



This manual contains basic information, drawings and guides for installing the Polysand Slate Tile Roofing System on a basic type structure. This manual is a summary of good roofing practices and some of the industry standards that have been developed over time and is upgraded periodically. We stress the fact that we are not familiar with all building codes that pertain to roofing. Consequently, the general contractor, roofing contractor, installer or homeowner must accept responsibility for ensuring that the installation meets applicable building and roofing codes.

Please visit our website for additional information and contacts.

www.polysand.ca

Green technologies.

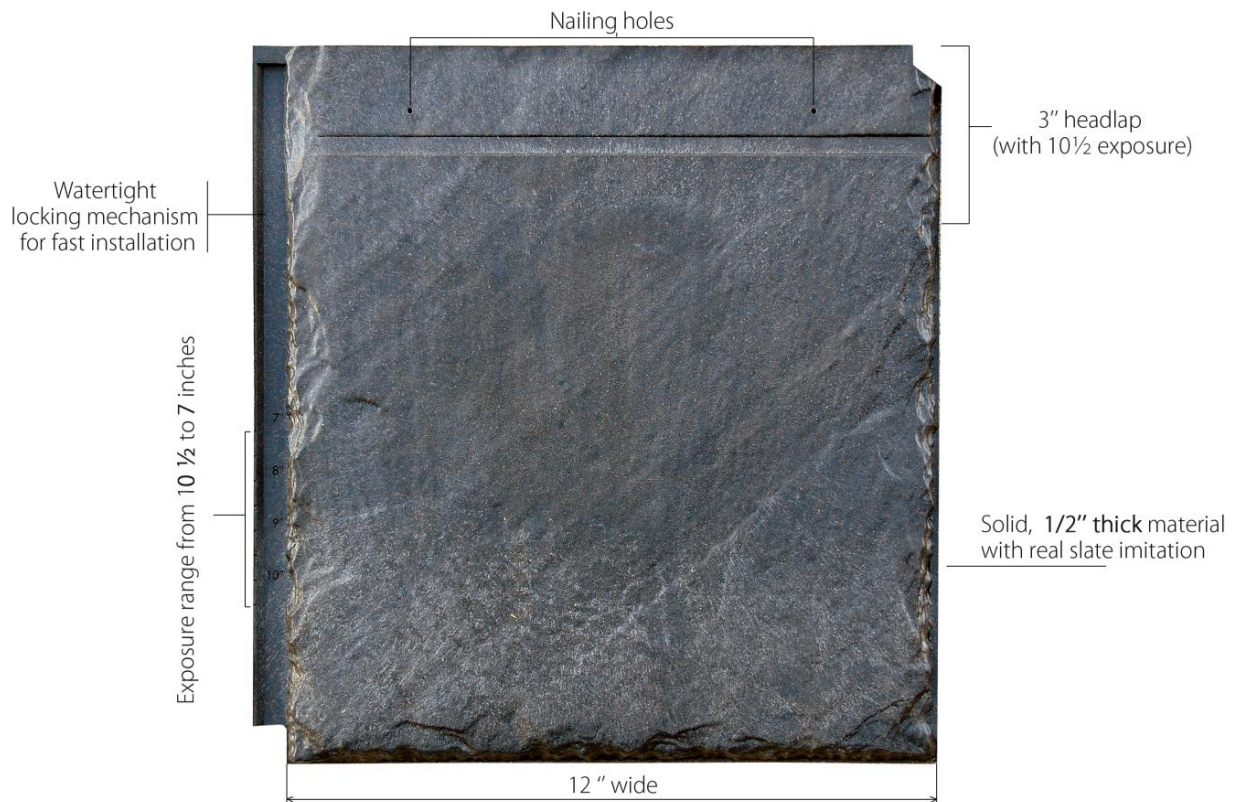
At Polysand, we consciously contribute to a cleaner environment by recycling used plastic. We collect, separate and remanufacture polymers to make all our products, which are absolutely safe for you and for the environment. We are proud to use green technologies that help conserve our planet's resources.

Installation Guide is subject to change without notice. Please check our website for the latest edition.

2015 Polysand Corp.

Technical data.

| Polysand Slate Tile | |
|-----------------------|--------------------------------|
| Weight 1 pc. | 3.6 lb (1.65 kg) |
| Size | 12½" x 13½" (306 x 338 mm) |
| Thickness | 1/2" (15 mm) |
| Headlap | from 3" (from 75 mm) |
| Exposure | 7½" - 10½" |
| 1 square (100 sq.ft.) | 114 tiles (with 10½" exposure) |
| 1 square weight | 410 lb (188 kg) |
| Packaging | |
| 1 bundle | 10 tiles |
| 1 bundle weight | 36 lb (16.5 kg) |
| Bundles per square | 14 |
| Bundles per pallet | 54 |
| Weight per pallet | 1944 lb (891 kg) |
| Squares per pallet | 4.73 |



Tools.

Polysand Slate tiles can be installed using conventional power tools - tiles can be nailed down using a hammer or nail gun and can be easily cut with a circular saw (masonry or metal blade).

Weight, Exposure and Appearance.

The exposure of tile is the portion of the tile that is not covered by the course above and is, therefore, the length of the roofing tile exposed to the weather.

The marker lines embossed on the surface of the locking mechanism of the tile will help to set the required exposure.

Polysand Slate tile can be installed with 7½" exposure up to 10½".

| Exposure | Tiles Quantity | Weight of 100 sq.ft. |
|----------|----------------|----------------------|
| 7½" | 160 | 576 lb. |
| 8½" | 141 | 507 lb. |
| 9½" | 126 | 453 lb. |
| 10½" | 114 | 410 lb. |

Installation.

Polysand Slate roofing tiles are made to replicate authentic slate as close as possible and in most cases the installation process is the same. If you have a concern during installation of Polysand Slate roofing tiles please refer to an authentic slate installation guide.

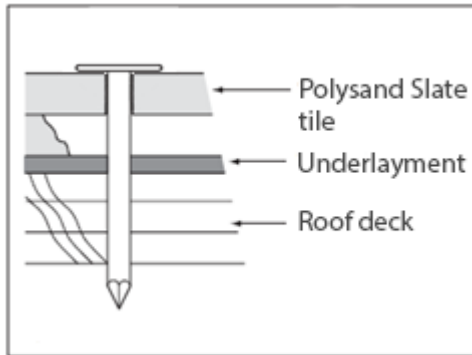
Decking and Slopes.

Polysand Slate tiles should be installed on approved plywood or OSB sheathing minimum 3/8" thick (10mm), cut flush with fascia at both eaves and gable. When re-roofing all previous roofing materials should be removed.

It is not recommended to install Polysand Slate tiles on slopes less than 3:12 (14 degrees).

Non-corrosive metal drip-edge should be installed along the all eaves and gable ends. There is no need to use battens with Polysand Slate roofing tiles.

Nailing.



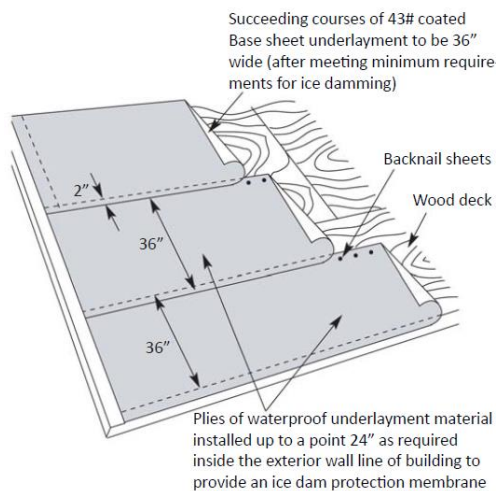
Polysand slate is fastened with two nails properly placed in the nail guide holes. When attaching slates, nails should be driven with a small pressure on the tile. The length of the nails should be sufficient to properly penetrate 3/4" into or through the thickness of the deck. In most instances, 1½" nails for the field tiles and 2" for the ridge/hip tiles are acceptable. Copper, stainless steel or hot-dipped zinc coated nails are recommended to be used. Unprotected nails are

not acceptable.

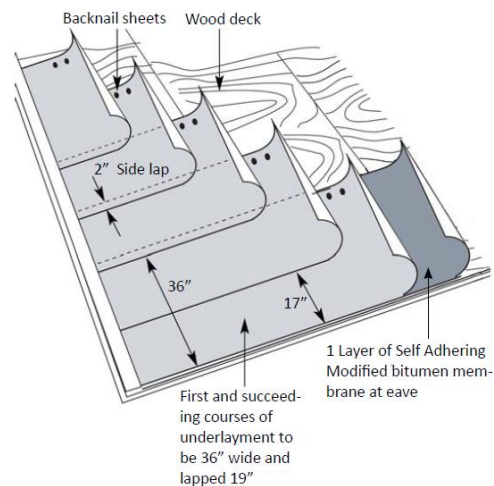
Wire: On non-nailable surfaces or some insulated decks or where fastening through the metal flashing needs to be avoided or if underlayment cannot be penetrated, such as special low slope applications, wire and strapping systems are sometimes used. Wire must be 13 gauge stainless steel or 10 gauge solid copper, with or without insulation.

Underlayment.

Because of the long service life of Polysand roofing tiles, a long-lasting underlayment should be used. All decks shall be covered with two layers of No. 30# asphalt-impregnated roofing felt or one layer of No. 43# coated base sheet or one layer of Ice and Water.



Single Sheet Underlayment



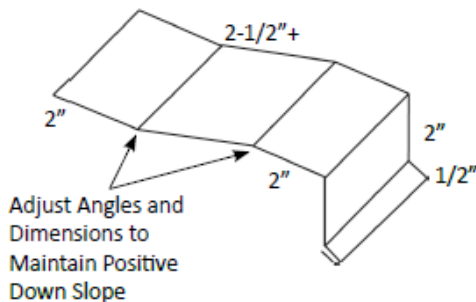
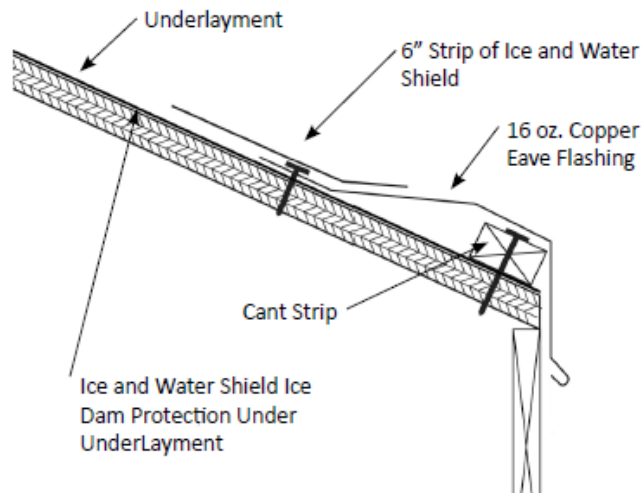
Double Sheet Underlayment

An ice dam protection membrane should be applied starting at the eaves and extending upslope a minimum of 24 inches (610 mm) from the inside of the exterior wall line of a building.

Ventilation.

It is very important that the roof is ventilated properly, especially in regions with a cold climate. Please follow your area building practices to meet local building codes. Appropriate soffit ventilation or continuous ridge vent is highly recommended for attaining the maximum service life of the roof.

First Course and Eave Cant.



An eave cant is necessary to raise the butt edge of the first course of slate tiles the same way the second course of slate raises the butt edge of all succeeding courses. Apply 1/2" X 2" and 48" long pressure treated cant strip directly to the underlayment, with 1/2" gap every 96" to allow drainage. Cover with copper or stainless steel flashing drip edge and a 6" Strip of Self Adhering Ice and Water Shield.

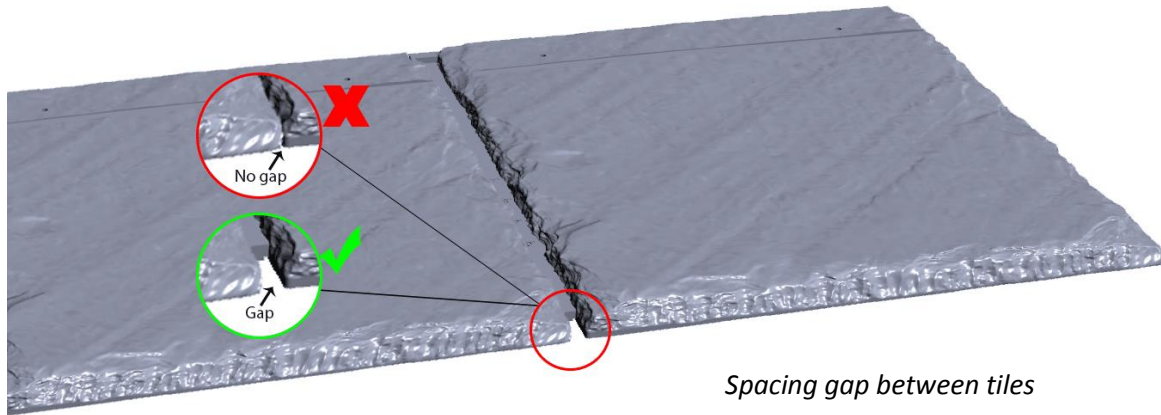
Polysand Slate tiles are laid with a minimum headlap of 3". Before chalking the roof the installer should verify the tile pattern/exposure being installed. Chalk vertical and horizontal lines along the roof to ensure consistent exposure. As the Polysand Slate Roofing tiles have a locking mechanism on the side there is no need to use a starter course. The first course of the Slate tiles should be installed to extend approximately 1 inch beyond the rake

edge and overhang the eave edge on 1 inch to 2 inches. The amount of eave overhang can be adjusted to achieve a good water flow into the gutter. It is necessary to use the chalk line to be sure that the first course is straight otherwise subsequent courses will not align properly. The chalk line should be snapped approximately 12 inches from the bottom edge of the roof. First course of the tiles is placed so that the top edges of the tiles are on the chalk line.

Field Tiles.

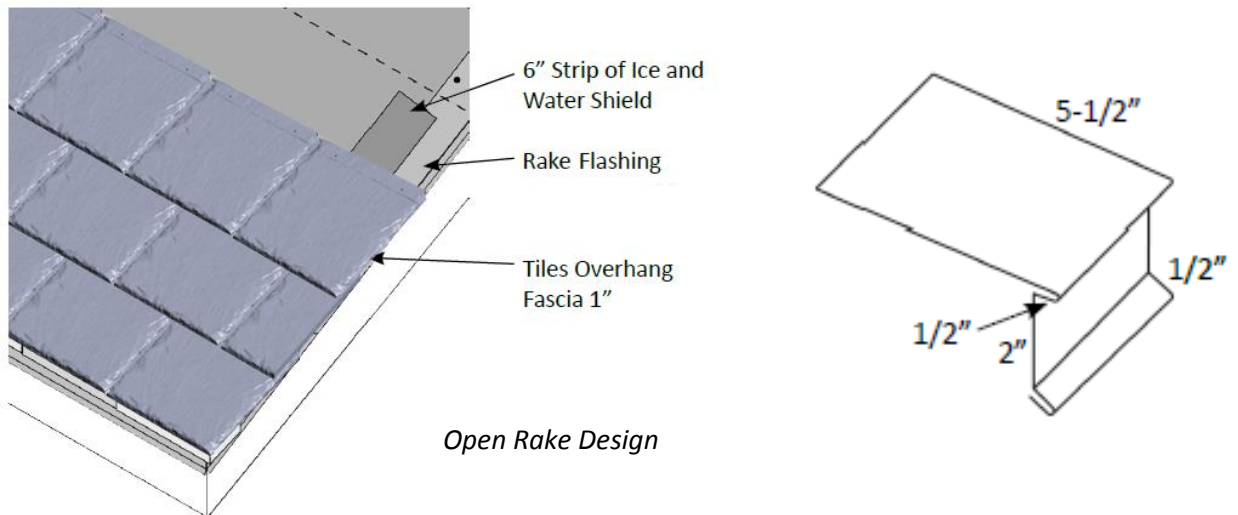
Polysand Slate tiles should be installed from the bottom to the top, from the right corner to the left. The first tile should be placed on the chalk line so that the top edge of the tile is on the line. The right side of the tiles should be hanging approximately 1 inch beyond

the rake edge. As you lay the tiles, space them out with a small gap allowed by the locking mechanism. This allows for natural expansion and contraction of the tiles.

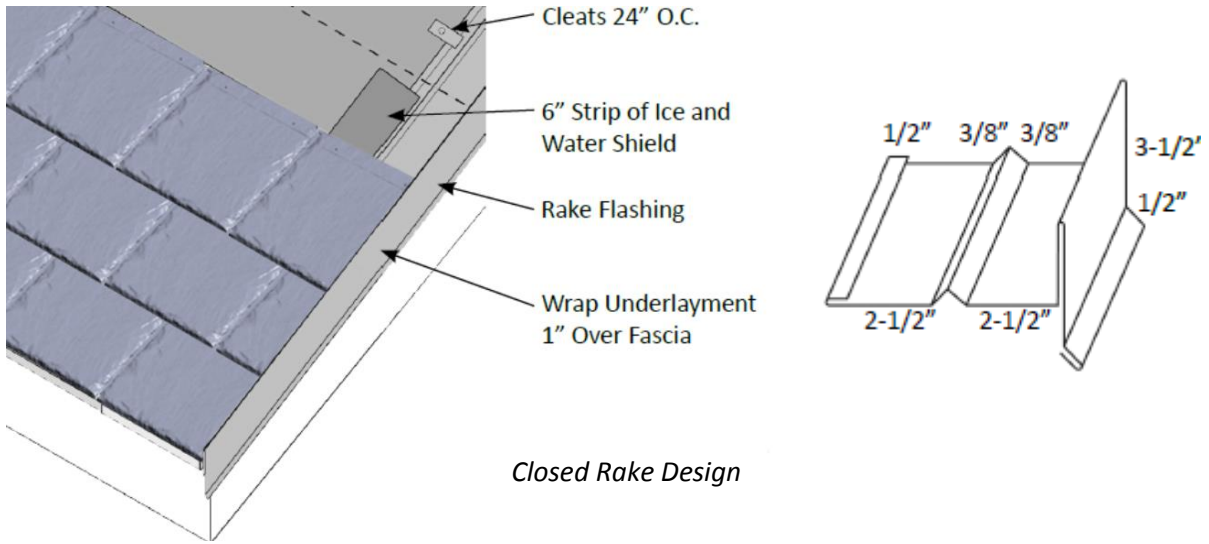


Rake Edge flashing.

The gable flashing should be installed over the waterproof underlayment. For an Open Rake design, the flashing must extend 5" onto the deck and 2" down over the fascia with a 1/2" hemmed edge.



For a Closed Rake design the flashing should extend 5" across the roof deck with V diverter and a hem at the edge. At the edge of the roof deck, the flashing is to extend up (perpendicular to the deck) 2" and back down at least 1-1/2" along the gable fascia board with a 1/2" crimp at the bottom edge to serve as a drip edge. The gable flashing pieces are to lap each other to form an overlap of at least 4".



Closed Rake Design

Ridges and Hips.

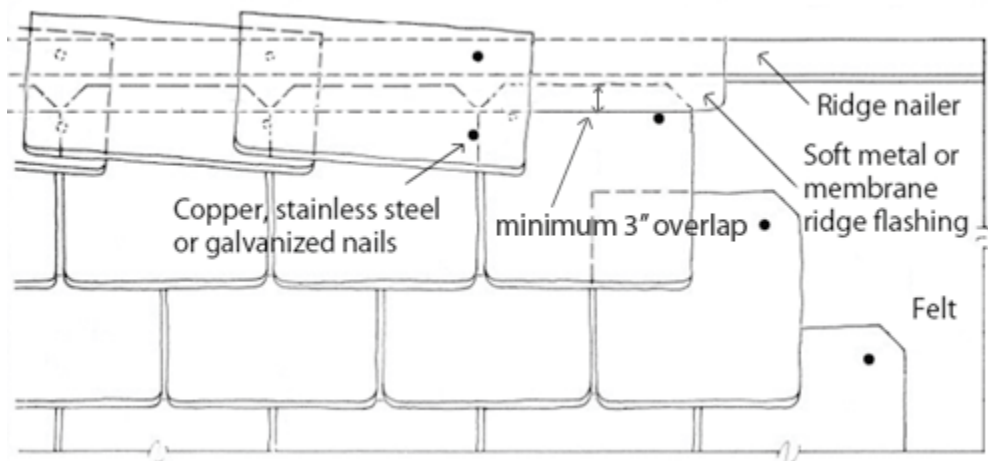
Polysand Slate roofing tile is designed so, that you can use the same field tile to make a hip or ridge. To make a ridge/hip you should snap off or cut the tile in 2 halves. You can do it by pressing the tile against a corner or roofing edge holding the tile with face down. To snap off the locking mechanism you can use a simple device provided by our company or cut it off using a circular saw.



Hip/Ridge tile should be installed at minimum 3 inches overlap. Each half of the tile must be nailed with 2 roofing nails. The length of the nails should be at least 2 inches.

Saddle Ridge.

For non-ventilated ridge you should use a Saddle Ridge. Wood nailers are installed at the peak of the roof along the ridge. The first nailer is installed at the thicknesses of the slate tile to accommodate the ridge tile. The field tiles are installed up the roof to the ridge nailers on both sides of the roof. A non-corrosive soft metal or membrane flashing must be installed over the ridge and ridge nailer, and, then, ridge tile is installed perpendicular to the field tile on each side of the ridge. As the ridge tile is run across the ridge and nailed, they overlap and cover the nails.

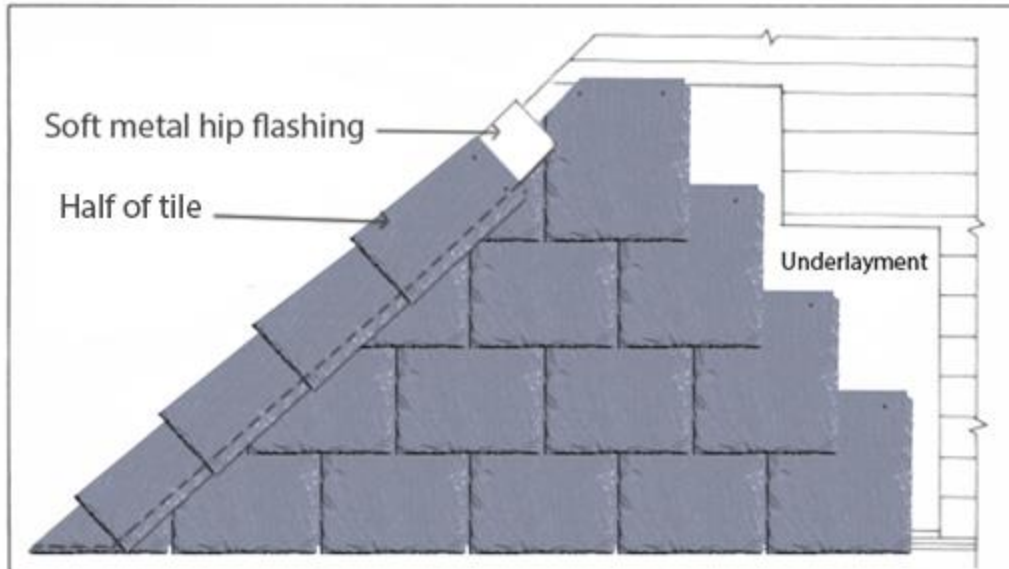


Example of a non-ventilated Saddle ridge

Boston Hip

We recommend to use a Boston hip application which will hide the rib structure of the slate tiles. Once all field tiles have been installed, place the non-corrosive soft metal hip flashing over the field tiles and hip. Hip flashing should extend minimum 3 inches from the center point on each side of the hip.

To make a hip starter you should cut the tile on an angle so that the tile is installed parallel to the roof eave. Place these two pieces together tight and nail them with two nails each. Next, the hip tile is installed parallel to the hip on each side of the hip. The hip tile is run up the hip and secured with 2 nails. They overlap the preceding hip tile and cover the nails.

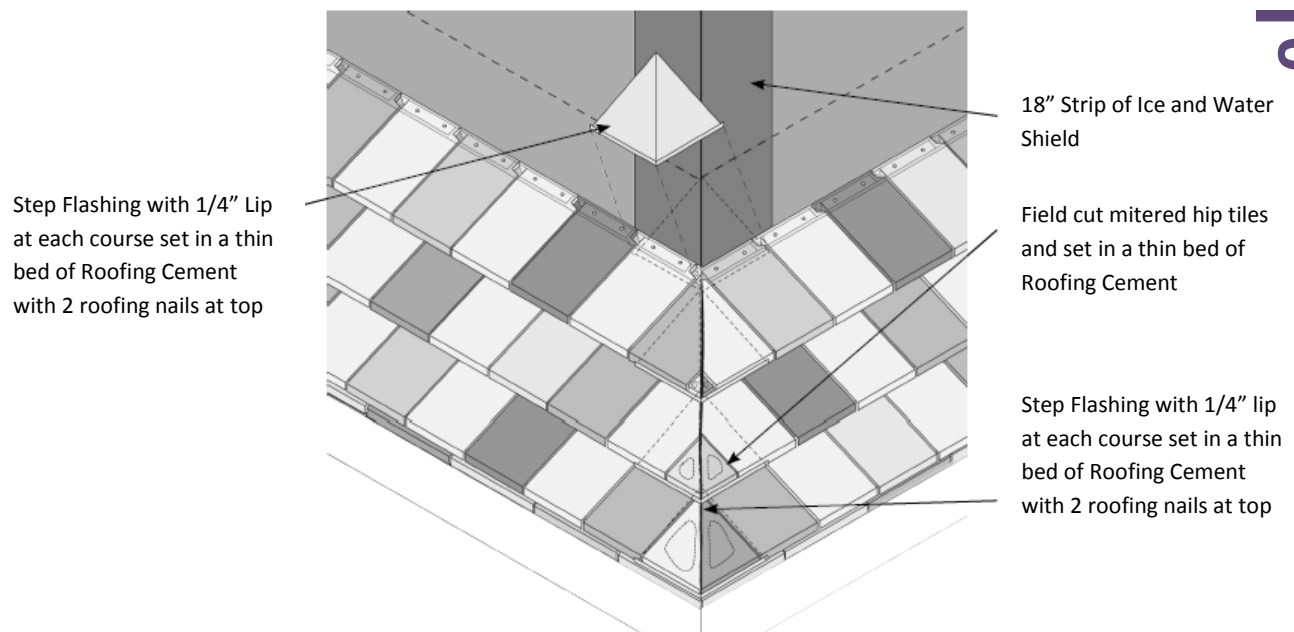


Example of a Boston hip



Mitered Hip

When it is applicable, you can use a mitered hip application. A flush mitered hip can be done by accurately miter-cutting the field tile and sealing the finished joint with an approved sealant, meeting the requirements of ASTM D-4586. Mitered hips require the use of copper or stainless steel step flashing on every course.



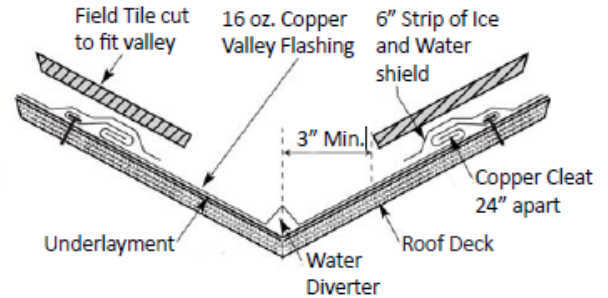
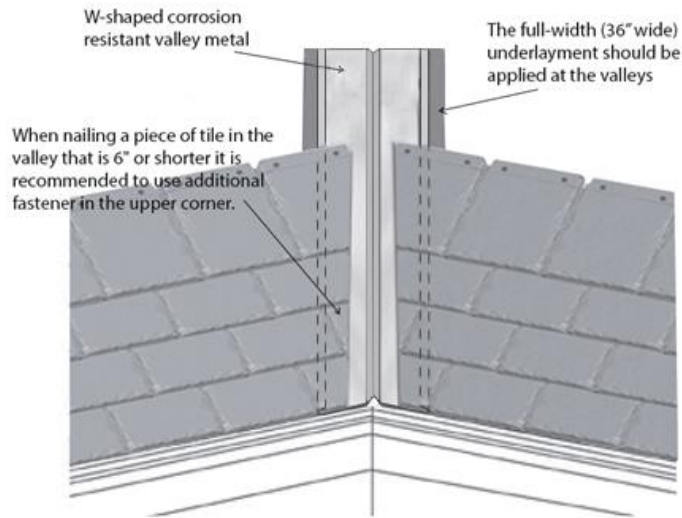
Example of a mitered hip

Valleys.

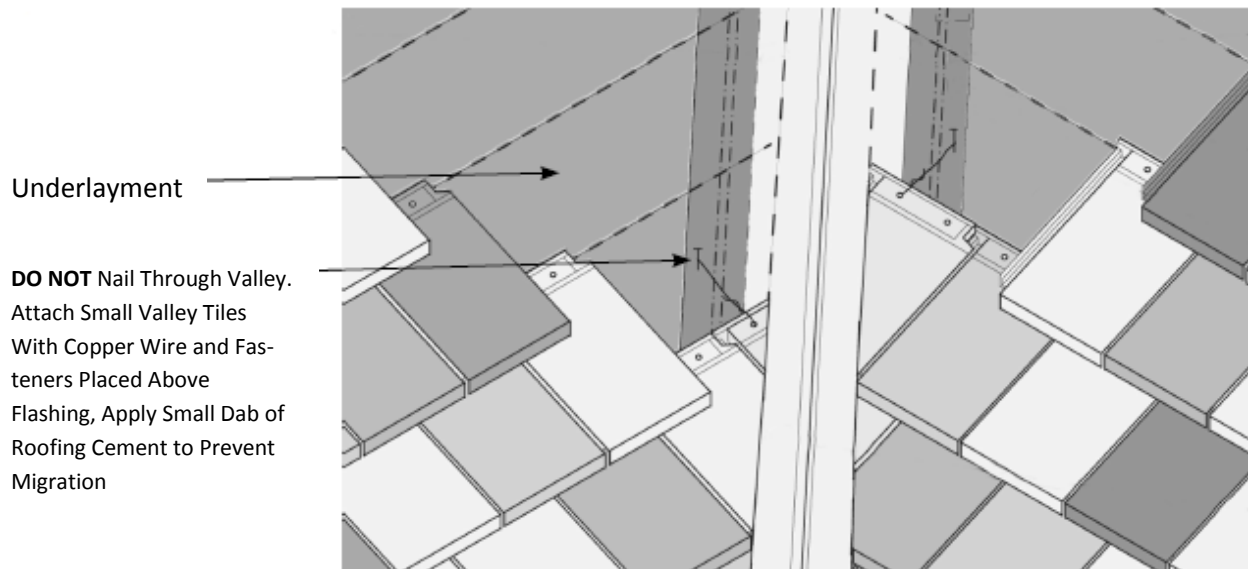
The full-width (36" wide) underlayment should be applied at the valleys. Fasteners should be kept back from the center of a valley by a minimum of 8 inches (200 mm). Valleys can be made of an open or closed design.

Open Valleys

Open valleys should be lined up with a sheet metal. A metal valley is constructed by installing lengths, typically 8 feet or 10 feet (2.4 m or 3 m) and minimum 18" wide of corrosion resistant metal through the valley. It is suggested that valley metal be formed with a "W"-shaped splash diverter or rib in the center (1" high).

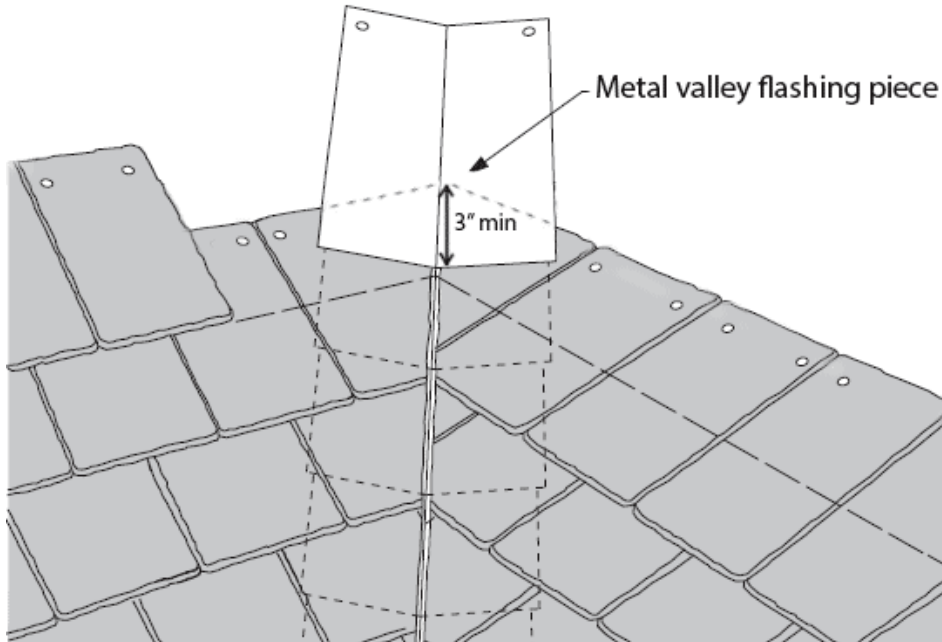


Example of an open valley



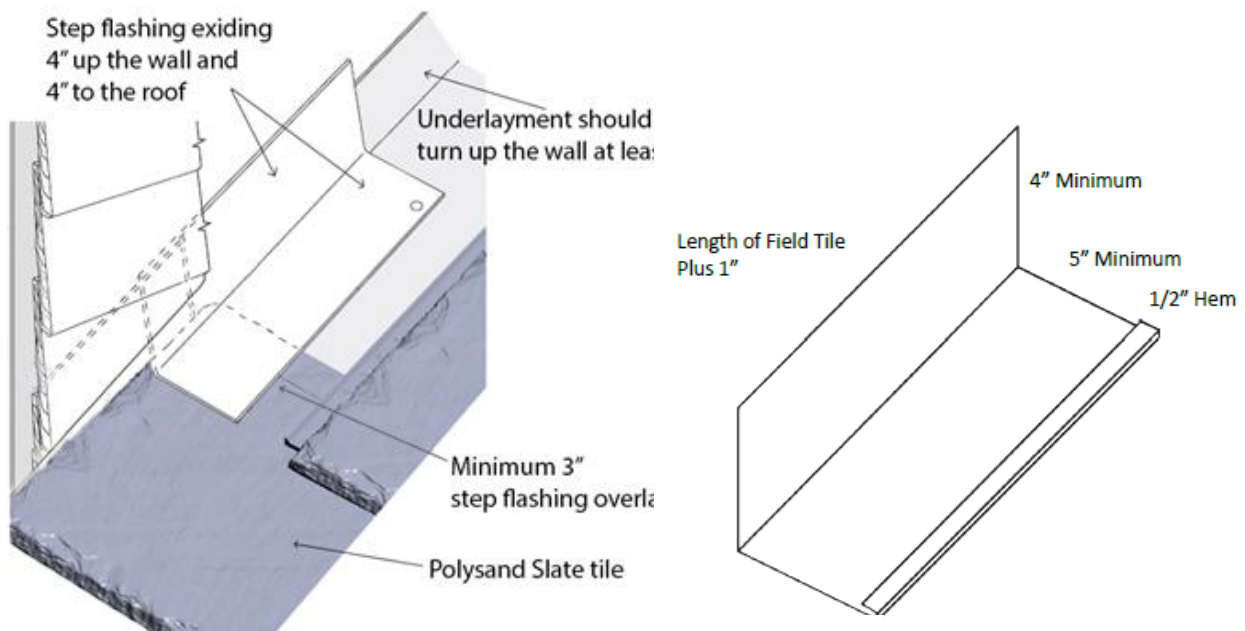
Closed Valleys.

In a closed valley, tile on both sides are cut at an angle parallel to the center line of the valley and are butted together, forming a mitered joint. The size of the metal sheets to which the slate will be attached should be 15 inches long to be laid out in such a way as to extend at least 12 inches above the top of the slate course that will be applied to it so that the sheet will be nailed directly to the roof deck. Each metal sheet should extend downslope 1/2 inches short of overlaying slate. Each metal sheet should be wide enough to extend at least 5 inches from the center of the valley to the roof surface.



Wall Flashing.

When a roof intersects with a vertical wall, step flashing is installed at the end of each course of slate. It is suggested to use metal flashing not less than 12 inches long and 8 inches wide. A roofing underlayment should turn up the wall at least 4".



Side Wall Step Flashing

Chimney and Vents.

Before metal flashing is applied, an asphalt-saturated felt underlayment should be applied to a roof deck around a chimney. In moderate and severe climates, before the underlayment is applied, an ice dam protection membrane should be installed around the base of a chimney.

Plumbing vent stacks are flashed using a metal vent pipe flashing, soft metal or a flexible rubber flashing and woven into the slate tiles courses at the top of the slope.

