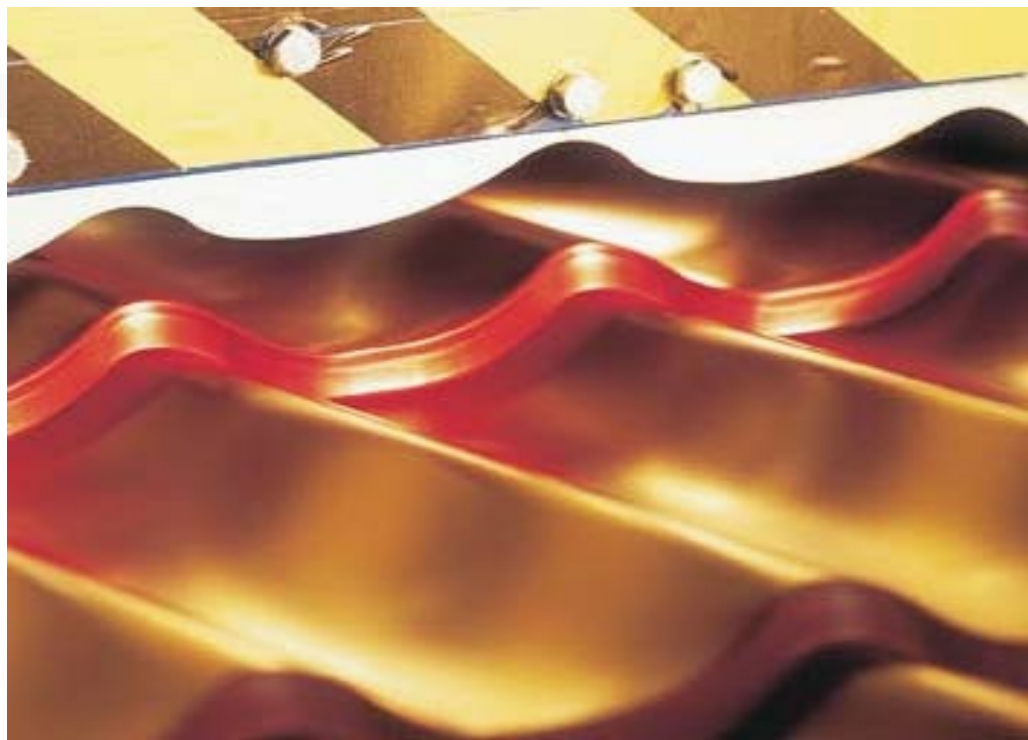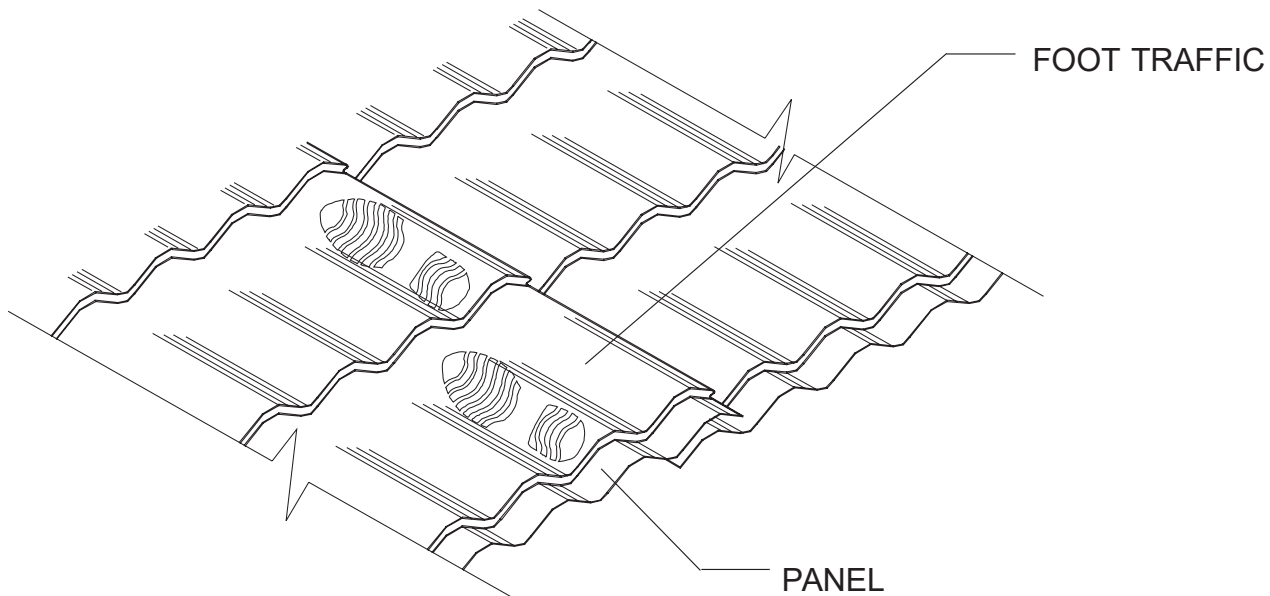
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## Final notes

1. Use shears, nibblers, or snips to cut sheets.

Do not use tools which cause damage of the coatings as a result of heat generation, i.e. angular grinders.

2. Walk on the roof using footwear with soft soled shoes and placing feet only in the low portion of the tile.

FOOT TRAFFIC

PANEL

Screw down all screws before stepping on the roof.

3. Scratches during installation can be touched up with touch up paint. Surface should be cleaned from dirt and surfaces prior to touch up.

4. Steel chips, from cutting and drilling should be removed with a soft brush to avoid rust stains caused by such chips.

5. Dirt can be removed with household detergents.

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