10.8 Dormers

It is the designer or the roof contractor's responsibility to ascertain that the capacity of the valley profile chosen is adequate for the catchment area.

10.8.1 Detail A - Ridge to wall junction

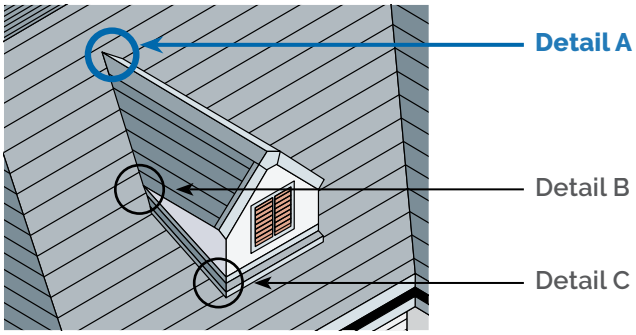


Figure 10.8.1.1

Box trim

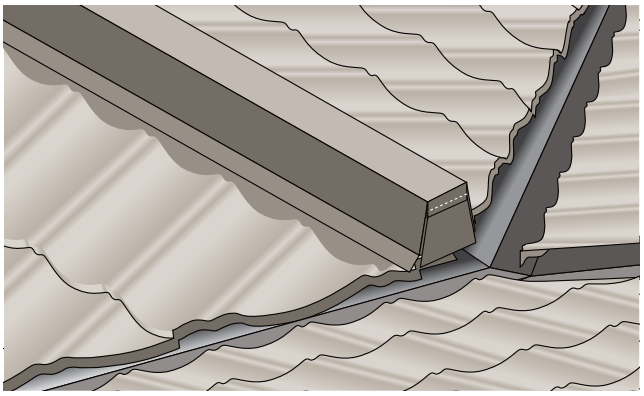
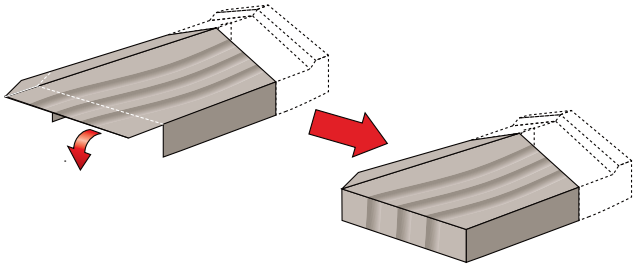


Figure 10.8.1.2

Angle trim



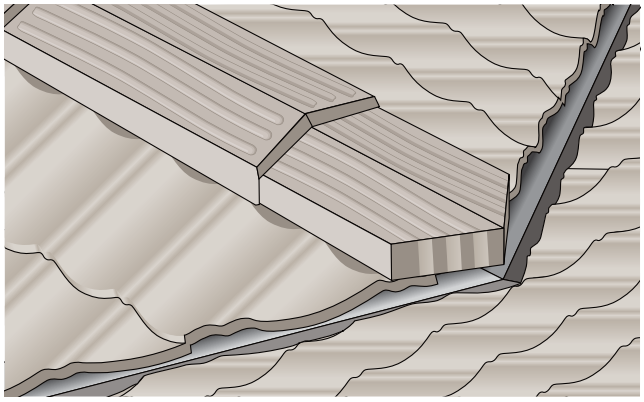
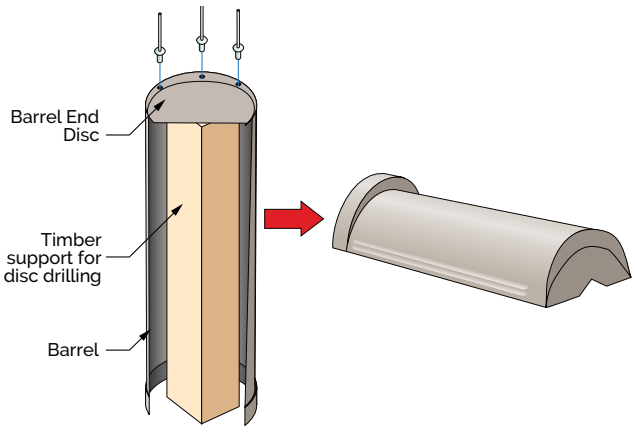


Figure 10.8.1.3

Barrel trim

Method 1



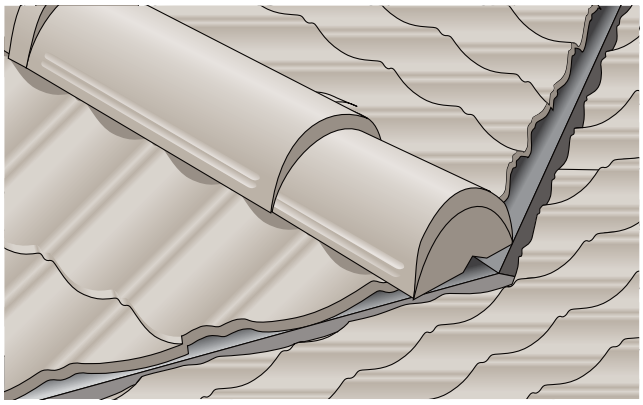
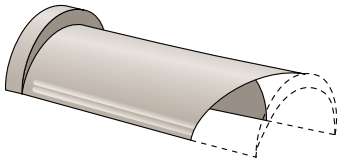


Figure 10.8.1.4

Method 2

Mitre cut and sealant under the barrel at the junction. By carrying through to tile the barrel will act as diverter.



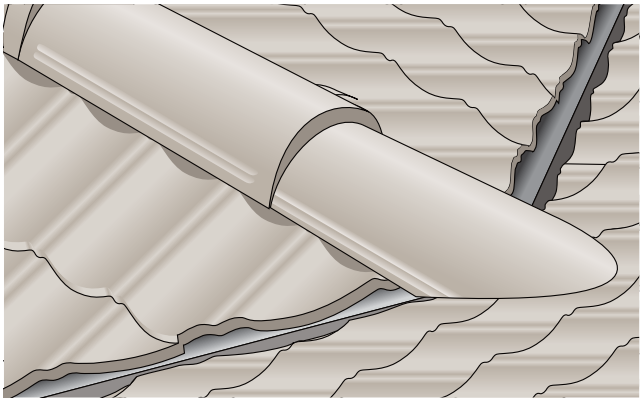


Figure 10.8.1.5

10.8.2 Detail B – Valley to roof

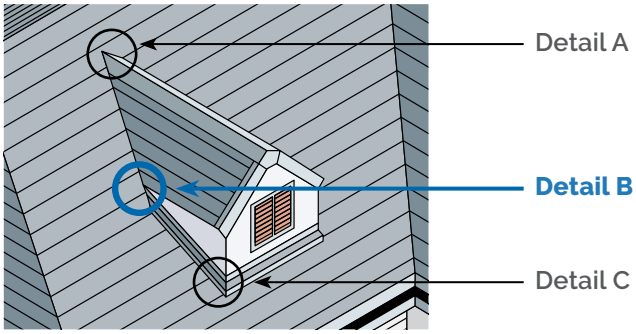


Figure 10.8.2.1

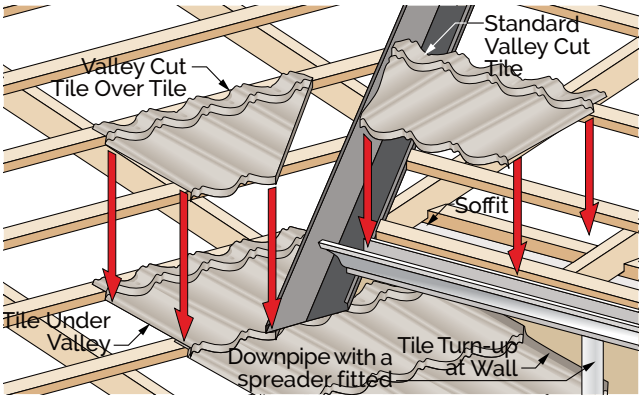


Figure 10.8.2.2

An extra valley cut tile is installed onto an existing panel so that the valley is concealed and held firmly in place.

Keep the valley cut tiles tight against the valley side walls so that the extra valley cut tiles do not impede the water flow.

Fold down drip edge to direct water flow onto the lower roof.

Tile turn-ups against wall should be inserted behind side flashings or apron flashings, which are omitted here for clarity (**Refer 9.2 Wall flashings for pitched roofs**).

10.8.3 Detail C – Side/Apron flashing junctions

Refer **10.9** and **10.9.1 External corner**.

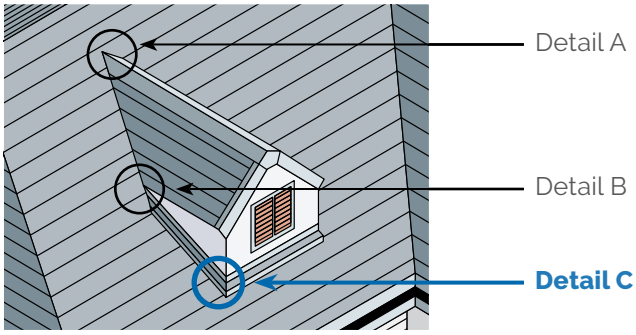


Figure 10.8.3.1

10.9 Side flashing junctions

10.9.1 External corner

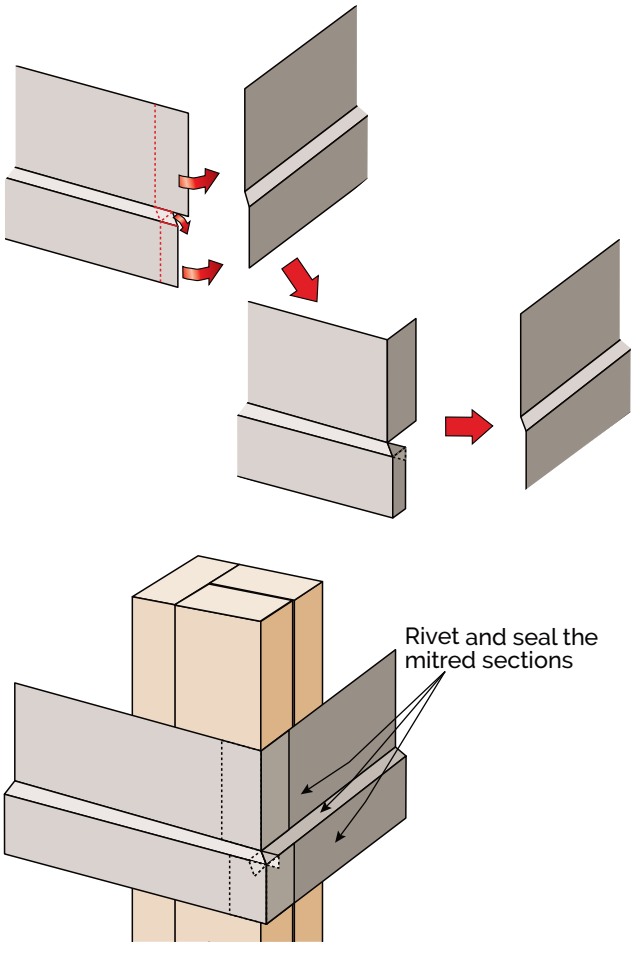
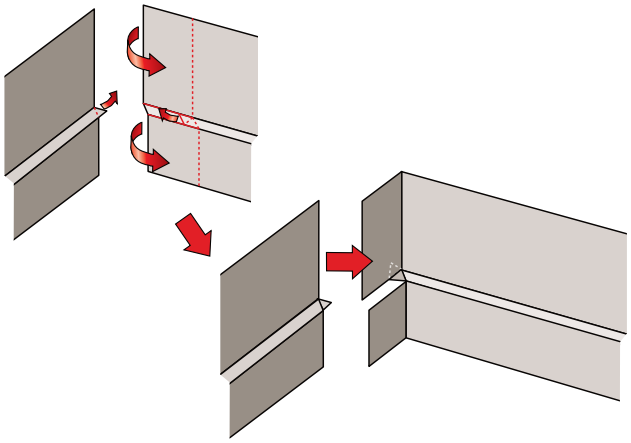


Figure 10.9.1.1

10.9.2 Internal corner



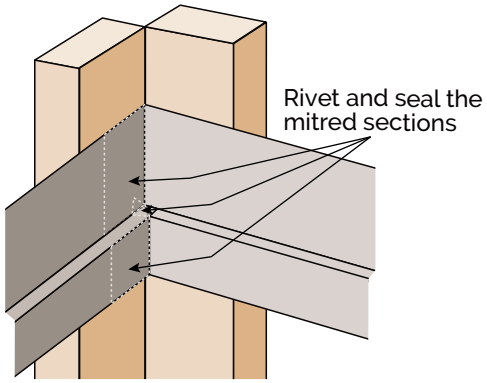


Figure 10.9.2.1

10.10 Side flashing and step flashing junction

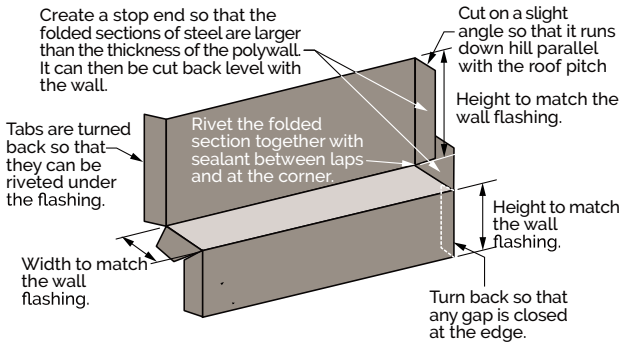


Figure 10.10.1

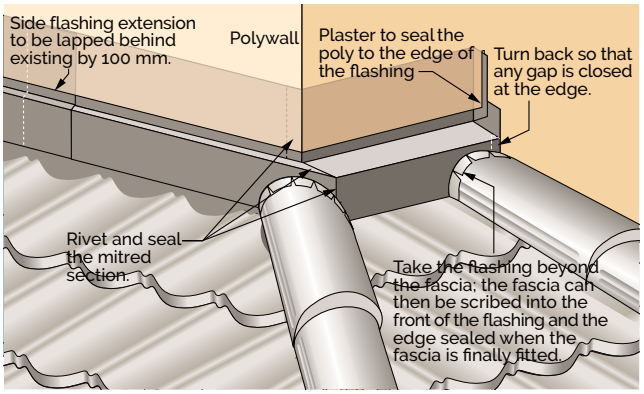


Figure 10.10.2

10.11 Corner tiles

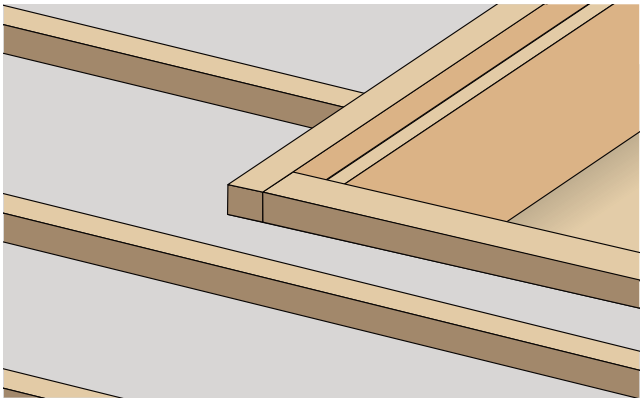
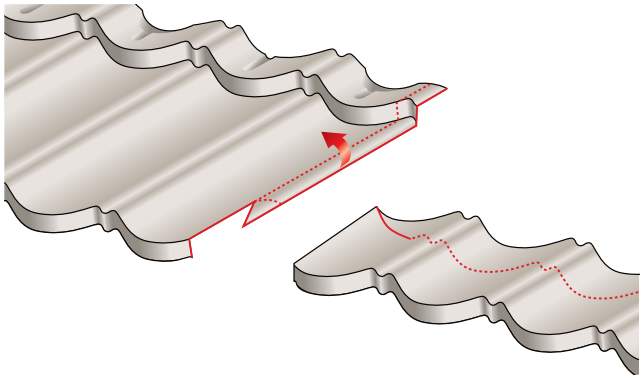
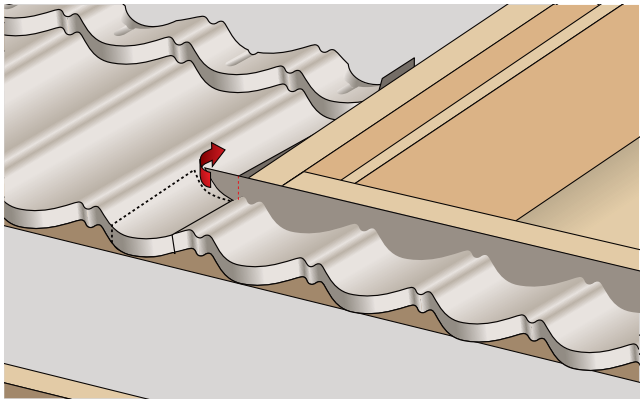


Figure 10.11.1

10.11.1 Installation





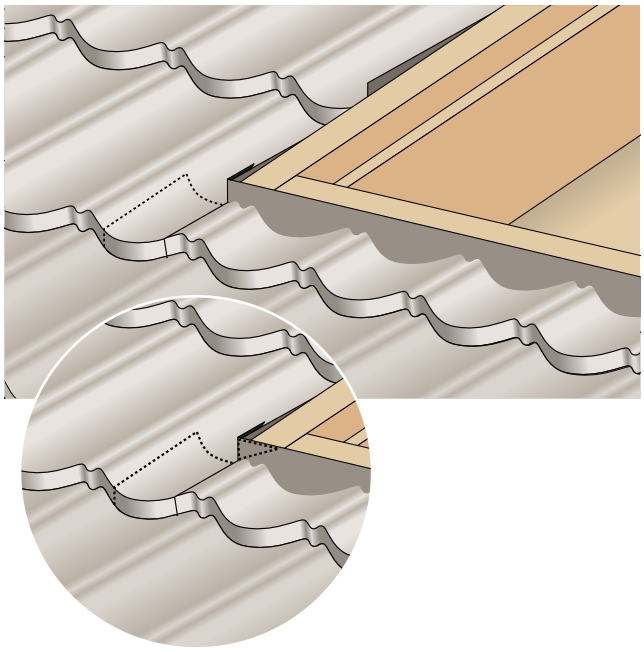


Figure 10.11.1.1

10.12 Gable end wall top junction

A stop end needs to be made to ensure water does not penetrate the wall cavity. A flat vertical surface that projects out further than the wall cladding is created to allow the wall cladding to be sealed either side of the kick out.

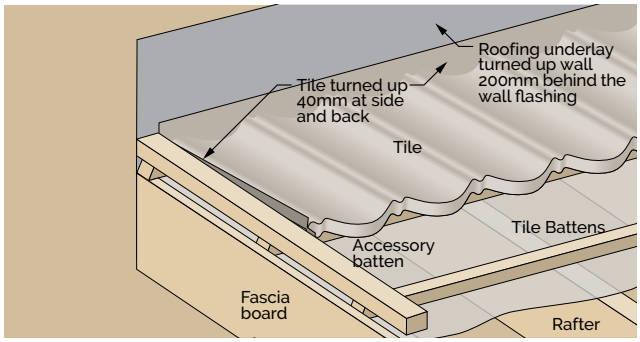


Figure 10.12.1

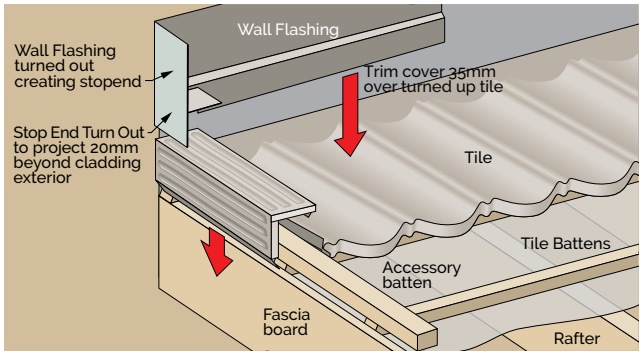


Figure 10.12.2

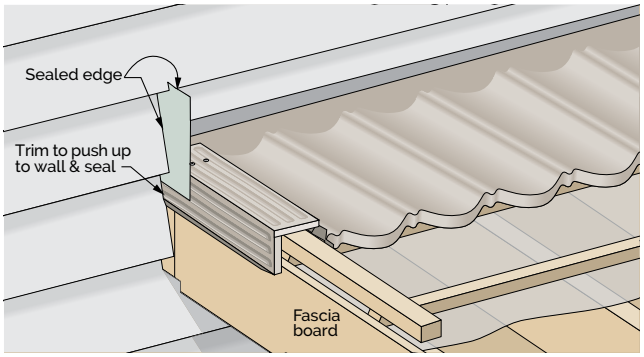
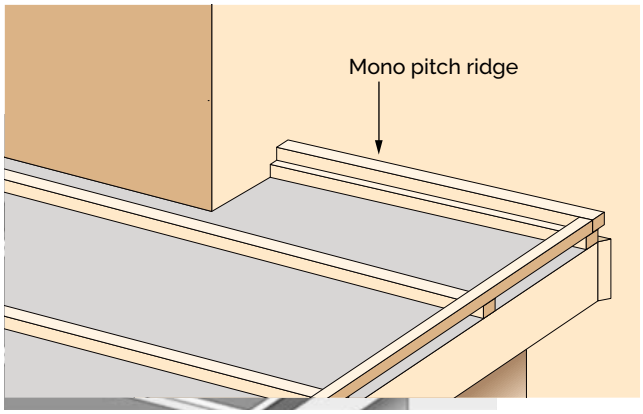
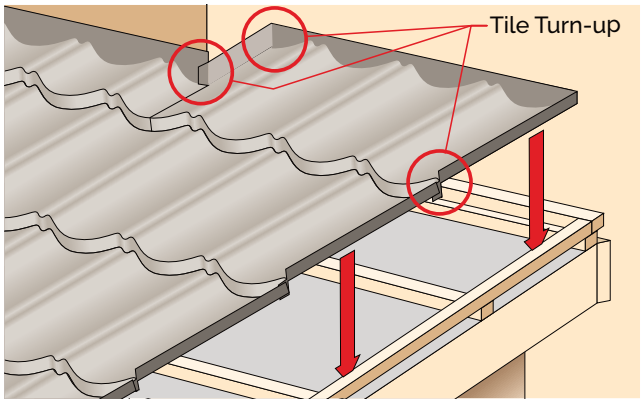


Figure 10.12.3

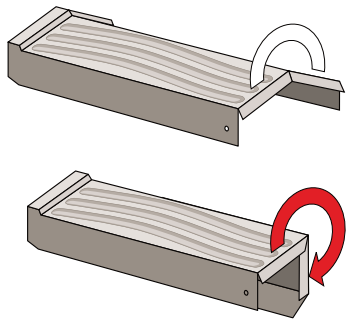
10.13 Mono pitch ridge & wall junction

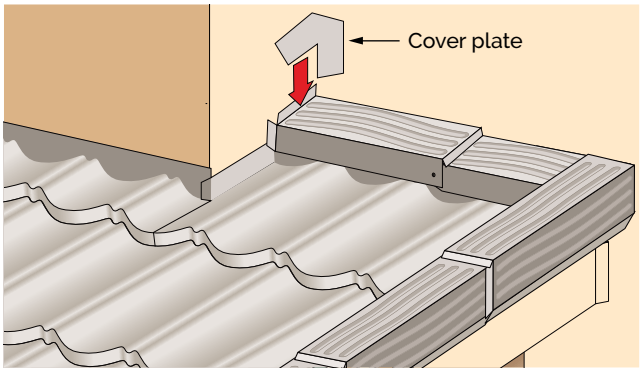


Install tile and accessory battens to the mono ridge and gable to suit ridge and gable accessories.



Install tiles with a 40mm turn up against the accessory battens and walls.





Prebend the accessories to match the angle of the mono pitch at the ridge and for the gable end. Where the accessory butts against the wall turn the ends up a minimum of 25 mm and cut a cover plate to flash over the bent up ends. Seal the cover plate over the ends to ensure weather security.

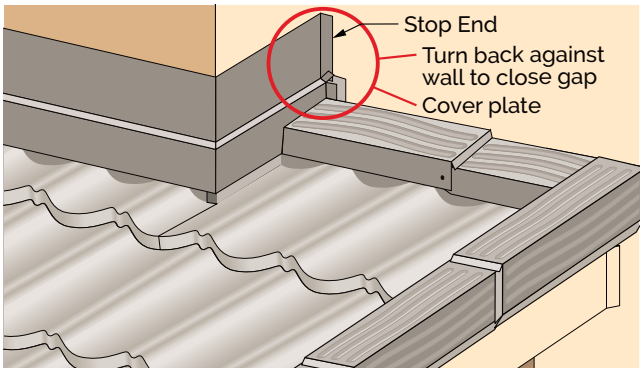
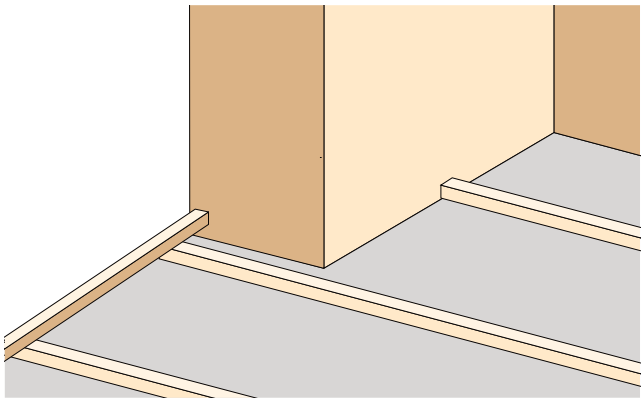


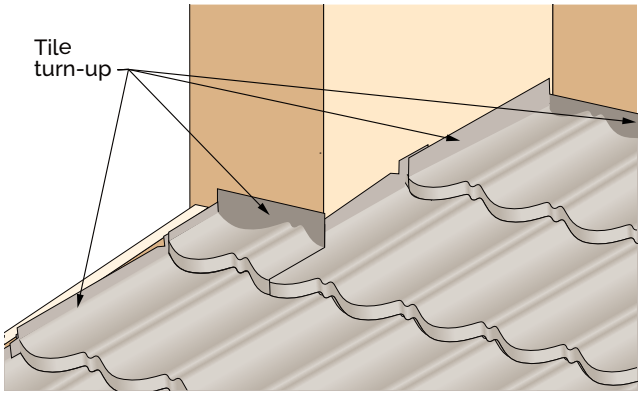
Figure 10.13.1

Scribe the side flashing over the accessory at the wall. Turn the outer section of the side flashing on the vertical side of the mono ridge in against the wall, closing the gap.

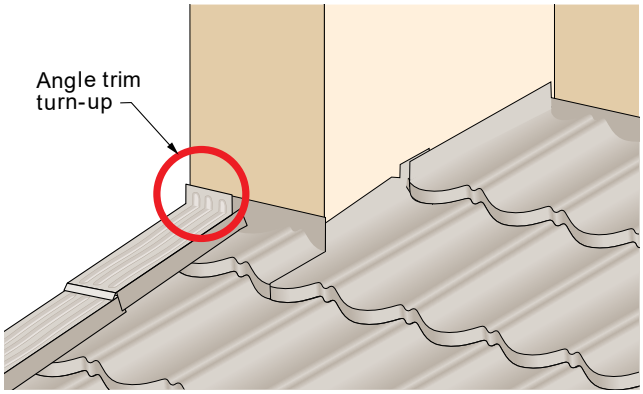
10.14 Gable end and wall junction



Install battens down the gable end.



Install tiles with a 40mm turn up against the gable end batten and walls.



Scribe the side flashing over the accessory at the wall. Turn the outer section of the side flashing out by 20 mm to create a stop end.

Wall wrap should lap over the side flashings.

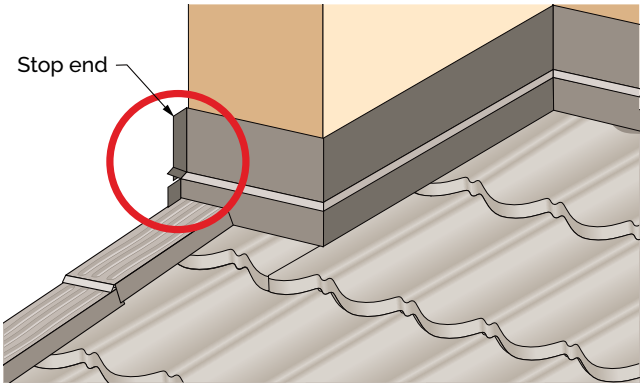
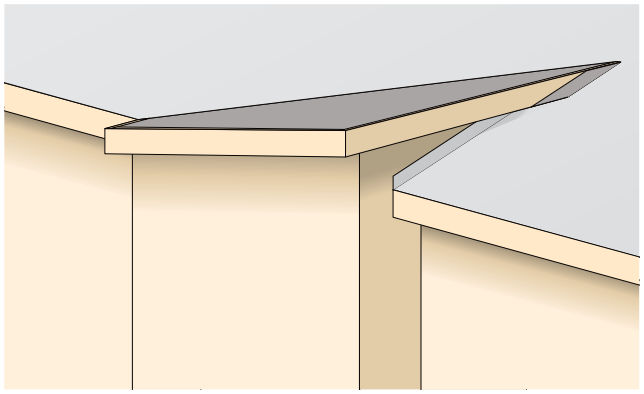
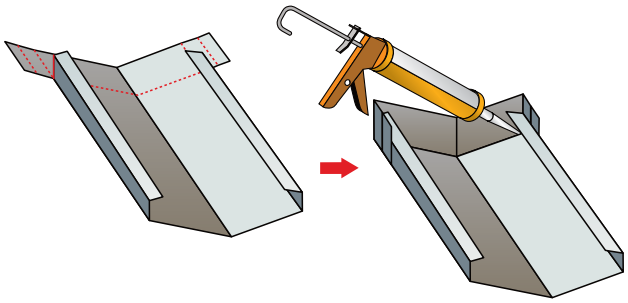


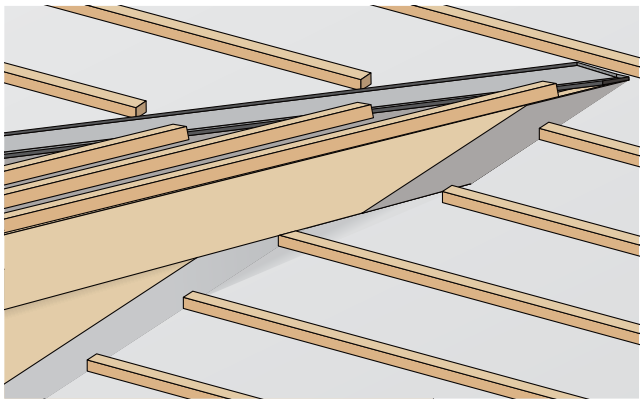
Figure 10.14.1

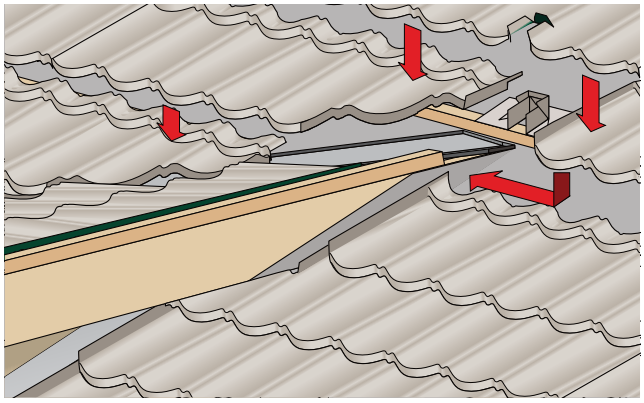
10.15 Ridge valley roof junction

Install roofing under battens over the rafters. Install the valley up to the highest point, turn up the top end of the valley sealing corner sections (refer **Figure 10.4.2** for more info).

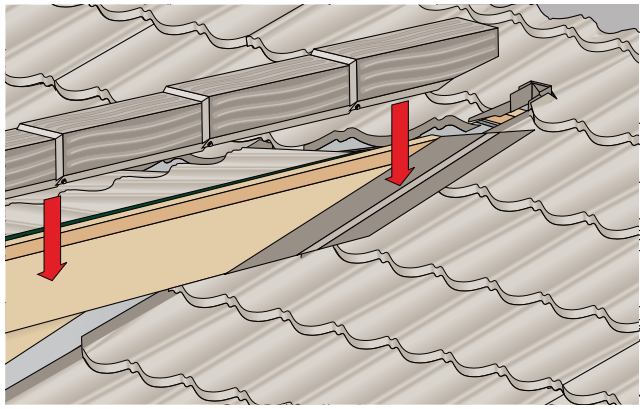




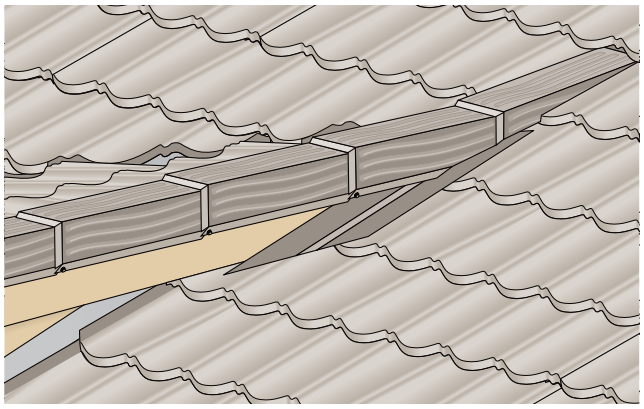




Install tiles into valley and up against the fascia board.



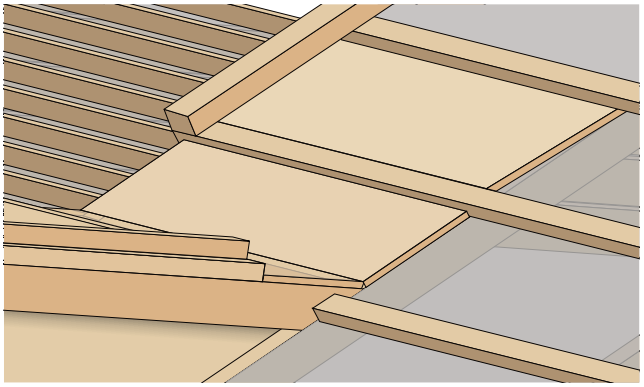
Install side flashing down fascia and accessory along the ridge.



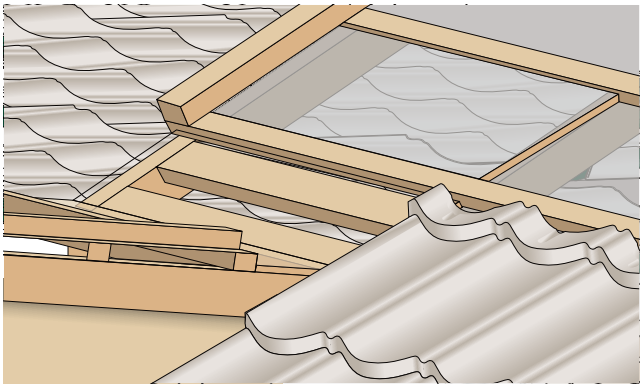
Install end accessory under nose of tile above the ridge and valley ensuring the junction is weather secure.

Figure 10.15.1

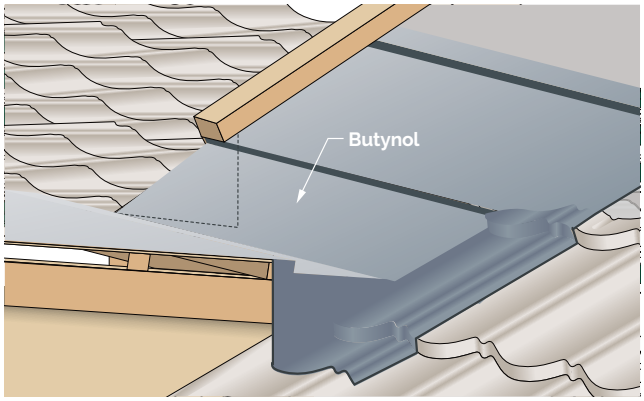
10.16 Butyl valley at roof cross over junction



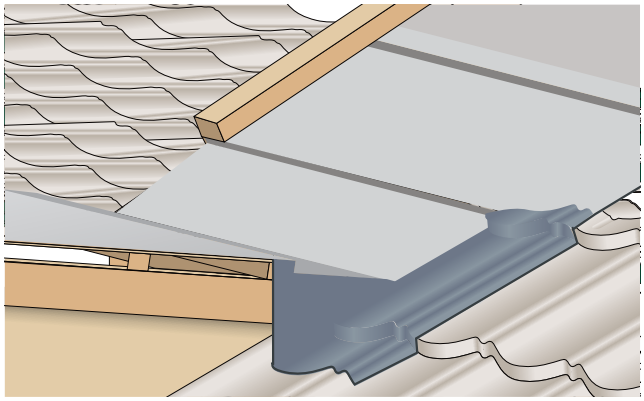
Install 12 mm plywood support boards for the valley. Install them between battens.

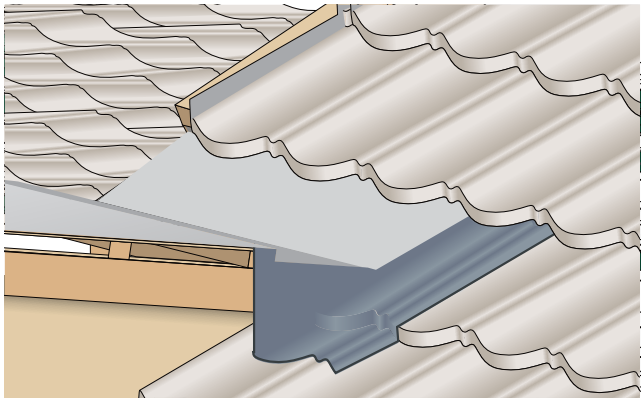


Lay tiles up to the valley.

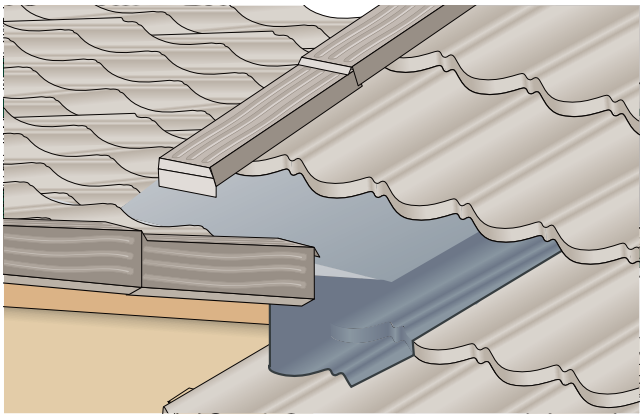


Install butyl valley over the plywood support and on to the tile surface. Install a layer of underlay over the butyl.





Install tiles with a 40 mm turn up against the gable end batten.



Lay tiles and accessories up the remaining section of the roof.

Figure 10.16.1

11.0 Penetrations

11.0 Penetrations

General

Tiles cut for penetrations through the roof must be provided with up-stands and over-flashed to provide drainage from above without restricting the water flow.

All penetration flashings upstands should have a 10 mm minimum clearance from the finished wall cladding of the penetration structure.

Where roof penetrations are required for large openings such as skylights and chimneys:

The edge of roofing penetrations over 200 mm wide should be supported in either direction with additional framing as shown in **Figure 11.1**

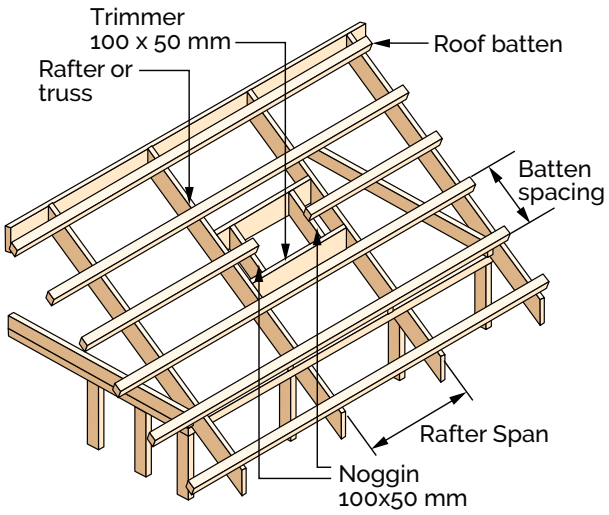


Figure 11.1

11.1 Chimneys

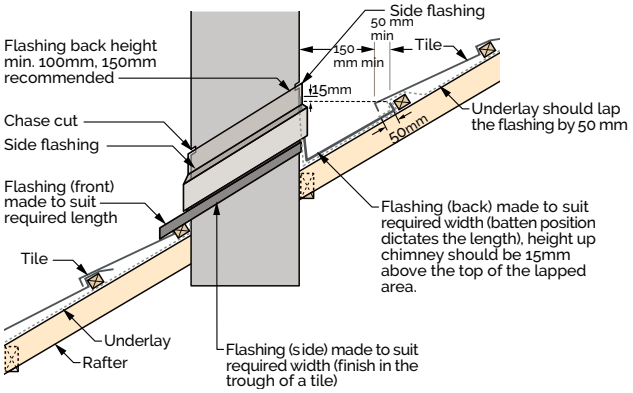


Figure 11.1.1 Elevation

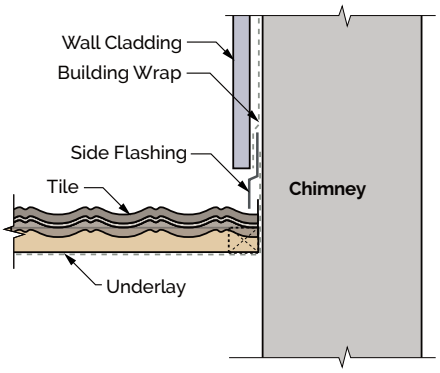


Figure 11.1.2 Section

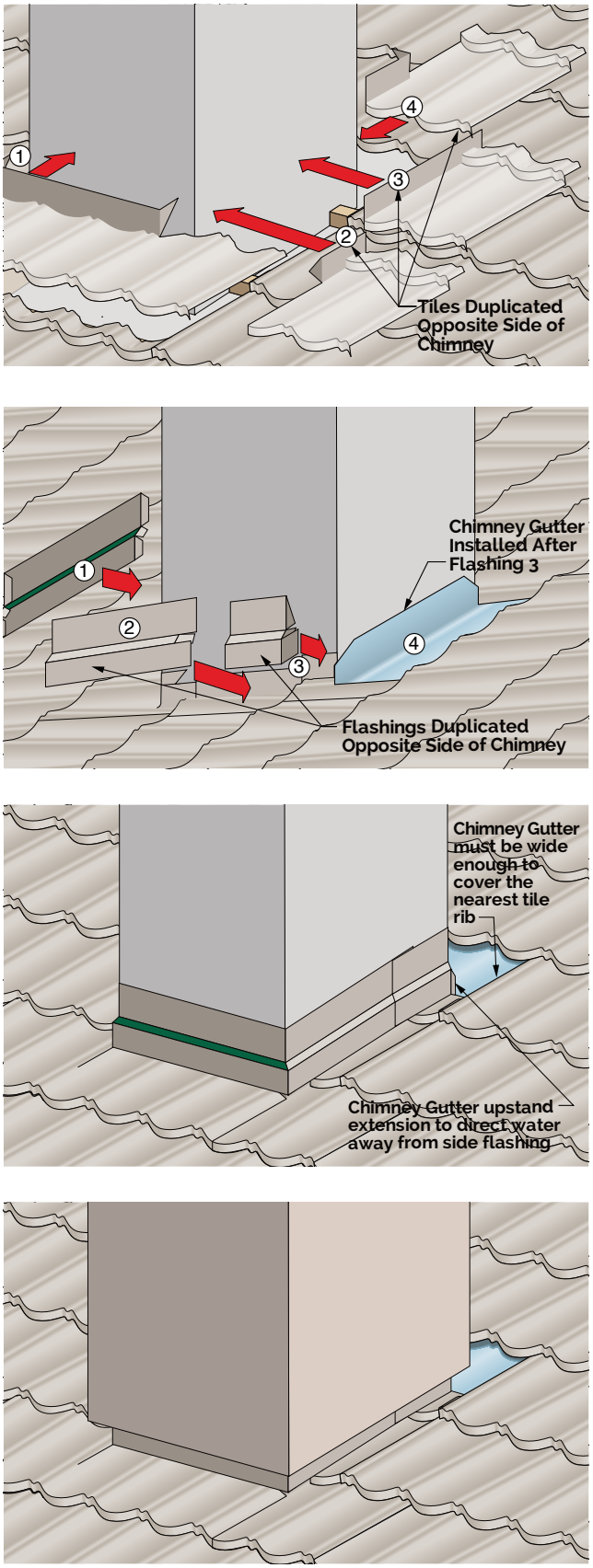


Figure 11.1.3 Installation

Where the use of sheet metal is not the most pragmatic method to flash a penetration, butyl rubber with a minimum thickness of 1.0 mm is the preferred alternative providing that they are compatible and comply with the design requirements and conditions outlined in ASTM D6134.

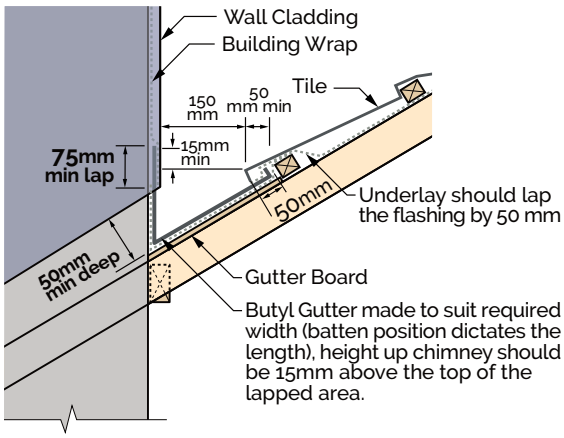


Figure 11.1.4 Elevation – Butyl gutter

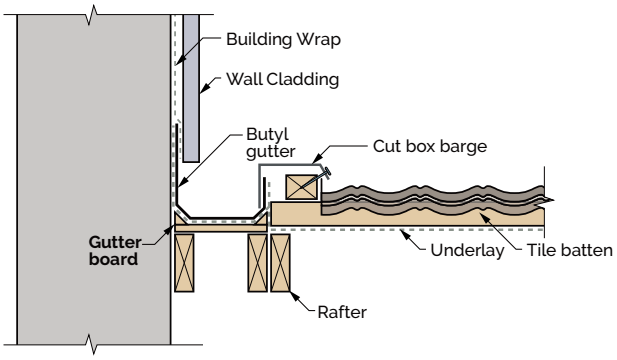


Figure 11.1.5 Section – Butyl gutter

Install the gutter board so that it hangs over the fascia board and into the gutter but avoid contact with the gutter. Glue the butyl rubber extension on the stop end.

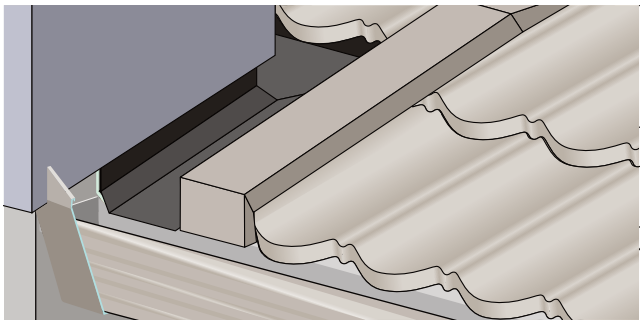


Figure 11.1.6 Chimney at eave – Butyl gutter

When the chimney construction is solid masonry or brickwork, and flashings cannot be installed under the wall cladding, a chase must be cut and an over flashing installed in the chase to provide weather protection.

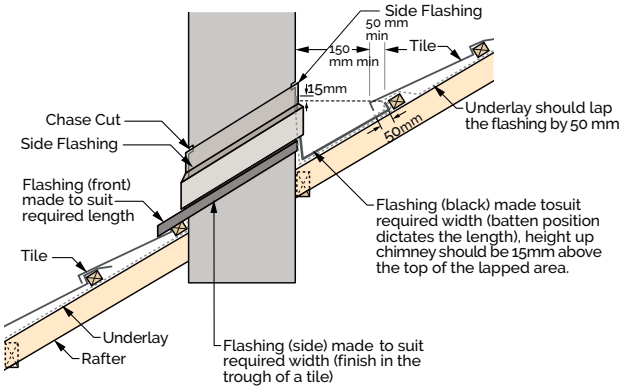


Figure 11.1.7 Elevation

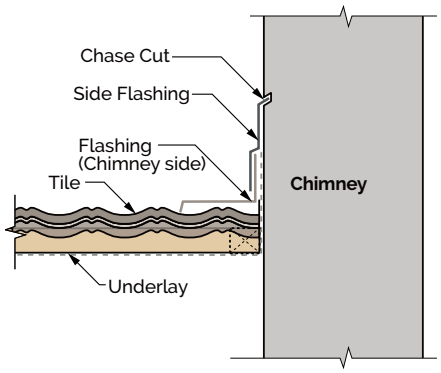


Figure 11.1.8 Section

11.2 Skylights

11.2.1 Velux skylights

An extra trimmer at both sides of the frame and two extra trimmers above the frame are installed to provide support to the tile battens. The trimmers are 40 x 50 mm (h x w).

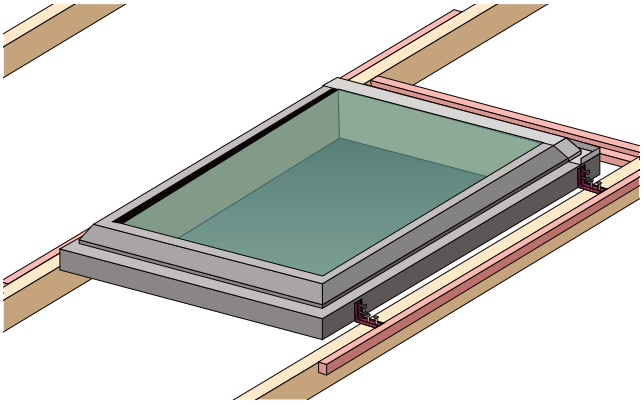


Figure 11.2.2.1 Frame support

Dress roofing underlay up around all four sides of the frame. Roofing underlay at bottom frame must not exceed groove.

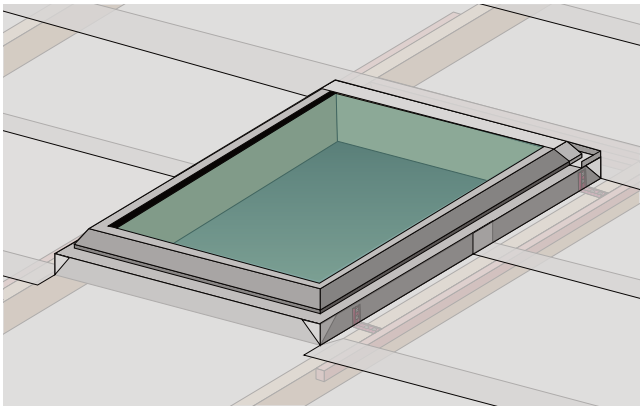


Figure 11.2.2.2 Underlay installation

Cut a groove (25 mm deep and 140 wide) in the tile battens at both sides and above the frame.

Install the tile batten below the frame so that the distance from its front edge to the bottom frame must be 140 mm.

Position an extra batten 30 mm below the frame to support the bottom flashing. The supporting batten to be positioned at a level 10 mm lower than that of remaining battens.

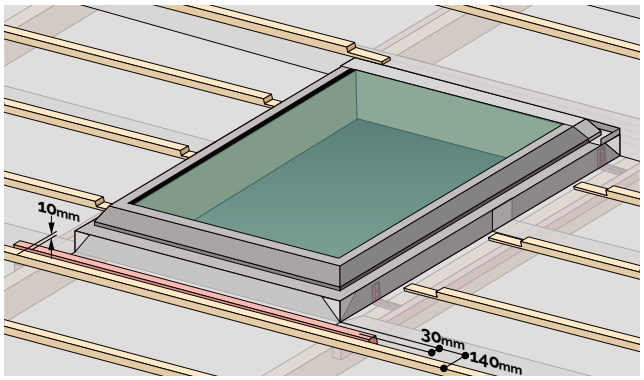


Figure 11.2.2.3 Batten set up

Install bottom, side and top flashings supplied by VELUX following VELUX Skylight Installation Instructions.

Note: NEVER nail/fasten the VELUX bottom flashing through the top of the tiles.

For VELUX Skylight Installation Instructions check on:

http://www.velux.co.nz/professionals/installation-instructions

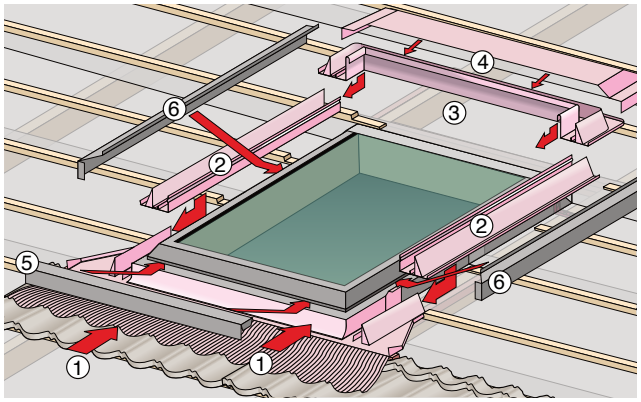


Figure 11.2.2.4 Flashings installation

11.3 Sky tube base installation

Mark the centre of hole to be cut in the roof based on the location of hole that will be cut in the ceiling below.

Mark where the hole in the roof is to be cut using chalk.

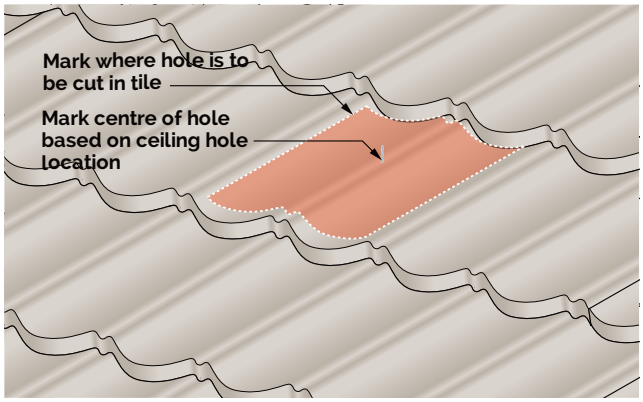


Figure 11.3.1

Position base above the hole and mark the side of the base where it is to be cut to suit the tile profile.

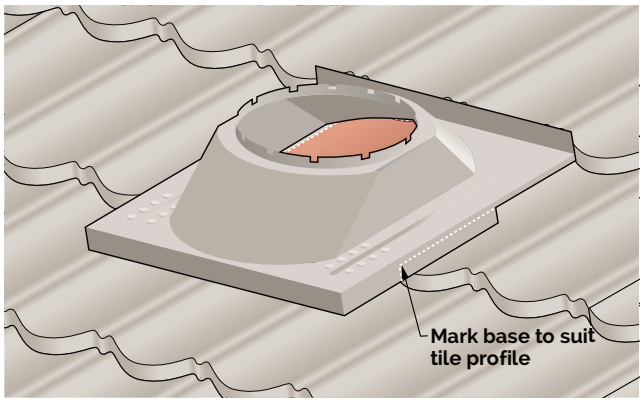


Figure 11.3.2

Remove the nails of the tile above the hole so that you can lift the nose of the tile.

Cut the hole with hacking knife or snips along pre-marked chalk line (Refer **Figure 11.3.1**).

Snip the hole ends 15 mm wider (horizontal) than the hole in preparation for turning back the sides of the hole. Cut roofing underlay so it can be dressed up around the four sides of the hole.

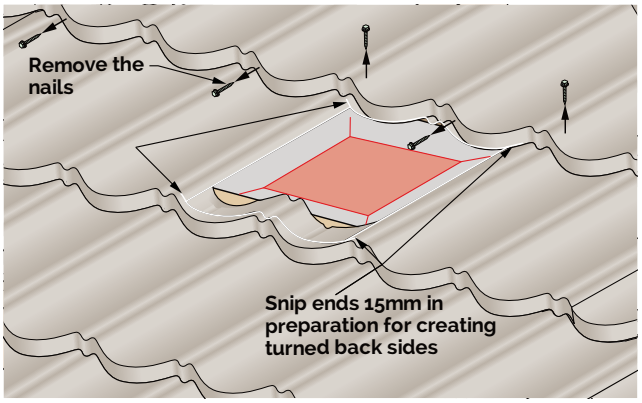


Figure 11.3.3

Turn the sides of the hole over (almost 180˚) 15 mm using hand benders.

This provides weather security down the sides of the hole.

Cut the back out of the batten as shown in **Figure 11.3.4** so that the gap between the batten above and the cut batten is large enough to allow the solar tube to fit between the battens, usually cutting the batten back to the back of the tile is sufficient. **DO NOT** fully remove the batten as support is required for the tile and the base.

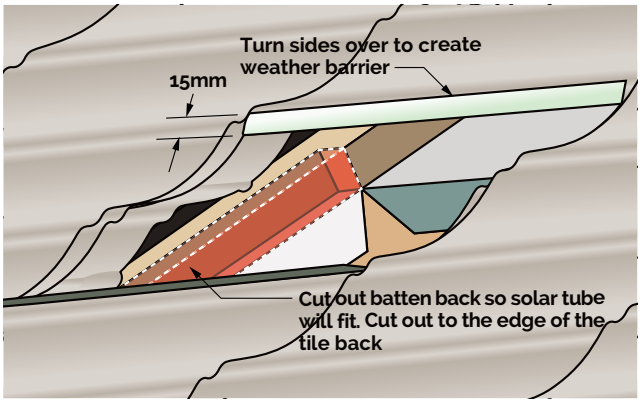


Figure 11.3.4

Lift up the tile above (and the remaining back of the cut tile) and turn up and staple the roofing underlay to the front face of the batten above.

Fold up and staple the roofing underlay to the back of the batten below.

Tape the roofing underlay to the two turned-over sides.

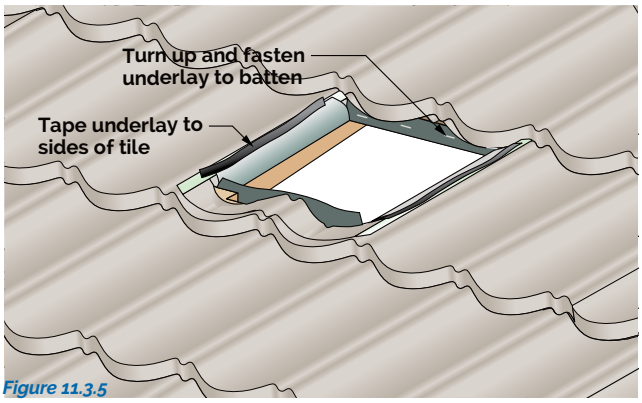


Figure 11.3.5

Seal the back edges of the folded sides using a suitable sealant.

Cut the base where it was marked earlier.

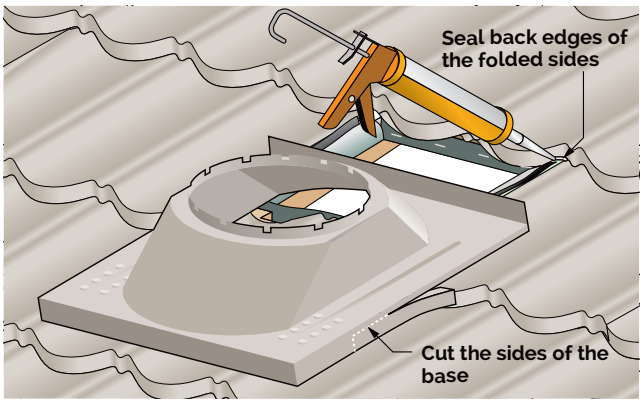


Figure 11.3.6

Place the base so that the nose of the tile below sits over the back turn up of the base. Refasten the tiles above; pre-drill if nailing through base, press the tile nose down onto the base as tight as possible whilst nailing.

Tek screw (supplied) the base to the tile batten. Pre-drill the hole in the base, the tek screw will cut through the tile surface and in to the tile batten.

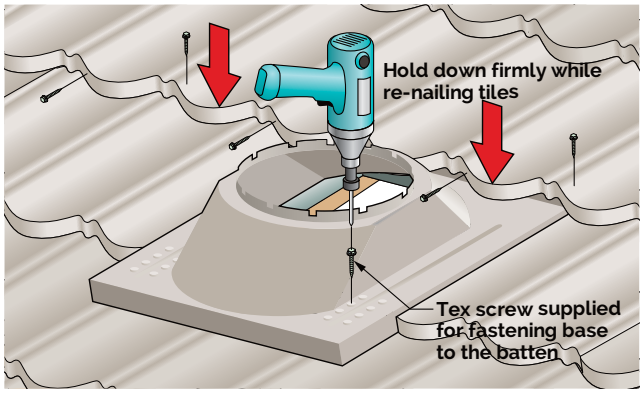


Figure 11.3.7

11.4 Pipe vents

Measure and cut the tile when it intersects with a vent pipe as per **Figure 11.4.1** and **Figure 11.4.2**.

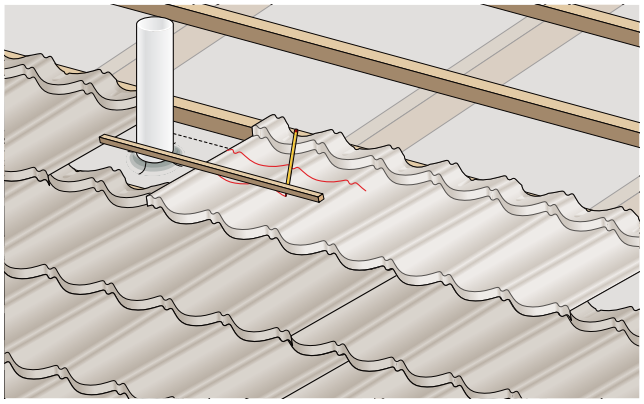


Figure 11.4.1

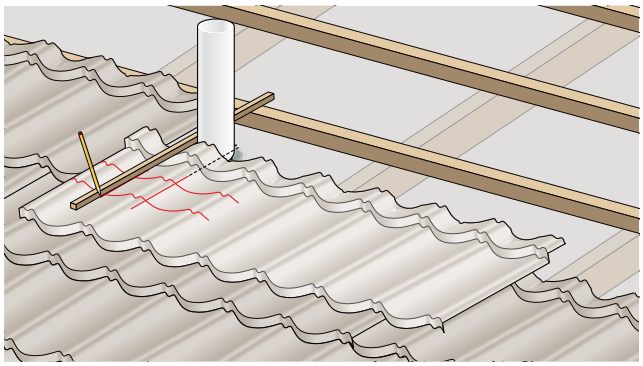


Figure 11.4.2

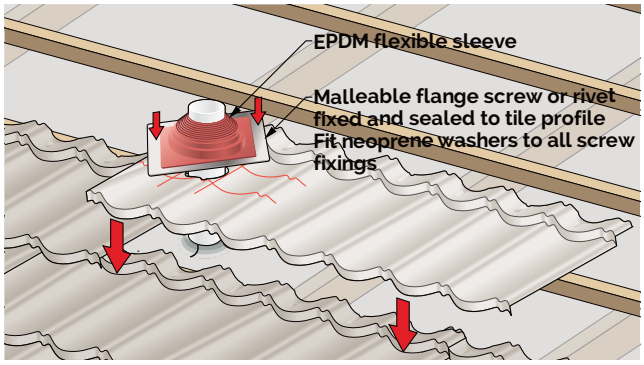


Figure 11.4.3

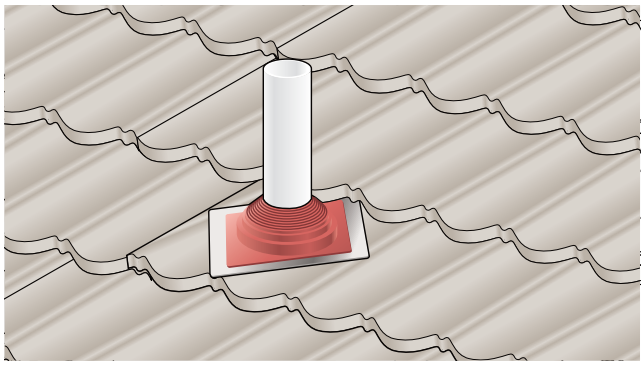


Figure 11.4.4

Pipe penetration should be flashed using an EPDM aquaseal pipe flashing or a butyl rubber pipe flashing as shown in **Figure 11.4.3**.

Hole cut out through the rib if possible and square base must be fixed diagonally to minimise holding of discharge water. Gerard Roofs recommends the MS sealant or Neutral Silicone to use with EPDM based through-roof fittings.

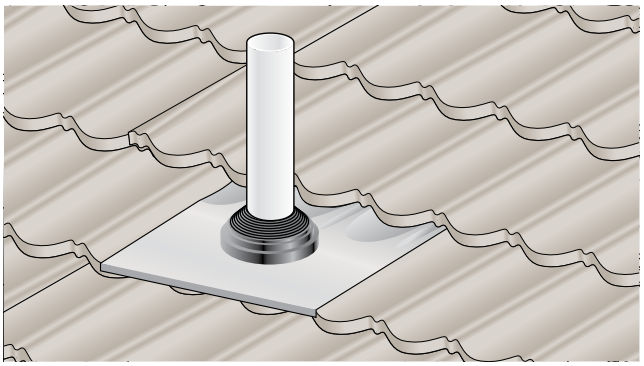


Figure 11.4.5

11.5 Ventilation

Gerard Roofs have been supplying passive flow roof vents for Gerard Roof tile profiles for over 30 years.

These profiles are still available however a new range from our European plant is available for use.

A passive/ducted vent LV200 and Sanitary Vents are available in a range of profiles.

11.5.1 LV200

Matched to each of the tile profiles it is easily installed in to the roof at the correct place.

This low profile 20,000 mm² vent provides a vent for both passive and mechanically vented spaces.

This vent provides a 160 mm diameter vent and can be provided with a reducer down to 80 mm so it can be connected up as a ducted vent for bathroom, kitchen or laundry extraction systems. It can also be used as a passive vent to allow moist or hot air from the space below the roof.

Installation

Determine the location of the vent, position the vent and remove and cut a circular hole in the roofing underlay for connection of the extraction system or for passive ventilation.

The vent tiles are overlapped by the above and side tiles, this interlocks them in place. Fasteners installed next to the laps but not through the vents complete the installation.

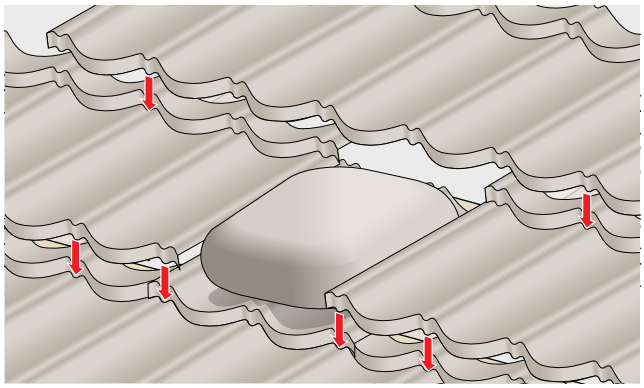


Figure 11.5.1.1

11.5.2 Sanitary vent

These vents are provided with a flexible duct pipe that can be connected to sanitary pipes or a ducted extraction system.

Installation

Check with the plumber where the vents are to be installed. Connect the flexible pipe to the base of the vent, cut a round hole in the roofing underlay and feed the flexi pipe through.

The sanitation vent tiles are overlapped by the above and side tiles, this interlocks them in place. Fasteners installed next to the laps but not through the vents bases complete the installation.

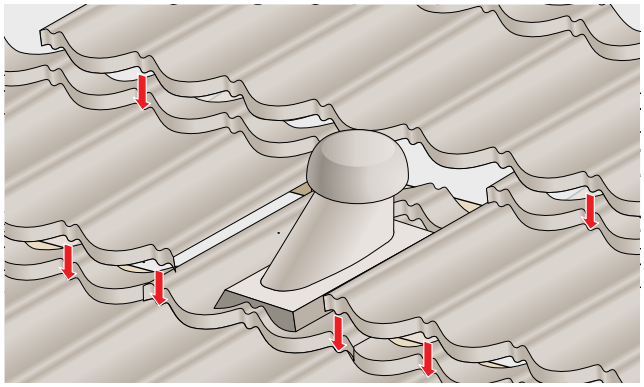


Figure 11.5.2.1

11.6 Solar brackets

Gerard Roofs solar brackets. These may be used for PV or Solar hot water systems.

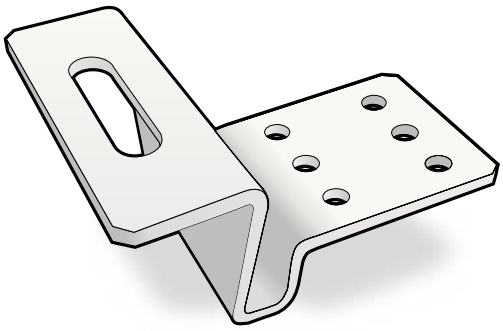


Figure 11.6.1 Senator solar bracket

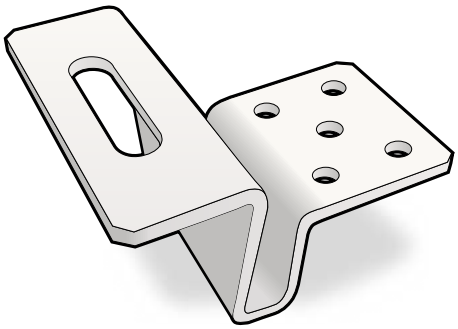


Figure 11.6.2 HMCC solar bracket

11.6.1 Before installation

Consult local authorities for regulations and solar panel manufacturers for installation and maintenance instructions.

11.6.2 Solar bracket installation

Solar brackets are best installed at the time a new roof is being installed. This ensures that every batten rafter junction is screw fastened in the solar area and that the brackets are installed in the best location/position.

Solar brackets are fastened with 2 x 80 mm 10 g screws or fixing equivalent to 2.4 kN.

When installing solar brackets on a Shake, Senator, Rockport, Oberon, Aspen or Alpine profile ensure that the brackets are screw fastened directly over a rafter.

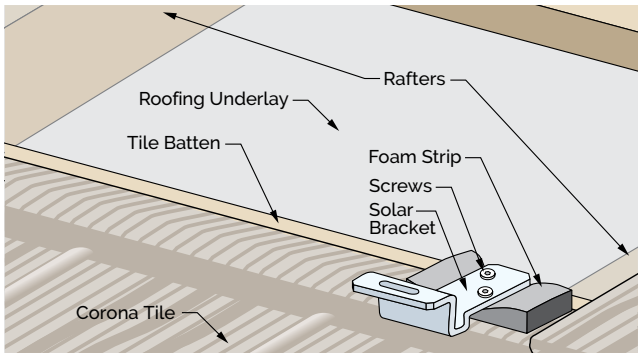


Figure 11.6.2.1 2 x 80 mm 10g screws through batten into rafter

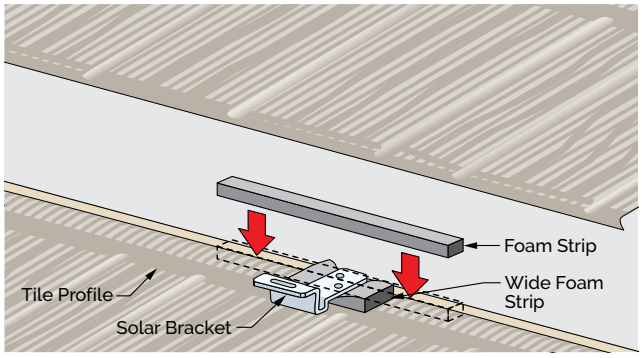


Figure 11.6.2.2 Solar brackets weather security strips

Note: Solar brackets are not covered by BRANZ Appraisal no. 1096.

When a Bond, Milano or Classic profile is used the brackets are always to be installed within 100 mm of a rafter. The rafter junction must always be screw fastened.

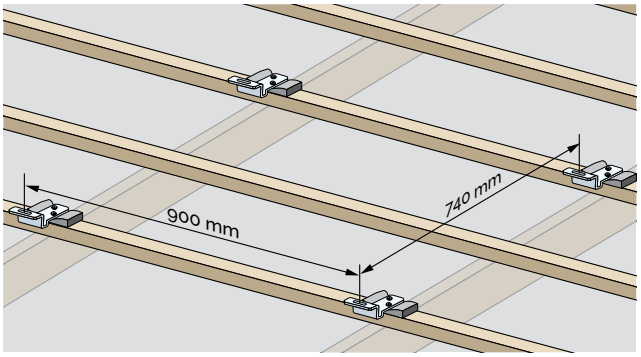


Figure 11.6.2.3 2 x 80 mm 10g screws through batten into rafter

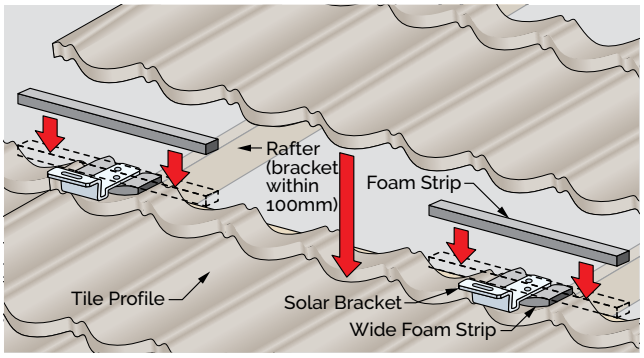


Figure 11.6.2.4 Solar bracket weather security strips

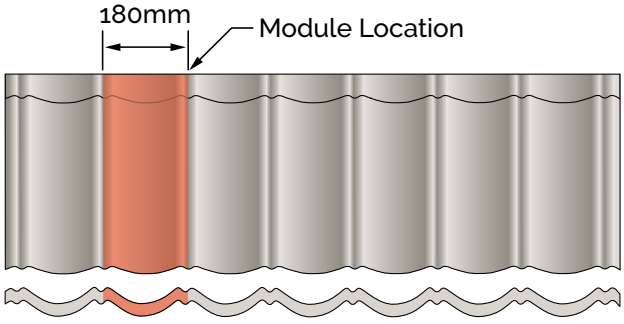


Figure 11.6.2.5 Module position

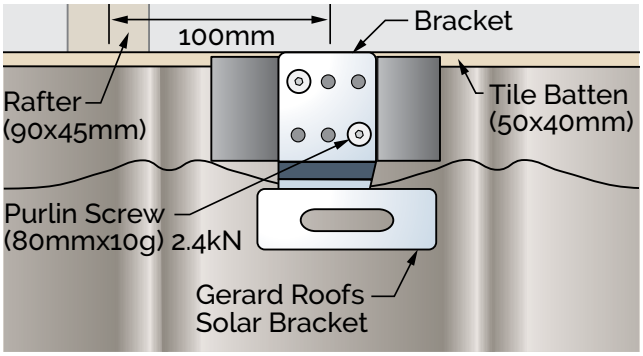


Figure 11.6.2.6 Solar bracket installation

The spacing between the brackets should not exceed 900 mm horizontally. Brackets installed up the roof should be spaced as per, **Figure 11.6.2.7**.

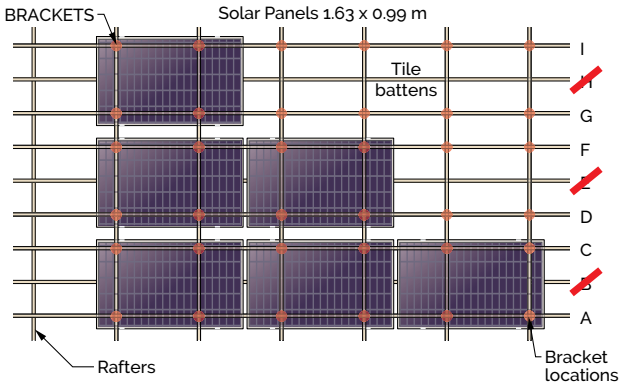


Figure 11.6.2.7 Solar bracket positions

Consult solar panel manufacturer's installer/supplier guide regarding pane sizes to be used and widths of panels. Ask them to provide a plan of bracket locations. Rails are connected to the solar brackets, these will support solar panels. It's important that the brackets are located in the correct place.

Retrofitting of solar brackets is possible however this involves removing tile fasteners from tiles where the brackets are to be installed. The tile nose is lifted and the brackets fastened in place.

Note: All batten rafter junctions are to also be fastened with a screw or 2.4 kN capacity fastener.

Note: Solar brackets are not covered by BRANZ Appraisal no. 1096.

11.6.3 Walking on tiles

Soft soled shoes capable of providing secure footing should be worn.

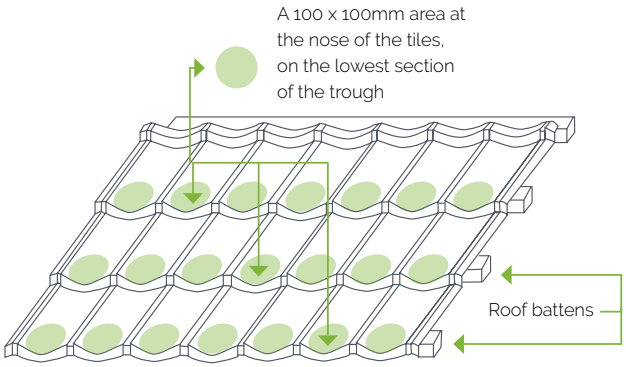
Extreme care is required when walking on wet tiles and this should be avoided if possible. Satin finish tiles can be very slippery and should NOT be worked on while wet.

The surface coating of the textured finish tiles may be damaged when they are wet, and damage increases as the pitch increases.

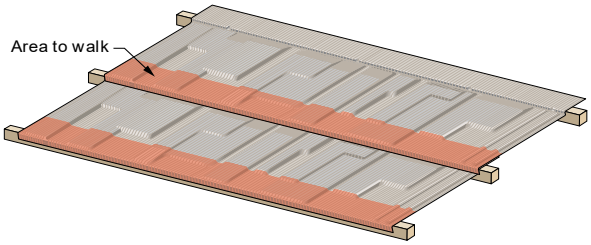
When walking on the tiles weight must be concentrated directly above the batten for Shake, Senator, Rockport, Oberon, Aspen and Alpine and in the pan (lower section) of tiles above the batten.

Tile damage will occur if installer weight is applied to tile ridges or mid sections of Shake, Senator, Rockport, Oberon, Aspen and Alpine.

For Bond, Milano and Classic



For Shake, Senator, Rockport, Oberon and Alpine



11.6.4 Solar panel installation

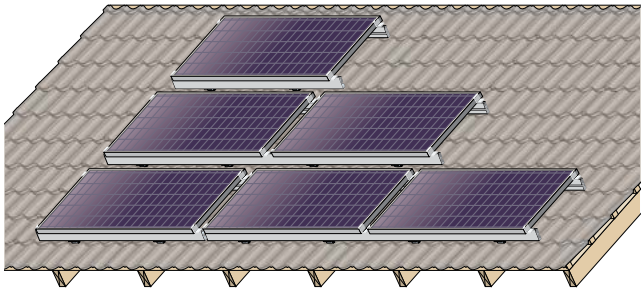


Figure 11.6.4.1

Rail spacing's are to suit each panel manufacturer's recommendations. They should not be spaced more than 0.9 m apart.

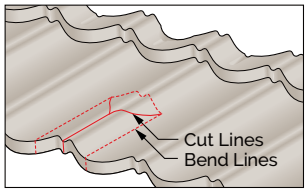
Photovoltaic (PV) solar panels

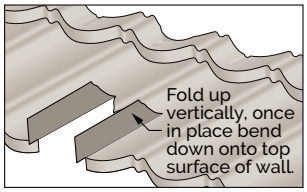
The final step is to run the conduit to connect the panels to the inverter. The electricity wiring enters the internal from the metal roof which must be properly flashed.

Solar water heating panels

The relief valve drains and water pipes which enter the internal from the metal roof must be properly flashed. The heated water pipes must be properly insulated to last for no less than 5 years.

11.7 Parapets





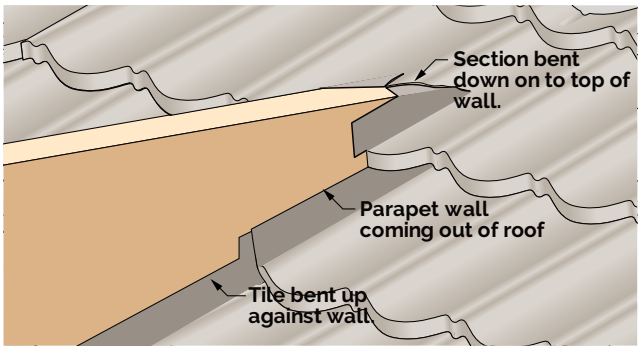


Figure 11.7.1 Install tiles

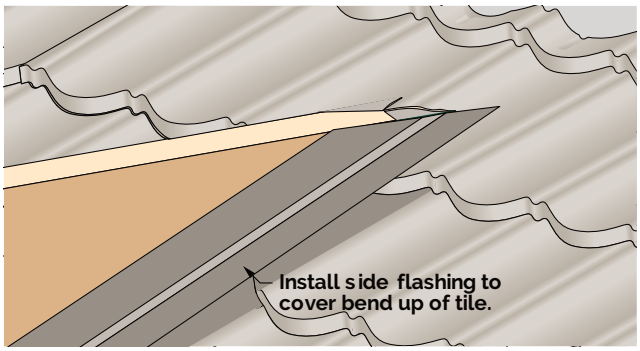


Figure 11.7.2 Install side flashing

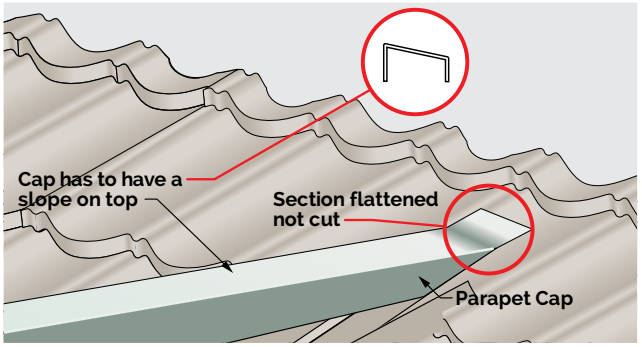
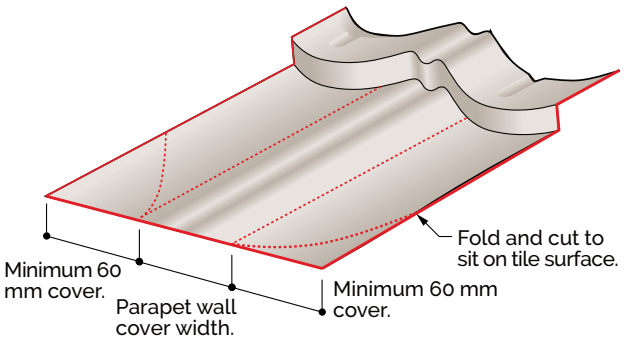
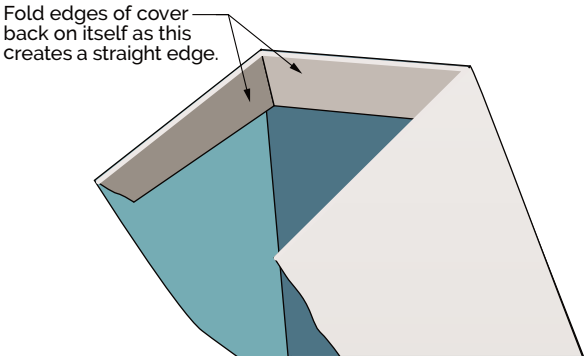
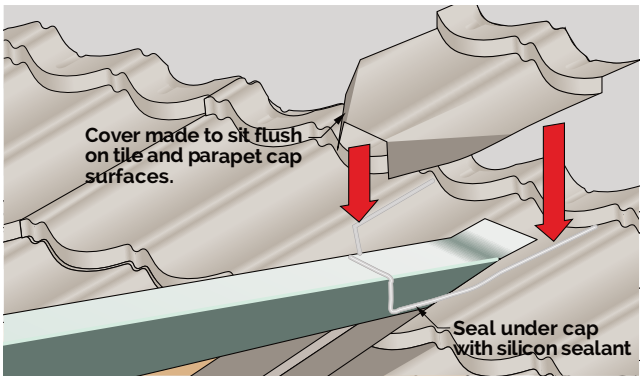


Figure 11.7.3 Install parapet cap







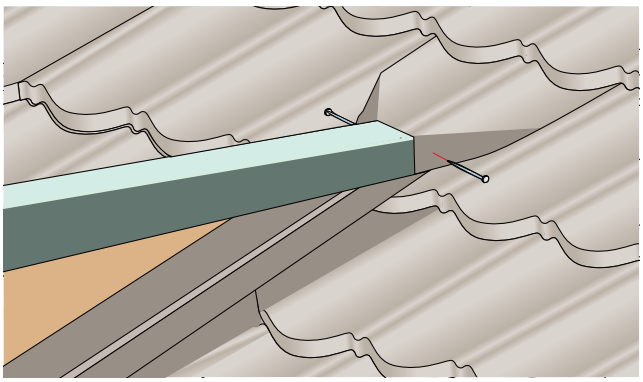


Figure 11.7.4 Install cover pan

11.8 Back wall cricket

Where the back wall or chimney is greater than 600 mm a cricket may be required to ensure water drainage.

Where the use of sheet metal is not the most pragmatic method to flash a penetration, butyl rubber with a minimum thickness of 1.0 mm is the preferred.

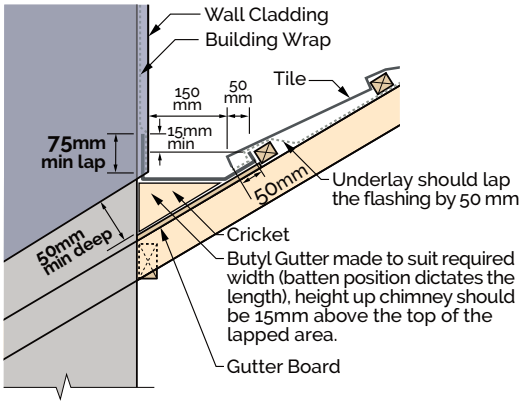


Figure 11.8.1 Elevation – Butyl gutter with cricket

Install the butyl gutter down the side of the chimney to the eave.

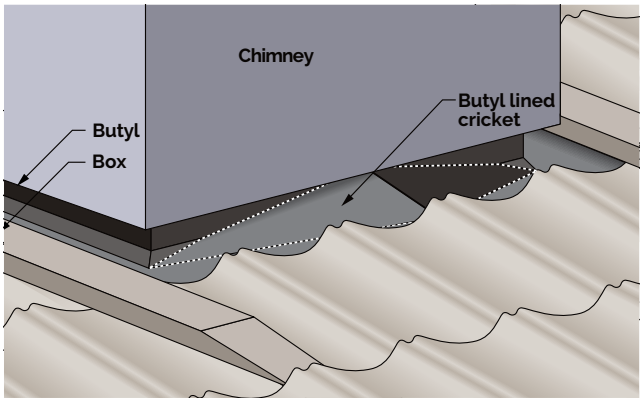


Figure 11.8.2 Butyl gutter with cricket

Install the gutter board so that it hangs over the fascia board and into the gutter but avoid contact with the gutter. Glue the butyl rubber extension on the stop end and the gutter board edge at the eave.

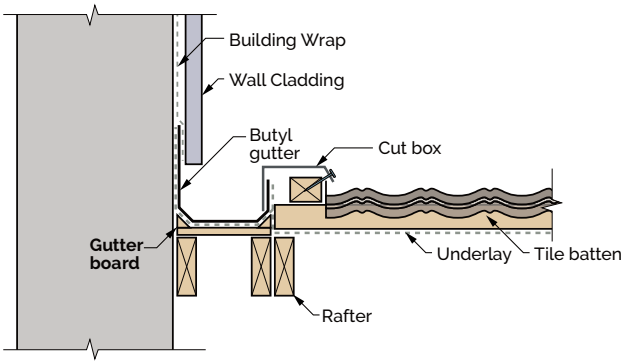


Figure 11.8.3 Elevation – Butyl gutter

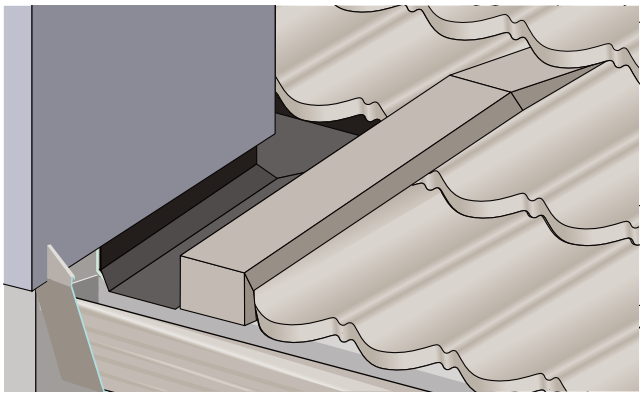
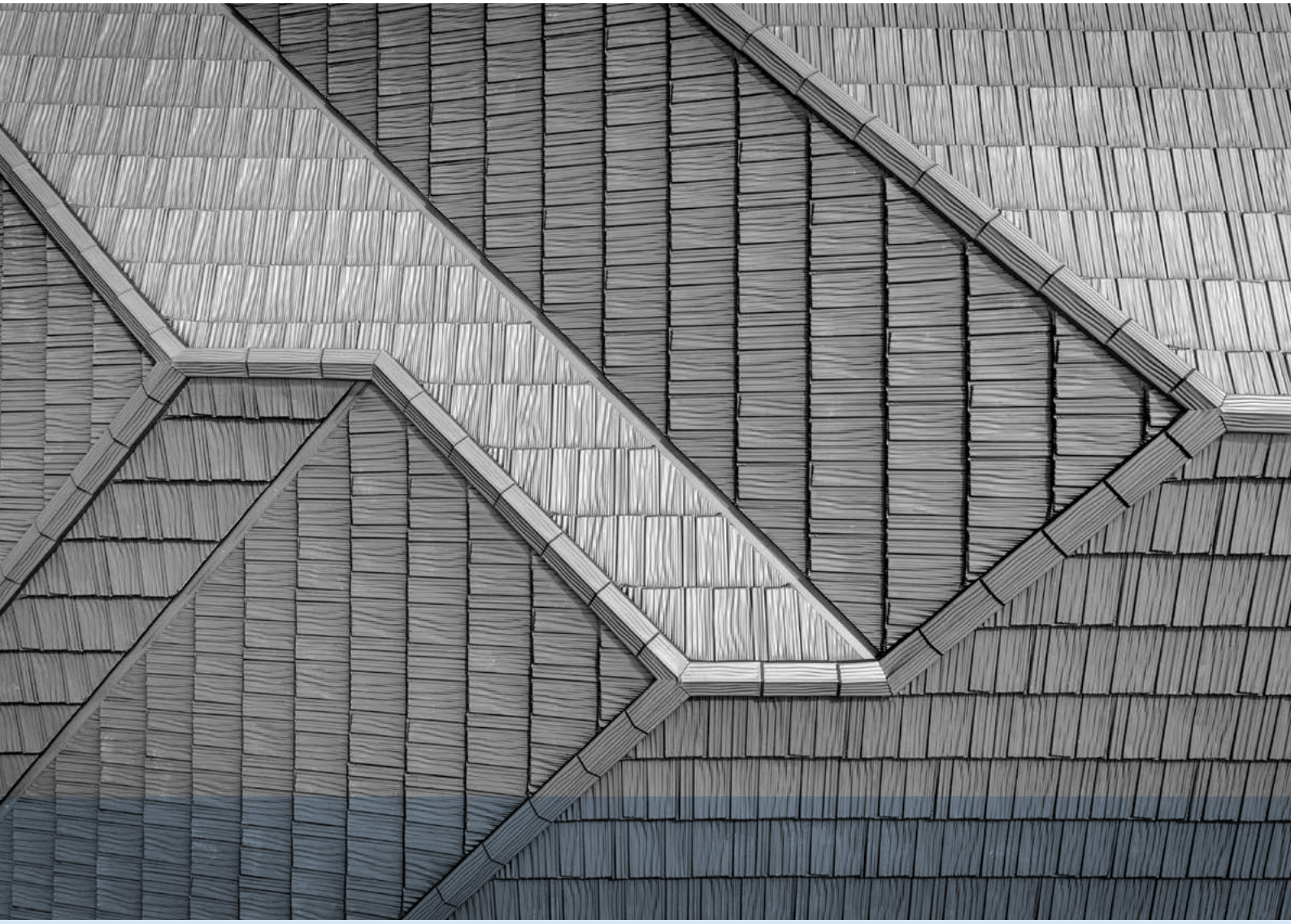


Figure 11.8.4 Chimney at eave – Butyl gutter

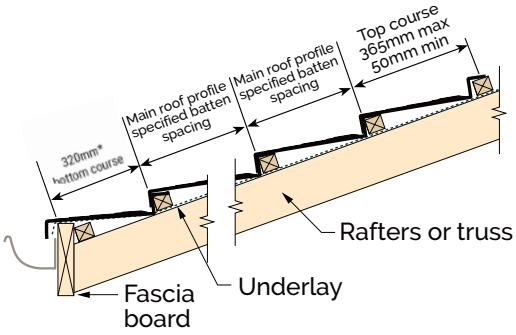
11.0 Penetrations

GERARD
Roofing Designed to Endure



12.0 Unusual situations & circumstances

12.1 Top course too short or too long



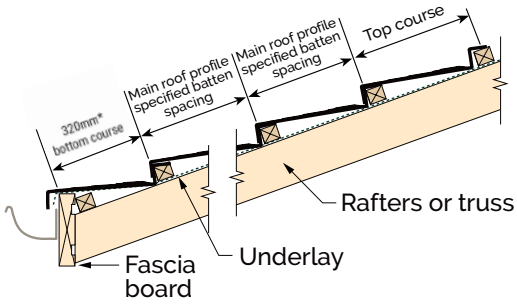
* Variable depending on the type of rainwater collectionsystem used

Figure 12.1.1 Batten set out general rule

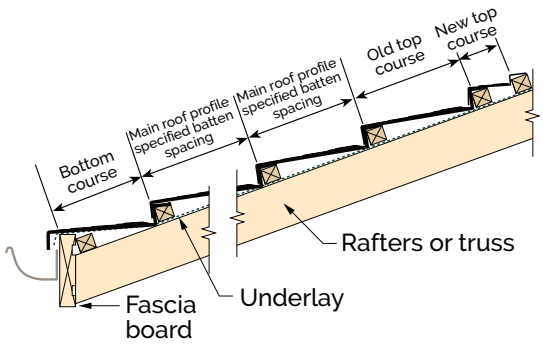
12.1.1 Bond, Classic, and Rockport

When the top course batten spacing is found out to be too short (less than 50 mm) or too long after pin out (more than 365 mm and less than 420 mm), the bottom course dimension may be changed to between 290 mm and 328 mm to solve the problem.

Example 1 reduce bottom course spacing

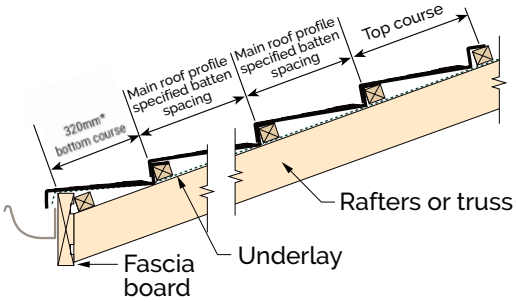


* Variable depending on the type of rainwater collectionsystem used

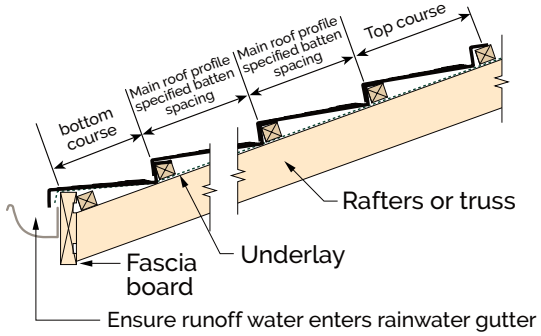


Ensure runoff water enters rainwater gutter

Example 2 increase bottom course spacing



* Variable depending on the type of rainwater collectionsystem used



Ensure runoff water enters rainwater gutter

Figure 12.1.1.1

12.1.2 Shake, Senator, Aspen, and Alpine

When the top course batten spacing is outside the range between 50 mm and 365 mm, the natural upstand of the Shake, Senator and Alpine remains and the front downturn can be created by bending the tile down before cutting.

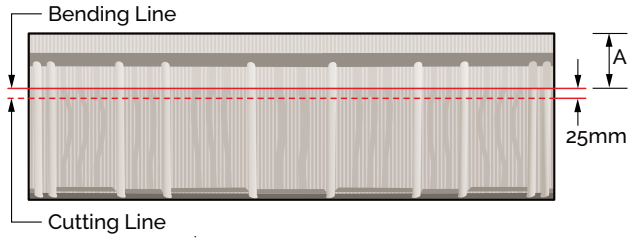


Figure 12.1.2.1

12.2 Short valleys

This situation occurs when a valley exits onto the roof surface well above the fascia. Cut end of the valley to protrude 50 mm and do not use cover pans. Fold down drip edge to ease water to flow down the roof.

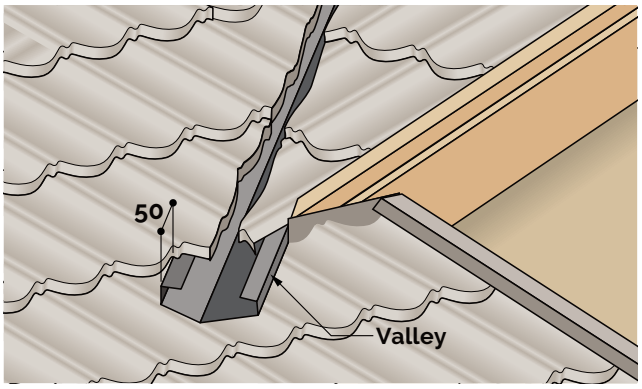


Figure 12.2.1

12.3 Low pitched roof (>8°)

If a side flashing is used against the wall, seal the small section of wall wrap over the butynol using a sealant tape and also use a foam closure.

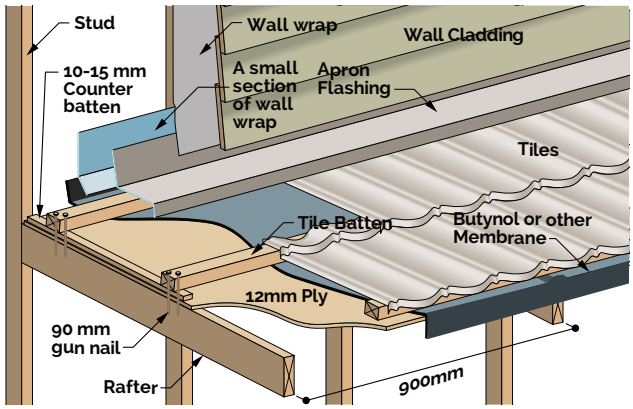


Figure 12.3.1

Use two 90 mm gun nails to compensate for the loss of ply plus counter batten plus membrane thickness.

The counter battens are to allow drainage if the tiles leak as is possible at pitch smaller than 15°.

At roof pitch lower than 8° a membrane roof or profiled steel roof is recommended.

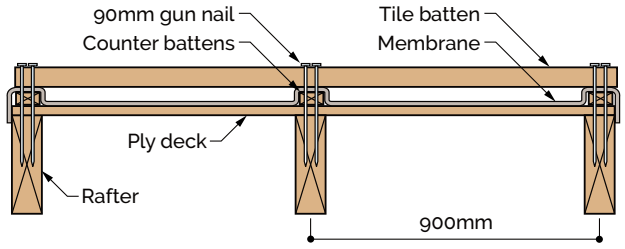


Figure 12.3.2

12.4 Butynol deck – Tile interface

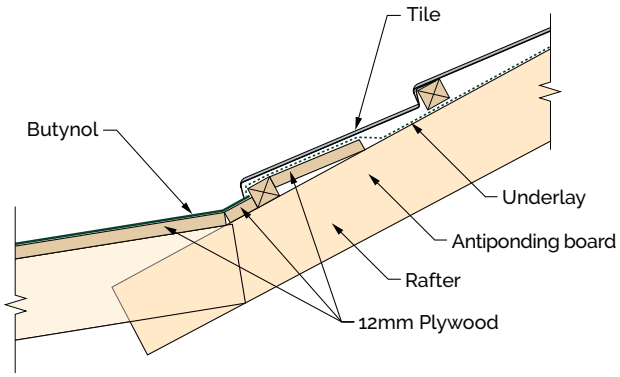


Figure 12.4.1

Note: Low pitched roof installation is not covered by BRANZ Appraisal no. 1096.

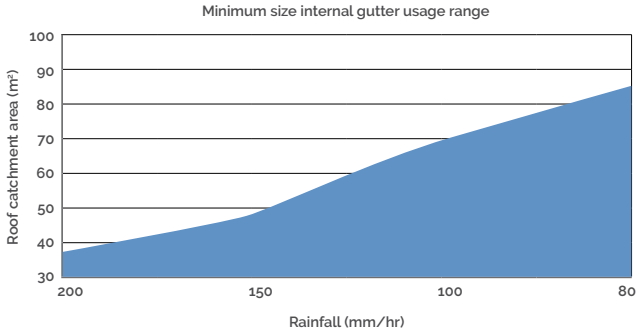
12.5 Over length mono-pitched roof

If a mono-pitch roof exceeds 12 m at its minimum roof pitch, the roof pitch should be increased by 1° per additional 0.5 m.

12.6 Internal gutters

Only either 5000 series aluminium to AS/NZS 1734 temper O, with a minimum thickness of 1.2 mm and a minimum fall of 1: 200, or butyl rubber, with a minimum thickness of 1.0 mm, should be used to form internal gutter.

The minimum size internal gutter suits for the roof catchment area as in **Graph 12.6.**



Graph 12.6

Bigger internal gutter should be used for larger roof area. A freeboard allowance of 20 mm should be added to the net capacity calculation to increase the maximum depth of flow in the gutter.

Angled internal gutter for the back wall should be installed using the details shown in **Figure 12.6.2**. The same principles of installation apply to the back flashing/gutter of dormers. The capacity calculations of angled internal gutters are more complicated than those of box internal gutters (**Figure 12.6.1**). The roof pitch has to be taken into account.

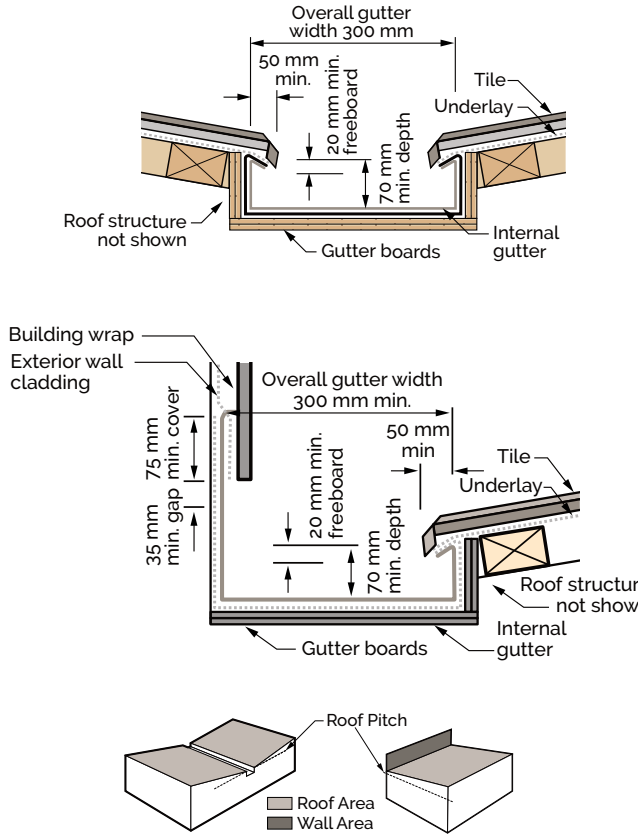


Figure 12.6.1

Catchment area = ☐ x ☐ + 0.5 x ☐

Vertical wall/s adjacent to roof slope	
Factor	Pitches
1.1	10°-25°
1.2	25°-35°
1.3	35°-45°
1.4	45°-55°
1.5	55°-65°

Catchment area = ☐ x

Sloped roofs only	
Factor	Pitches
1.1	10°-25°
1.2	25°-35°
1.3	35°-45°
1.4	45°-55°
1.5	55°-65°

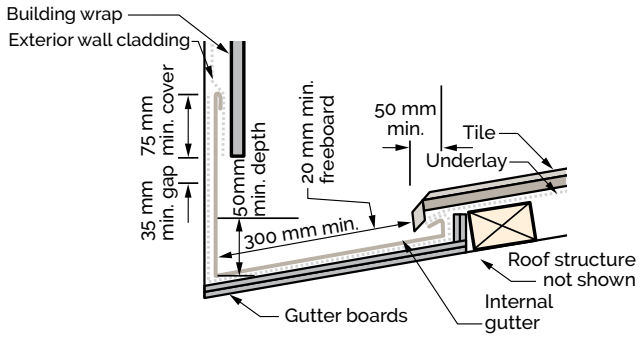


Figure 12.6.2

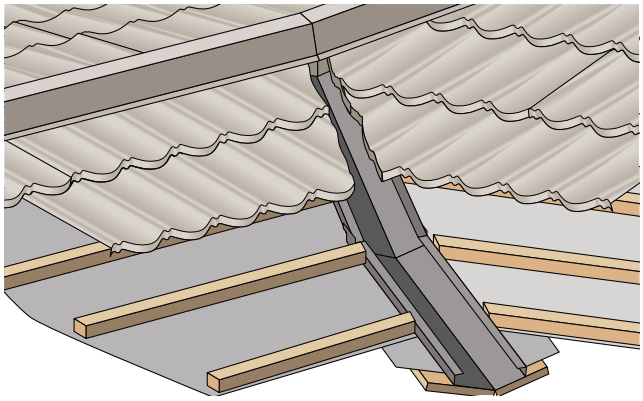
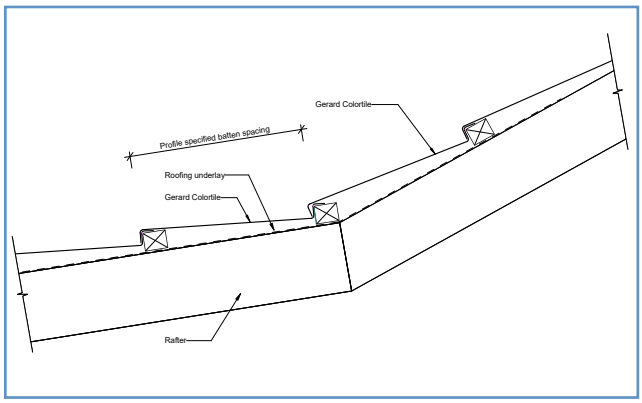


Figure 12.7.1.2 Valley installation

12.7 Change in pitch

12.7.1 High pitch to low pitch



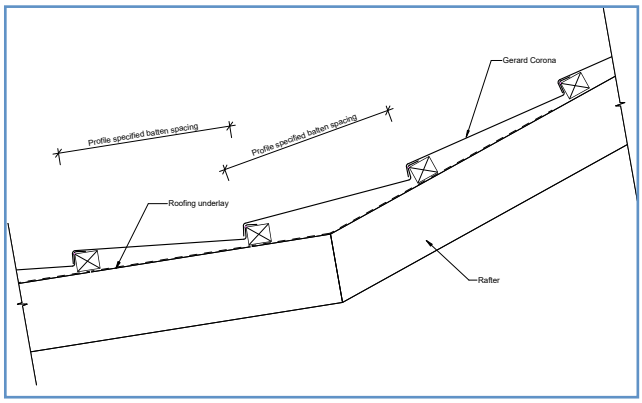


Figure 12.7.1.1 High pitch to low pitch

Gerard Roofs recommends sealant Silaflex MS for general use with our products. However, this product requires slightly higher application temperature (5°C), and resists only up to 70°C (darker roofing materialmay reach temperature up to 80°C in direct sunlight in the height of summer). Where operating temperature may be an issue, it may be preferable to use the Soudal MS Fix All 220. Sealant must always be used in conjunction with mechanical fastening and be applied between the two sheets to be lapped before they are fixed together.

The excess sealant extruded from the lap must be removed. Rivets should be at 50 mm centres.

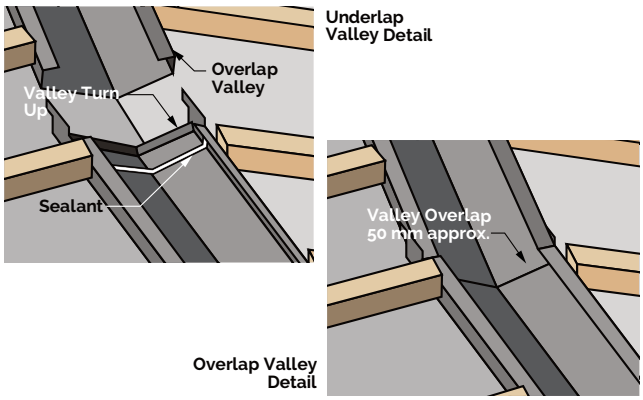


Figure 12.7.1.3 Low pitch to high pitch

12.7.2 Low pitch to high pitch

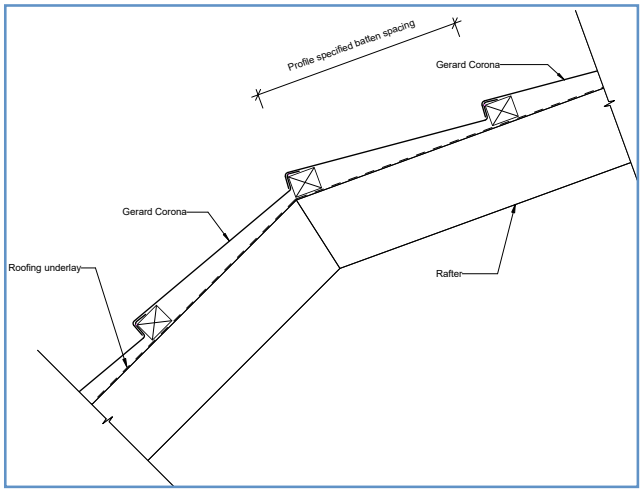


Figure 12.7.2.1 Low pitch to high pitch

13.0 Re-roofing

Assessment of existing corrugated steel roof

This must be carried out by the sales representative who visits the roof and uses the re-roof check sheet supplied by Gerard Roofs.

The use of **direct overlay or counter** batten method requires the corrugated steel to be in a reasonable condition.

Repairs to corrugated steel

Areas where corrosion has been found may be covered using sound (good condition) corrugated steel. The covering steel must be fixed to the roof purlins in the same way as the rest of the roof or to the roof purlins with the tek screws supplied for fastening the tiles.

13.1 Metal roof overlay with counter battens

The use of this method is not suitable for concrete or clay tiles and requires the roof to be in a reasonable condition.

13.1.1 Set out

Fascia

Existing roof cladding must be cut back inside fascia and preferably removed to behind the bottom eave batten.

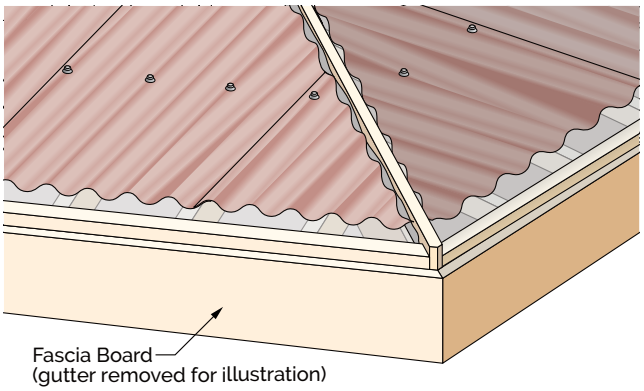


Figure 13.1.1.1.1

A tile batten should be installed immediately behind the fascia as a fixing point for the eaves course of tiles. In some cases the fascia board may need raising. Install the second tile batten 320 mm* up from the outside of the fascia board.

** In the event that the top course tile is too short or the rain water collection system conflicts with the tile nose, this dimension may be changed within -40 mm to +15 mm tolerance.*

Counter battens

Counter battens are installed parallel (preferred directly above the rafter) to the rafter. They are usually the same size as the tile battens; 50 mm x 25 mm for most re-roofing applications. The maximum spacing for counter battens in various parts of the roof should be as set in **Table 13.1.1.2**.

Counter battens should be fixed in the troughs of the existing corrugated steel and nailed at every crossing of the purlins with suitable nails e.g. two 90 mm gun nails.

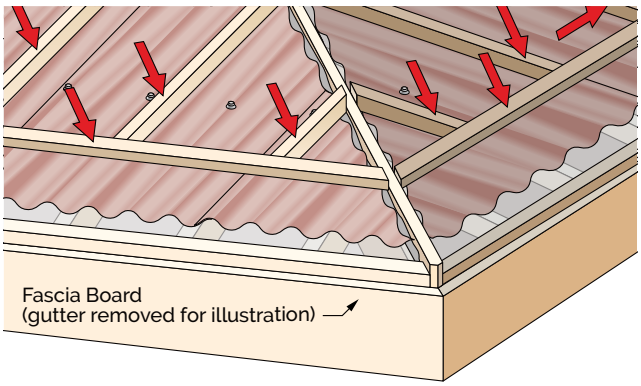


Figure 13.1.1.2.1

Wind areas	Spacing of purlins (mm)			
	≤750	750-900	≤750	300-900
	General roof area (no edge)		Roof edge zone within 1.2 m of eave, ridge, gable or hip	
Low & med	600	600	600	600
High	600	600	300	300
Very high	600	450	300	300
Extra high	Replace roof. Ensure correct batten rafter connections are used.			

Table 13.1.1.2 Spacing of 50 x 25 mm counter battens

Note: Additional short counter battens are required round edge zones between the normal counter battens to provide additional batten nailing points in high wind areas. Use batten fasteners outlined in **Tables 4.3.1** and **4.3.2**.

Tile battens

Fix tile battens to counter battens at each crossing.

Batten set out will be as for a new roof (Refer **4.0 Batten installation**).

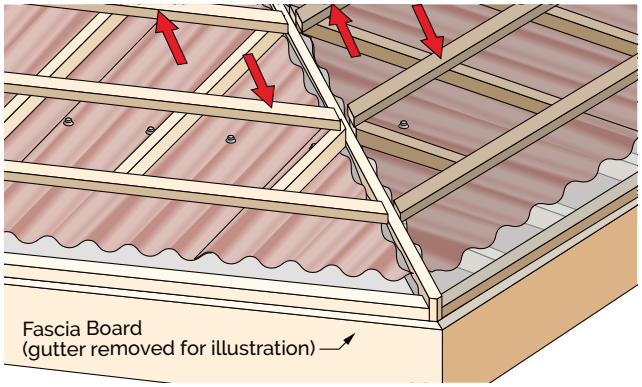


Figure 13.1.1.3.1

Ridge/hip

Remove all existing ridge and hip caps starting a waste pile on the ground.

Roll out underlay on hips and ridges. This is optional to protect the structure during installation.

Hip and ridge boards/battens should be built up at least 50 mm above the tile batten height (approximately 100 mm above existing roof) as in new roofing.

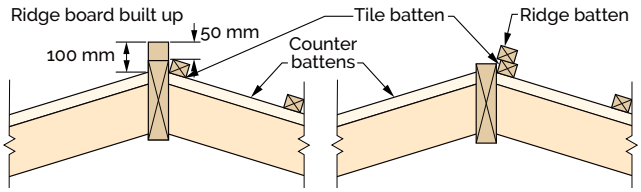


Figure 13.1.1.4.1 Ridge board/battens

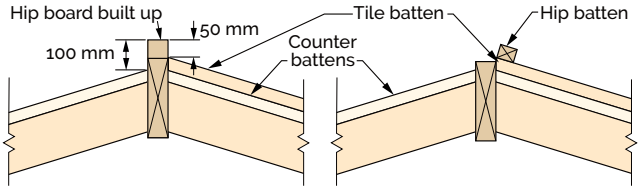


Figure 13.1.1.4.2 Hip board/battens

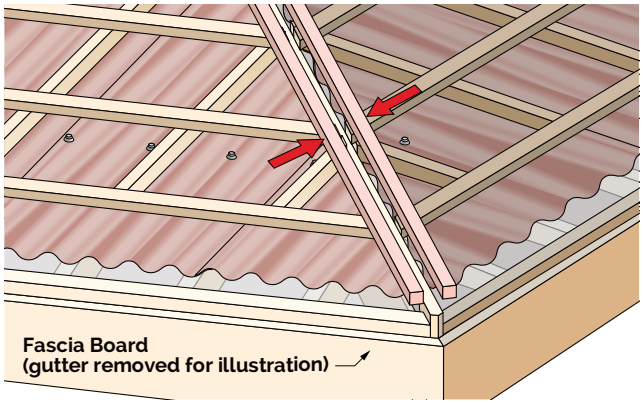


Figure 13.1.1.4.3 Hip battens installed above the tile battens

Valleys

Where the steel has been cut back to behind the bottom eave batten (**Figure 13.1.1.1.1**) then it should also be cut back to the valley batten for the first 750 mm measured up from the fascia.

Valley support battens approx 50 mm x 25 mm are laid over the existing roof and held by 90 mm x 3.15 mm nails into the old battens or sheathing. The spacing between the two support battens depends on the valley accessories to be used.

Replacement valleys are placed between the valley support battens and held securely.

Note: Capacity of valleys will depend on prevailing environmental conditions and roof size. Refer **9.1 Valleys & wall flashings.**

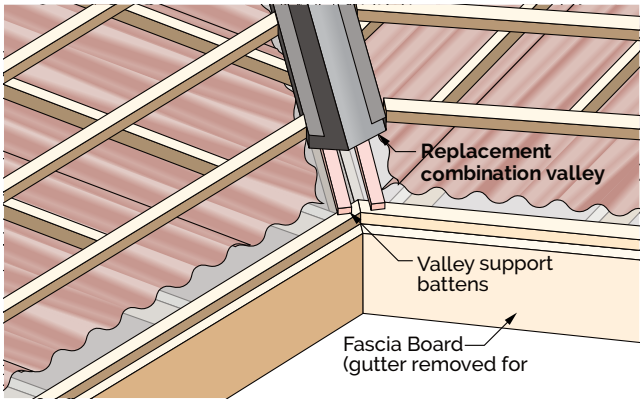


Figure 13.1.1.5.1

13.1.2 Tile and accessory installation

Roll out underlay on eaves where the steel has been cut back.

Tile and accessories will be laid and fitted as for a new roof (Refer **6.0 Cutting & installing the roof, 7.0 Product specific installation & 8.0 Installing hips, ridges & gables**). All roof flashing should be renewed except those in good order and of sufficient height to be re-used.

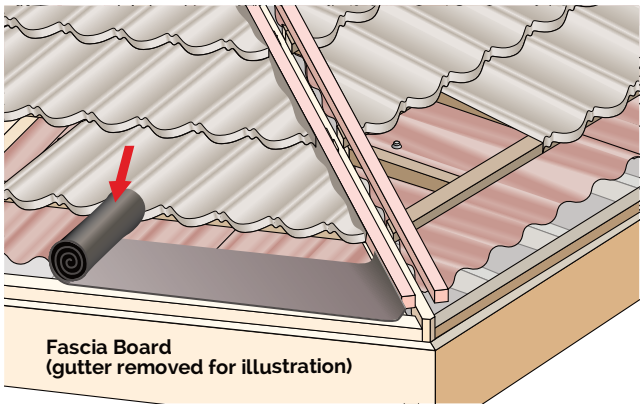


Figure 13.1.2.1

13.2 Direct overlay method

The use of this method requires the longrun or the corrugated steel roof to be in a reasonable condition.

This method, originally conceived for re-roofing using Senator, should also be suitable for Shake and Rockport.

This method is not suitable for extra high wind zones. Replace existing roof with new if roof is located in an extra high wind zone.

13.2.1 Preparation

Renailing existing roof

Remove lead head nails and renail the original roof to the battens close to the troughs in the corrugations with 90 mm nails, ensure the nail heads do not pierce the steel by using the correct settings if a nail gun is used. Nails are to be located every second corrugation. Install at least the same number as nails removed. Always nail where sheets of corrugated steel overlap.

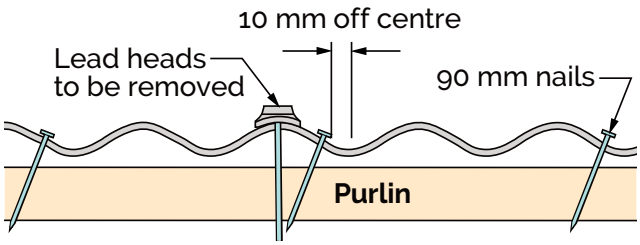


Figure 13.2.1.1

13.2.2 Set-out

Barge

Remove the existing barge covers.

Install a 50 x 40 mm batten up the gable spaced to suit accessory. Fasten with 90 mm nails at 600 mm centres to the rafter under the steel.

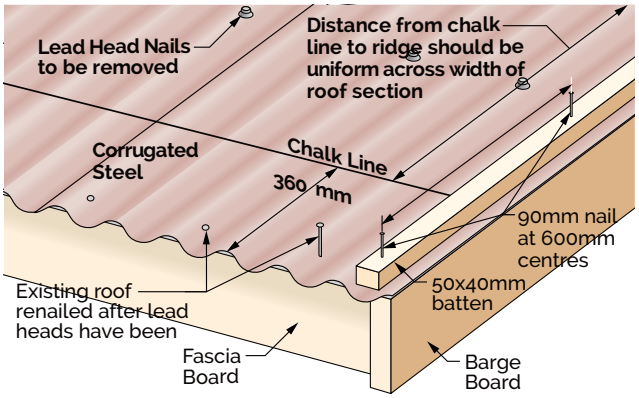


Figure 13.2.2.1.1

Hip

Remove the existing hip.

Identify where the battens attach to the hip rafter.

Attach 50 x 40 mm batten(s) to the battens and/or the hip rafter with 90 mm nails at the required spacing for the selected accessories.

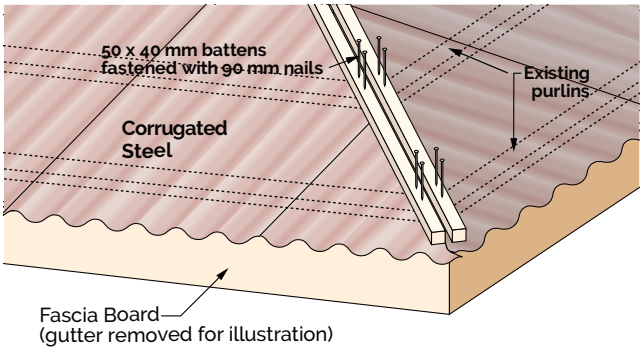


Figure 13.2.2.2.1

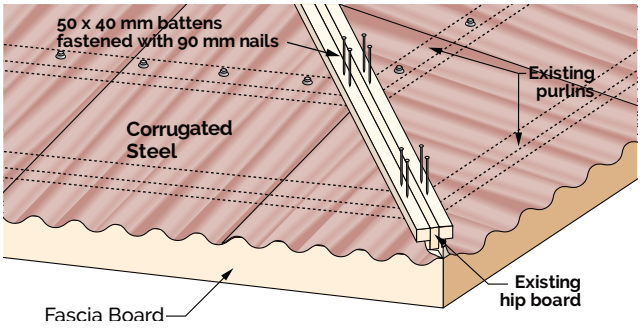


Figure 13.2.2.2.2

Ridge

Remove existing ridge capping.

Identify where the top purlin is located under the existing roof.

Produce (if required, see below) profiled counter battens long enough to span the distance from the top purlin to the peak of the ridge.

Install the profiled counter battens at a minimum of 600 mm centres using 2 x 90 mm nails to attach them to the purlins.

Install 50 x 40 mm batten(s) along the ridge line. If two battens are installed, set them to the width required for the accessory to be used.

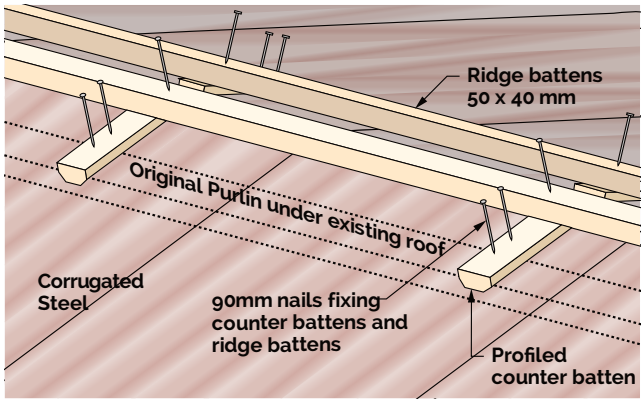


Figure 13.2.2.3.1

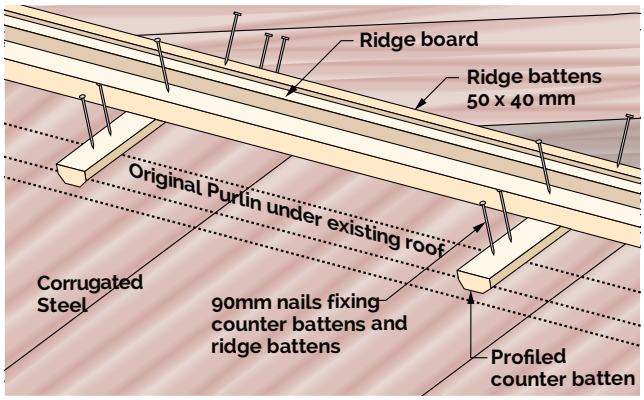


Figure 13.2.2.3.2

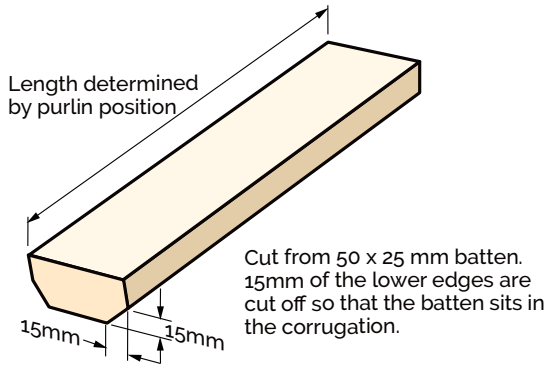


Figure 13.2.2.3.3 Profiled counter batten

Valley

Valleys may be installed over the existing valley if the original is in good condition. Valleys with any signs of red rust should be removed.

If required, cut back the corrugated steel along the valley line so that a combination valley can be inserted over the existing valley. Insert the valley and fix it in place (with a nail bent over the edge) without penetrating the valley.

Modify the valley end if required (see **Figure 13.2.2.4.1** and **13.2.2.4.2**).

At the top of any valley it must be turned up as high as possible to eliminate any wind blown rain getting into the roof cavity.

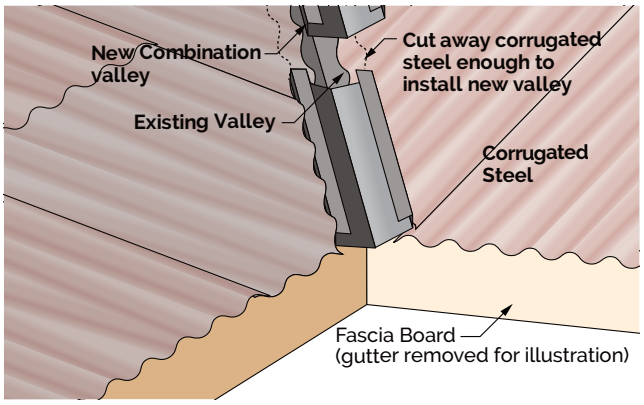


Figure 13.2.2.4.1

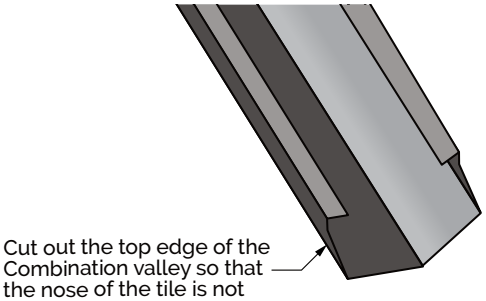


Figure 13.2.2.4.2

13.2.3 Tile and accessory installation

Screw fasteners supplied by Gerard Roofs should be used to fasten tiles to the corrugated steel that is structurally sound.

Mark using chalk, a line 360 mm up from the eaves of roof. Measure from the ridge down to ensure that the distance from the ridge is constant across the roof. If the eaves line is not parallel with the ridge line, make adjustments to the chalk line. Allow a minimum of 5 mm over-hang of the tile over the edge of the corrugated steel.

The back upturns of the eave tiles are aligned along the chalk line. The eaves tiles are then fastened along the back. Fasteners at the eaves are located approximately 50 mm up from the front nose. It is also important to place the fastener on a high point of the surface and NOT into the drainage channel that is over-lapped. Subsequent courses of tiles are held in place with fasteners through the nose and back upstand of the tile. Ensure that the noses of the tiles are hard against the back upstand before fastening to the corrugated steel.

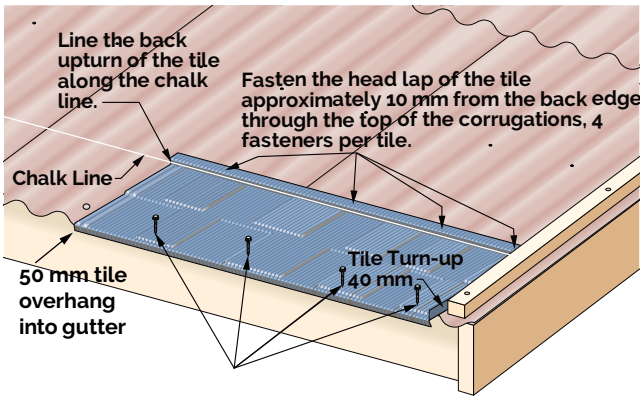


Figure 13.2.3.1

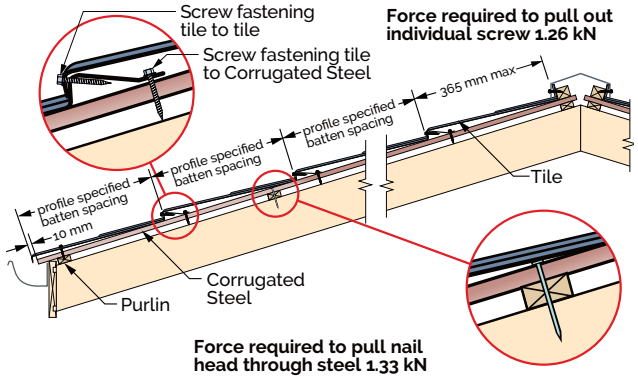


Figure 13.2.3.2

Tiles are fastened with 4 screws evenly spaced along the head lap. Care should be taken to ensure that the fasteners are located at the top of the corrugations of the underlying steel. This can be achieved by locating corrugation with the fingers under the nose of the tile or by noting the corrugation up the roof above the head lap of the tile. Fasteners should be installed where the corrugated steel overlaps, this results in the fastener penetrating 2 sheets of steel which provides greater pullout strength.

The fronts of the tiles are held in place with 4 horizontally installed fasteners. Care needs to be taken to ensure that the screws do not ride over the back of the head lap of the tiles.

Fasteners must not be installed in the drain channel at the side lap of tiles.

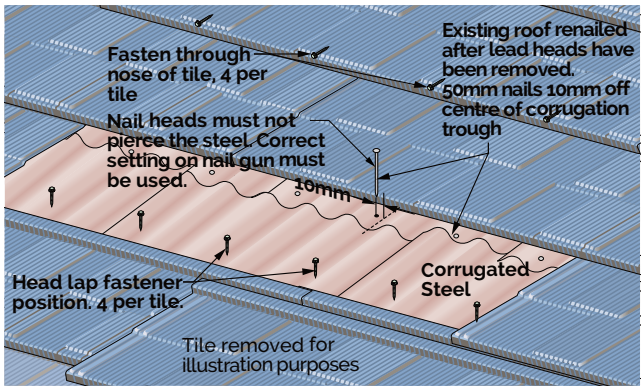


Figure 13.2.3.3

Tile and accessories will be laid and fitted as for a new roof (Refer **6.0 Cutting & installing the roof, 7.0 Product specific installation & 8.0 Installing hips, ridges & gables**). All roof flashings should be renewed except those in good order and of sufficient height to be re-used.

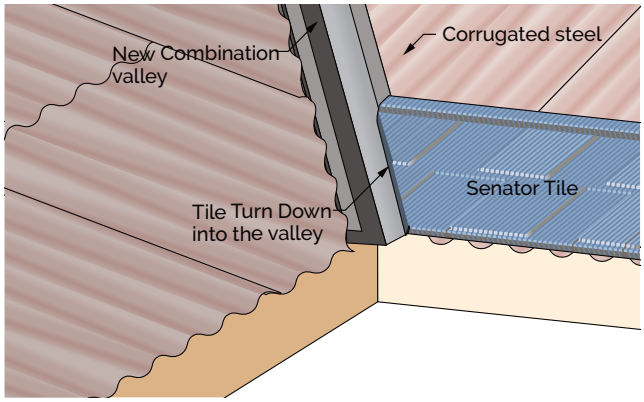


Figure 13.2.3.4 Valley detail

13.3 Full roof strip and replacement

Prior to beginning re-roof work, evaluate whether a test for traces of asbestos is appropriate.

Remove old roofing material (steel, shakes, shingle, pressed metal tile, concrete or clay tiles, etc). Lift nails, flashings and battens. Follow with a thorough examination of the roof structure for decay and damage. Replace all unsound or suspect timber.

Hip and ridge boards must be built up to extend at least 50 mm above tile batten height as in new roofing.

Any fascia repairs or replacement must be completed before re-roofing commences.

All old valley trays should be replaced.

Batten set out, tile and accessory laying proceeds as for new roof (Refer **4.0 Batten installation, 5.0 Roofing underlays, 6.0 Cutting & installing the roof, 7.0 Product specific installation & 8.0 Installing hips, ridges & gables**).

14.0 Roof installation on steel battens

Note: Installation on steel battens is not covered by BRANZ Appraisal no. 1096.

14.0 Roof installation on steel battens

14.1 Batten setting out

Battens set out should proceed in a similar manner as for houses with wooden framing.

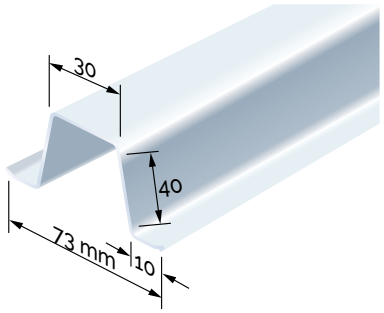


Figure 14.1.1 Steel batten

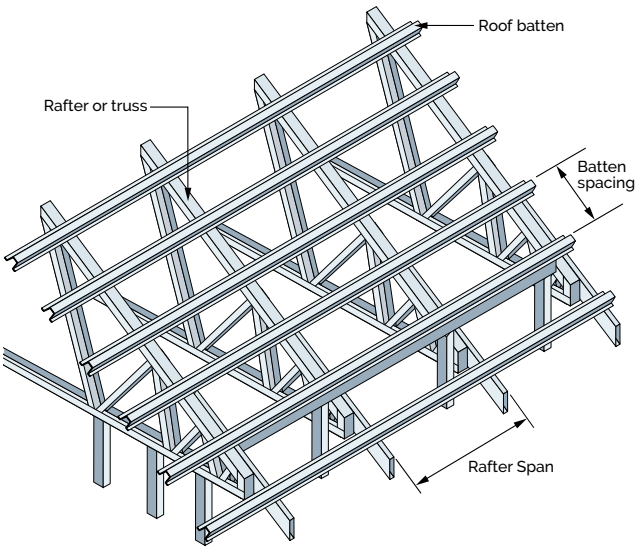
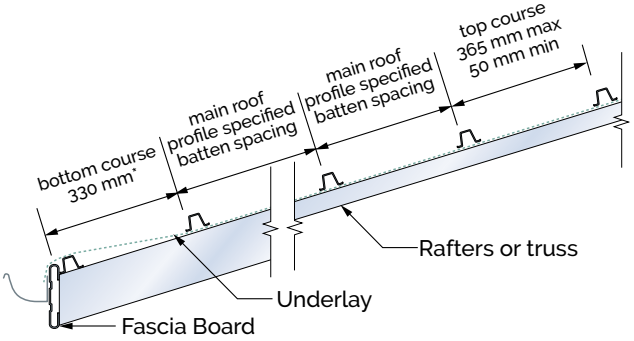


Figure 14.1.2 Steel framing

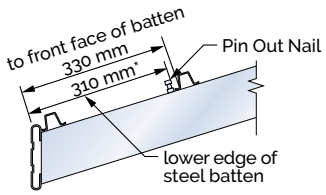
Steel battens are supplied by the steel frame supplier. These will be engineered to span up to 1200 mm however they may be used at narrower spacings.

Battens must be secured every second rafter with at least one tek screw before walking on them during the installation process. Once the section of roof has been covered with battens and underlay the battens must be fastened with the acceptable method as outlined in **section 14.3** before moving on to other sections or laying tiles.



* Variable depending on the type of rainwater collection system used

Figure 14.1.3 Rafter truss end on view, batten spacing



* Variable depending on the type of rainwater collection system used

Figure 14.1.4 Eave and first batten location/spacing

14.2 Installing battens and roofing underlay

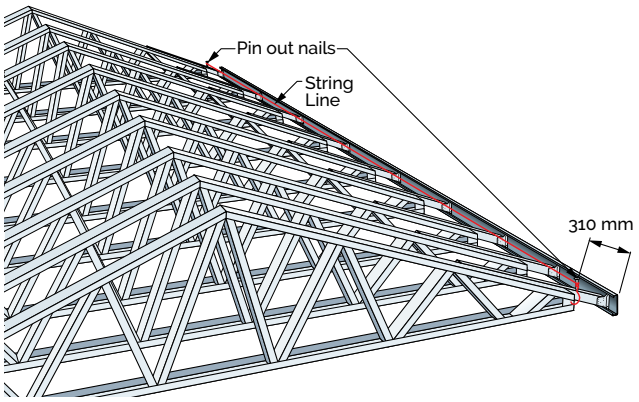


Figure 14.2.1 Batten pin-out

Mark/set out and fixing of the battens should be done sequentially throughout the batten installation process. The first batten is to be fixed behind facia.

Pin-out the second row to the recommended spacing to ensure that the eave tile is far enough into the gutter (40 mm). Then place the batten on the pin-out

Note: Installation on steel battens is not covered by BRANZ Appraisal no. 1096.

nail/screw, this will be used to support the first run of roofing underlay as rolled out across the roof.

The roofing underlay can then be rolled out placing a magnet strip on every second rafter to hold the roofing underlay in place.

14.2.1 Install a RU Eave Flashing

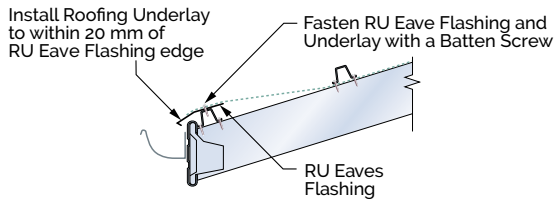


Figure 14.2.1.1

The RU Eave Flashing supports the roofing underlay at the edge and reduces or eliminates underlay vibration that can occur in high winds.

Lay the roofing underlay to within 20 mm of the edge of the RU Eave Flashing, the RU Eave Flashing overhangs the gutter by approximately 40 mm and the underlay is pinned by the batten screws so that any condensation will run into the gutter should it occur.

Minimum overlap of a lower section of under lap is 75 mm.

14.2.2 Underlay installation

Do not get on to the roof or top plate to roll out the roofing underlay, this is to be done from the working platform (**Figure 14.2.2.1**).

Once the roofing underlay is in place lift the second batten out from under the roofing underlay and fasten it in place against the pin-out nail/screw (**Figure 14.2.2.2**).

Roll out roofing underlay from the platform.

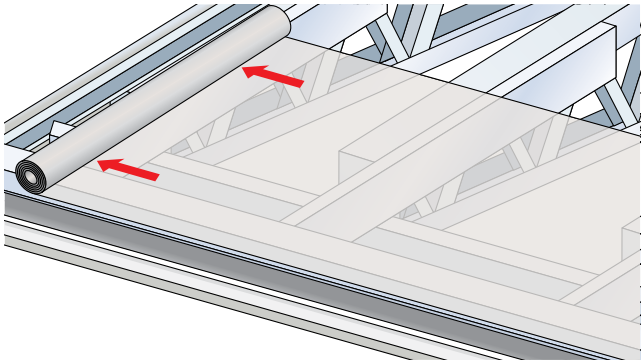


Figure 14.2.2.1

Fasten the second batten.

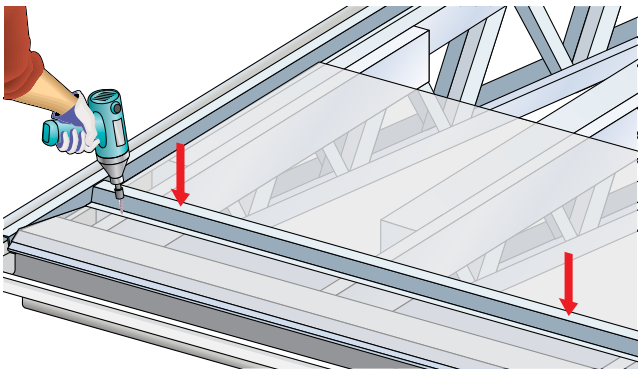


Figure 14.2.2.2

Space battens using batten spacers.

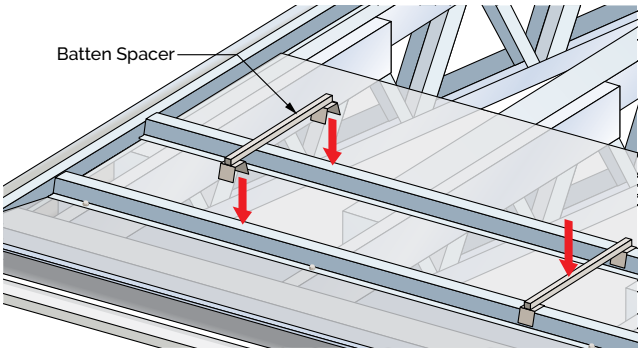


Figure 14.2.2.3

Note: Installation on steel battens is not covered by BRANZ Appraisal no. 1096.

14.0 Roof installation on steel battens

Fasten only the bottom/lower edge of the batten at the top edge of the roofing underlay.

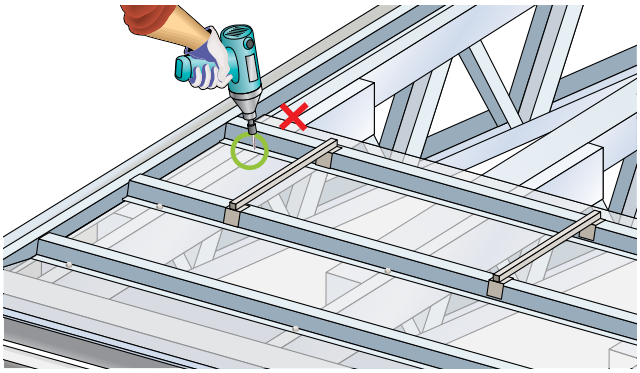


Figure 14.2.2.4

The batten at the top of the roofing underlay is to be screwed at the bottom only so it can be tilted up to enable the lap of the next run of roofing underlay to slide underneath. (**Figure 14.2.2.4**)

Place the next batten with the batten spacer off the top batten to support the next run of paper as in **Figure 14.2.2.5**.

Place supporting batten for second run of roofing underlay then roll out roofing underlay.

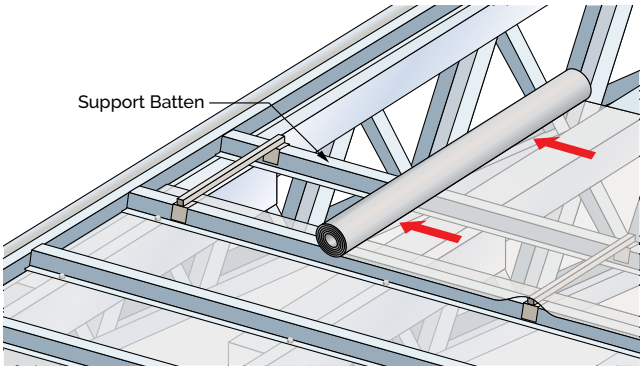


Figure 14.2.2.5

Roll out the next run of roofing underlay along the battens placing a magnet strip every second rafter.

Do not reach over open rafters to attach fixings to top of paper to hold in place.

Once the roofing underlay has been rolled out remove the batten spacer (**Figure 14.2.2.6**) allowing the batten under the roofing underlay to slide down. Place the batten on top of the roofing underlay using the batten spacer to locate it (**Figure 14.2.2.7**), fasten this batten. The lower edge of the roofing underlay is then tucked under the top edge of the batten below. (**Figure 14.2.2.8 & Figure 14.2.2.9**)

Remove batten spacer and remove batten from under the roofing underlay.

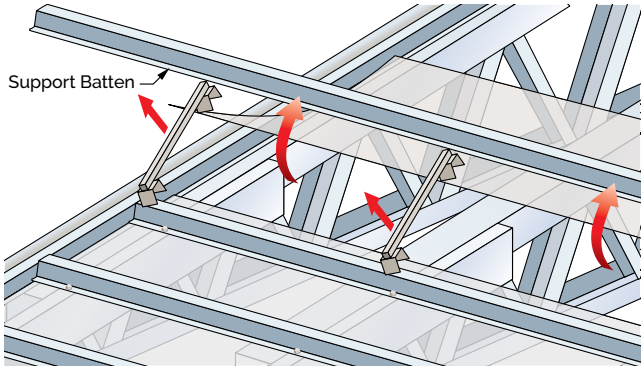


Figure 14.2.2.6

Place batten on top of the roofing underlay and fasten it in place.

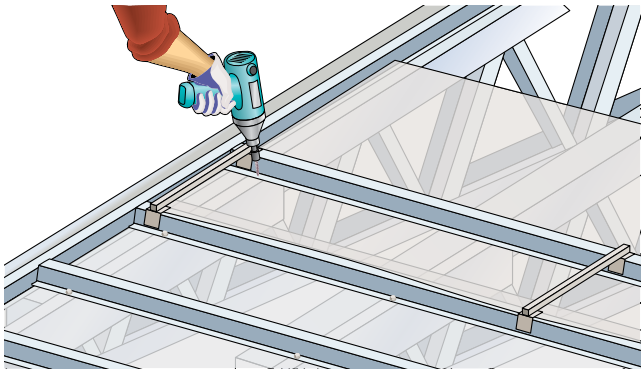


Figure 14.2.2.7

Note: Installation on steel battens is not covered by BRANZ Appraisal no. 1096.

Tuck the roofing underlay under the top most batten of the rolled out underlay below.

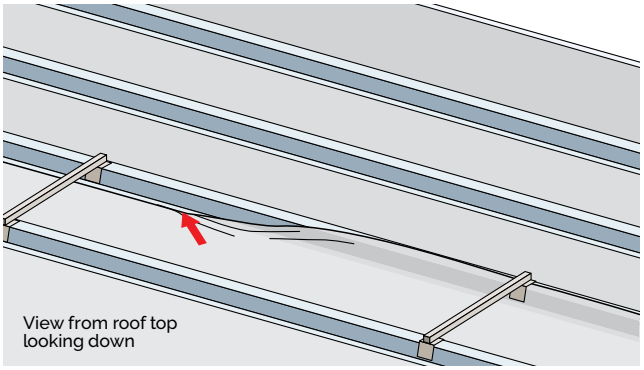


Figure 14.2.2.8

Tuck the underlay under the batten, then fasten the top edge of the batten.

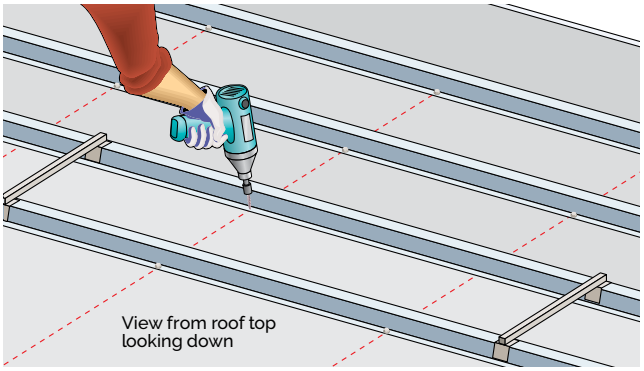
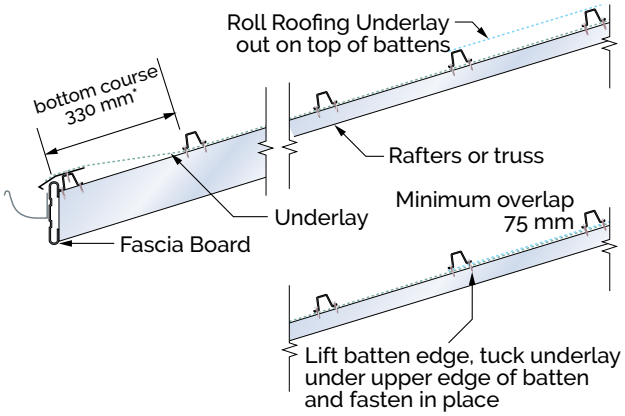


Figure 14.2.2.9



* Variable depending on the type of rainwater collection system used

Figure 14.2.2.10 Installation and overlap of roofing underlay

14.3 Batten fastening

Batten joints are to be cut to length so that they lap together on top of a rafter.

Fasten through the batten into the rafter using the approved fastening technique of:

2 x 16 mm 10 gauge drill point screws or 2 x 12 gauge tile fasteners one each side of the batten.

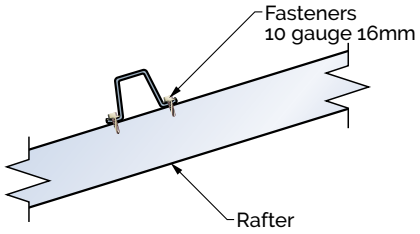


Figure 14.3.1

Note: Installation on steel battens is not covered by BRANZ Appraisal no. 1096.

14.4 Accessory batten installation

14.4.1 Ridge installation

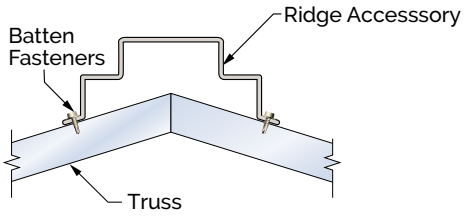


Figure 14.4.1.1 Ridge batten installation

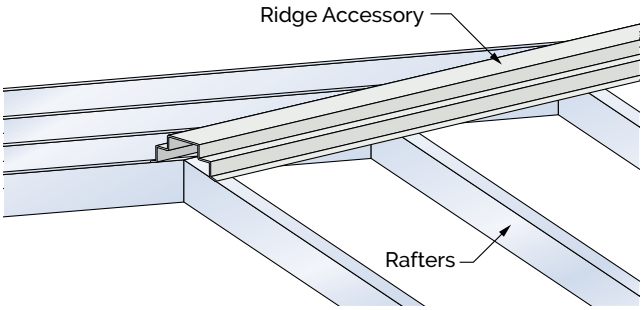


Figure 14.4.1.2

14.4.2 Hip installation

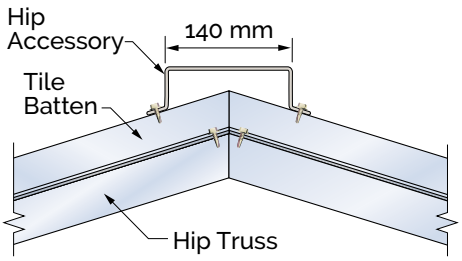


Figure 14.4.2.1 Hip batten installation

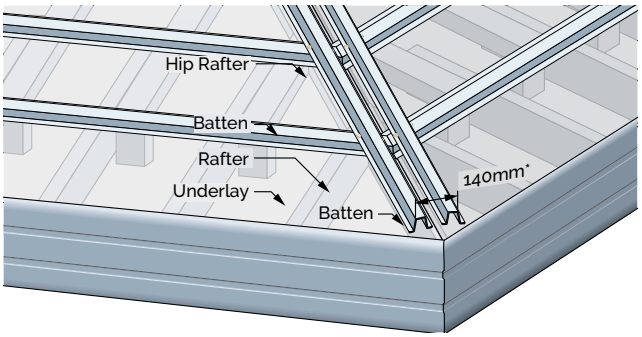


Figure 14.4.2.3 Hip batten installation alternative

14.4.3 Ridge hip accessory junction

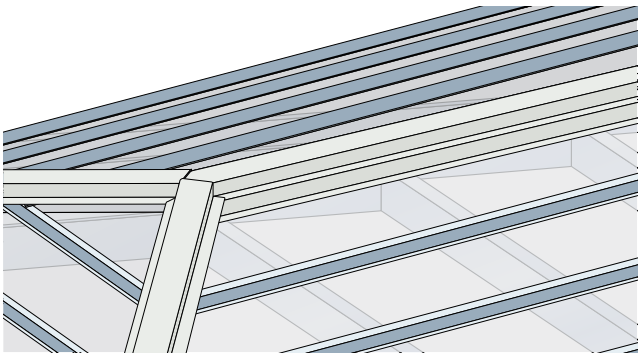


Figure 14.4.3.1

14.4.4 Gable installation

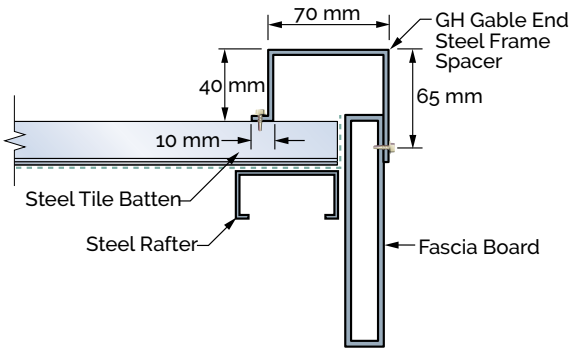


Figure 14.4.4.1 Gable batten installation Angle trim with steel frame gable end spacer

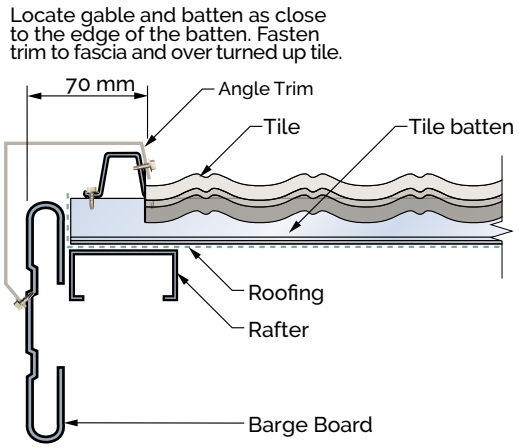


Figure 14.4.4.2 Gable batten installation Angle trim

Note: Installation on steel battens is not covered by BRANZ Appraisal no. 1096.

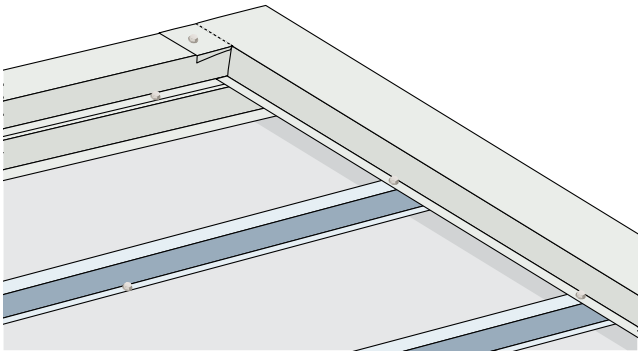


Figure 14.4.4.3

14.5 Valley batten installation

Steel valley boards should be installed by the builder prior to the roof fixers starting batten installation.

Roofing underlay is to be installed over the valley boards and under the tile battens.

Valleys may be held in place by clipping the top section of the valley and fastening it to the valley board. Valleys should be overlapped a minimum of 150 mm.

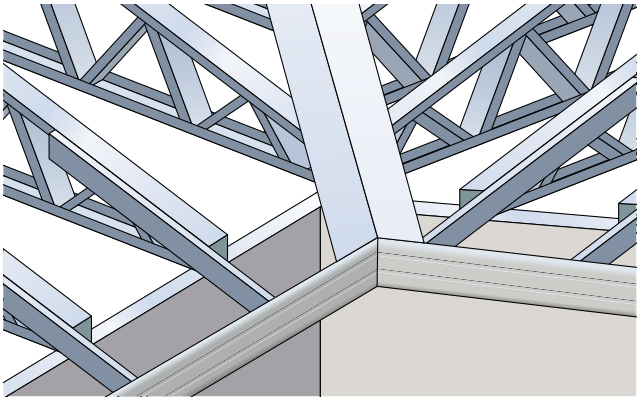


Figure 14.5.1 Two steel pieces riveted together

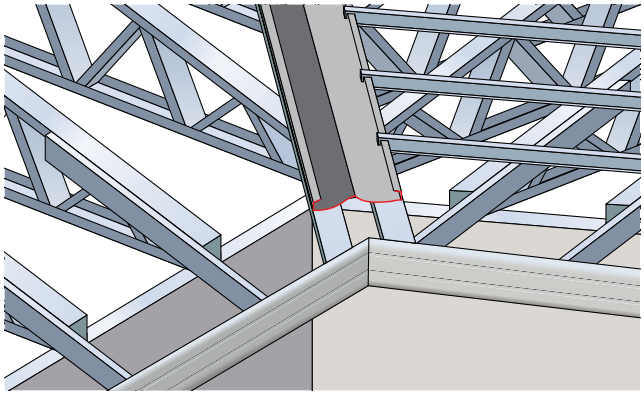


Figure 14.5.2 Two 'C' section steels

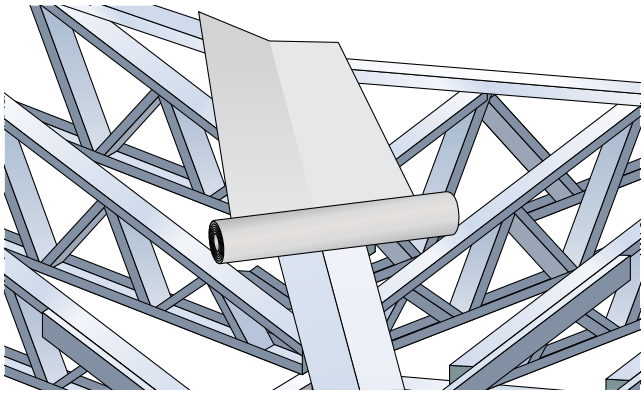


Figure 14.5.3 Installing the underlay from the top valley, note approach is from a fully battened section of roof

14.6 Tile installation over steel battens

14.6.1 General

Safety signs and edge protection, if required, should be in place before installation starts.

14.6.2 Preparatory work

Underlay, tile and accessory battens, wall flashings, valleys and fascia boards should be in place before laying tiles.

Note: Installation on steel battens is not covered by BRANZ Appraisal no. 1096.

14.6.3 Tile selection - colour coding

The roof installer should check that the tiles are of the correct colour and are in good condition. Gerard Roofs provides a colour code on each pallet (A - M).

Different colour coded tiles should NOT be installed on the same roof.

Tiles with surface defects should NOT be installed on the roof.

14.6.4 Walking on tiles

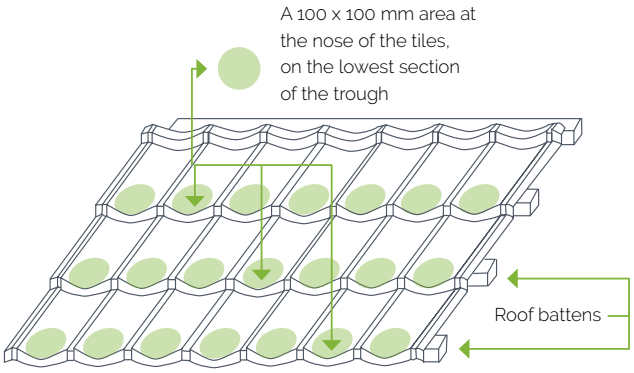
Soft soled shoes capable of providing secure footing should be worn. Extreme care is required when walking on wet tiles and this should be avoided if possible. Satin finish tiles can be very slippery and should NOT be worked on while wet.

The surface coating of the textured finish tiles may be damaged when they are wet, and damage increases as the pitch increases.

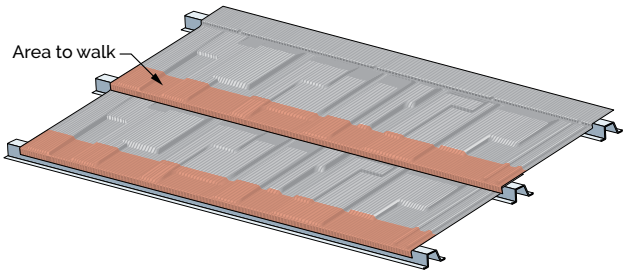
When walking on the tiles weight must be concentrated directly above the batten for Shake, Senator, Rockport, Oberon, Aspen and Alpine and in the pan (lower section) of tiles above the batten.

Tile damage will occur if installer weight is applied to tile ridges or mid sections of Shake, Senator, Rockport, Oberon, Aspen and Alpine.

For Classic, Bond and Milano



For Shake, Senator, Rockport, Oberon and Alpine



14.6.5 Damaged tiles

Tiles damaged during installation should be removed and replaced.

14.6.6 Sub-trade damage

If substantial work is to be carried out above a section of roof, such as installation of walls, tiles should generally be installed after this work has been completed. Tiles may be installed prior however protection for the tiles and their surface coatings needs to be installed before the wall cladding is installed. This may involve drop sheets and/or a plywood covering. At this point it should be made clear to the building supervisor who is responsible for damaged tiles by sub-trades.

14.6.7 Work interruption

If work is interrupted for any reason, or at the end of a workday, all loose tiles, accessories and incomplete sections must be secured against possible movement by wind.

Tile and accessories must be left clean and dry and securely covered to protect against the weather.

Note: Installation on steel battens is not covered by BRANZ Appraisal no. 1096.

14.6.8 Clean up

The building site should be left clean of any roofing materials. All batten and tile off cuts, nails and packaging must be removed from the site. The roof should be cleaned to remove any debris left by the installation process.

14.6.9 Sign off

Obtain sign off for the roof as soon as possible after completion of the clean up.

14.7 Tile laying

For Shake, Senator, Rockport, Oberon, Aspen and Alpine tiles only, to prevent lines of tile joins showing down the roof make sure to random stagger the tiles (Refer to **7.0 Product-specific installation** for each tile profile laying pattern).

All tiles interlock. Depending on the tile profile they may be interlocked in both directions or only in one direction (Refer to **7.0 Product-specific installation** for each tile profile laying pattern).

Lay tile laps facing away from prevailing winds. Where possible the tiles should be laid with the laps facing away from the line of normal sight.

14.7.1 Laying tiles

Tiles are installed from the top of the roof to the eave. Install the second to top course tiles (usually the first full width tile), hold them in place by fastening through the flat of the back edge of the tile which sits on the batten (Step **1** in **Figure 14.7.1.1**). Lower courses of tiles may then be laid without having to fasten each tile.

Subsequent tiles are laid by lifting both tiles in the course above and sliding the next course under the nose of the tiles already in place (Steps **2** and **3** in **Figure 14.7.1.1**). Tiles should be staggered so that side laps do not line up down the roof.

Note: Installation on steel battens is not covered by BRANZ Appraisal no. 1096.

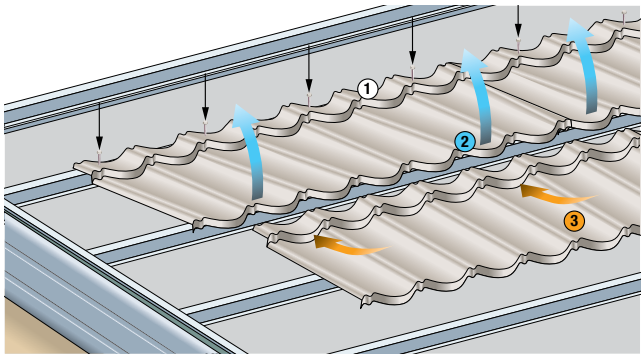


Figure 14.7.1.1

On lower pitched roofs all full tiles can be laid to cover the entire area without fastening. On higher pitch roofs, over 30˚, tiles should be fastened two courses above the tiles being laid.

All tiles should be fastened in place before leaving the job site for any reason.

14.7.2 Tile fastening

Tiles in the body of the roof are fastened using 4 tile fasteners per tile (spacing 420 mm approx.) through the front downturn (tile nose) so that the fastener penetrates the front face of the steel tile batten (see **Figures 14.7.2.1 & 14.7.2.2**). Fasteners need to be placed 60 mm from the lowest section of a pan on tiles and not in the hidden water channels on Shake, Senator, Rockport, Oberon, Aspen and Alpine tiles.

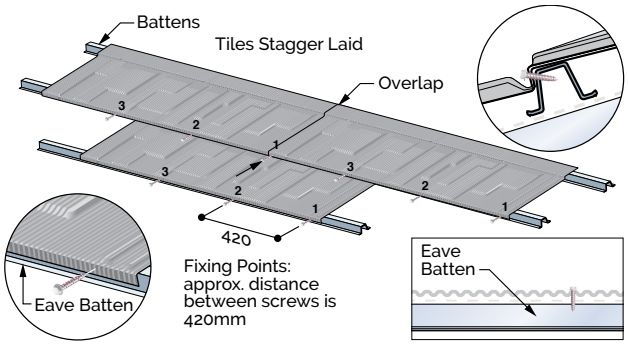


Figure 14.7.2.1

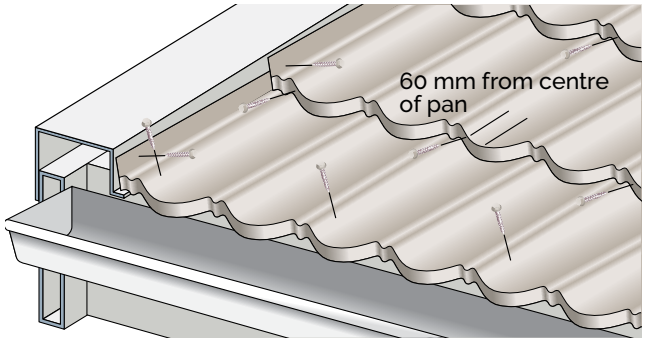


Figure 14.7.2.2

Fasteners should be installed a minimum of 10 mm from the edge of the nose or half the width of the nose.

Eave tiles are fastened through the tops of the tiles using 4 fasteners, not in the pans or water channels.

To ensure weather proofing - satin finish (painted) tile requires a rubber washer under the head of the eave fastener.

14.7.3 Fastening technique

The person fastening the tiles should stand on the tiles below, push down on the tile just above the location to be fastened. Push on the drill to drive the fastener into the nose and through the steel batten.

Clean any swarf that may fall on to the tile surface.

Figure 14.7.3.1

14.7.4 Gable roof

Tiles are turned up against the gable end accessory batten a minimum of 40 mm.

The end of the first tile is bent up 40 mm, this tile is then positioned against the accessory batten and second to top course tile batten, full tiles are then laid the length of the gable.

Starting from the course already laid; lay the tiles two courses at a time end to end. The tile laps must be staggered down the roof. The staggered laying will result in gaps at either end of the gable. Tiles need to be measured, cut and bent to suit. When laying these cut and bent tiles make sure that the laps are laid the same way as the rest of the roof.

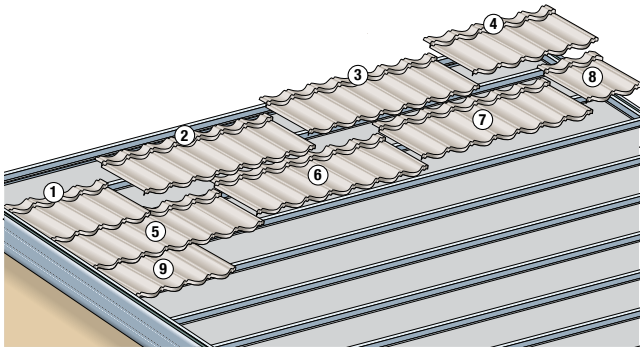


Figure 14.7.4.1 Stagger the tile laps down the roof, using part tiles at the gable end

Measuring, cutting and bending gable end tiles

Measurements for cutting and bending tiles are taken on the roof. The measurements are then transferred on to tiles on the ground where they are **cut**, **bent** and **stacked** in order.

For Bond, Classic and Milano: the measurement is taken from the centre of the water channel of the tile, along the front face of the tile batten on the roof to the inside of the gable end accessory batten, this is the bend line. Add 40 mm for the turn up of the tile, this is the cut line. (Refer to **6.4 Use of fixing tools – guillotine and bender**).

Note: Installation on steel battens is not covered by BRANZ Appraisal no. 1096.

For Shake, Senator, Rockport, Oberon, Aspen & Alpine: the measurement is taken from the edge of the side lap of the tile, along the front face of the tile batten on the roof to the inside of the gable end accessory batten, this is the bend line. Add 40 mm for the turn up of the tile, this is the cut line. (Refer to **6.4 Use of fixing tools – guillotine and bender**).

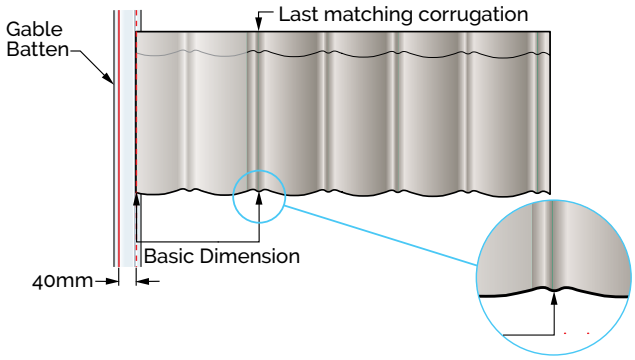


Figure 14.7.4.2 Gable end tile being cut then bent

If the gable is 90˚ then the bend can be made straight across the width of the tile. If it is an angled gable, treat the measurements the same way as a hip roof (Refer **14.7.5 Hip roof**).

Gable end, end tiles are installed from the eave up ensuring lapping is correct. Tiles are nailed in place through the front down turn and into the accessory batten through the turn up.

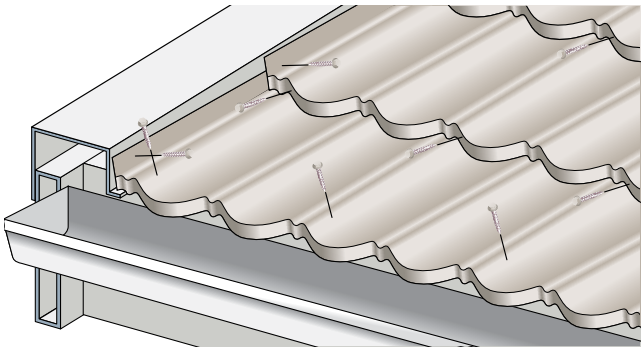


Figure 14.7.4.3 Fastener locations

Note the cut edge of a tile must be covered by accessories or other tiles on the roof to protect against weather.

14.7.5 Hip roof

Tiles are turned up against the hip accessory batten a minimum of 40 mm.

Lay the first full tile at the second to top course (if it doesn't fit, lay from the third to top course) so that the back of the tile is a minimum of 150 mm from the inside edge of the hip accessory batten (see **Figure 14.7.5.1**). This allows a full module to be used for the cut and bent hip tile.

Stagger and lay full tiles across the length of the roof until the last full tile. If the hip tile for the end section cannot be cut and bent out of a full tile it will be necessary to insert a part tile before the end of the hip. Bond, Milano and Classic can be cut in modular length, Shake, Senator, Rockport, Oberon, Aspen and Alpine have specific points where to cut (Refer to **7.0 Product-specific installation details** for each tile profile).

Lay the remaining full tiles down the roof leaving gaps at each end where hip tiles will need to be inserted.

Note: Installation on steel battens is not covered by BRANZ Appraisal no. 1096.

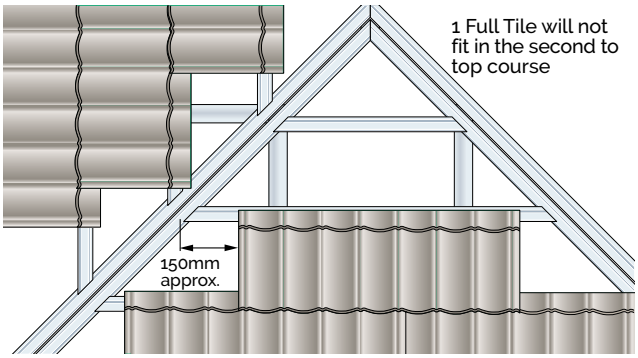


Figure 14.7.5.1 Laying tiles on a hip

Measuring, cutting and bending hip tiles

Measurements for cutting and bending tiles are taken on the roof.

All measurements need to be taken along the front face of the batten as this is where the tiles are fastened. Tiles need to be marked along a line where the batten will eventually be positioned. Failure to follow this procedure will result in bends being incorrect on the modular tiles.

The measurements are then transferred on to tiles on the ground where they are **cut**, **bent** and **stacked** in order.

For Bond, Classic and Milano: the measurement is taken from the centre of the water channel of the tile, along the front face of the tile batten on the roof to the inside of the hip accessory batten, this is the bend line. Add 40 mm for the turn up of the tile, this is the cut line. (Refer to section **6.4 Use of Fixing tools – guillotine and benders**).

For Shake, Senator, Rockport, Oberon, Aspen and Alpine: the measurement is taken from the edge of the side lap of the tile, along the front face of the tile batten on the roof to the inside of the hip accessory batten, this is the bend line. Add 40 mm for the turn up of the tile, this is the cut line. (Refer to section **6.4 Use of Fixing tools – guillotine and benders**).

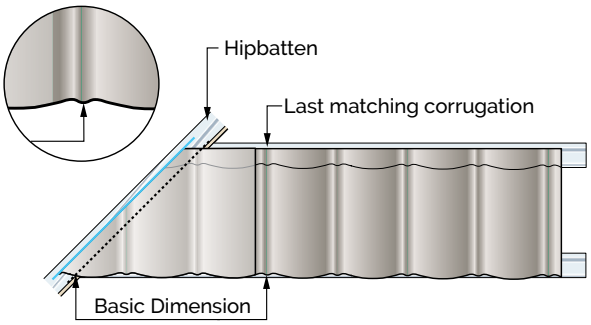
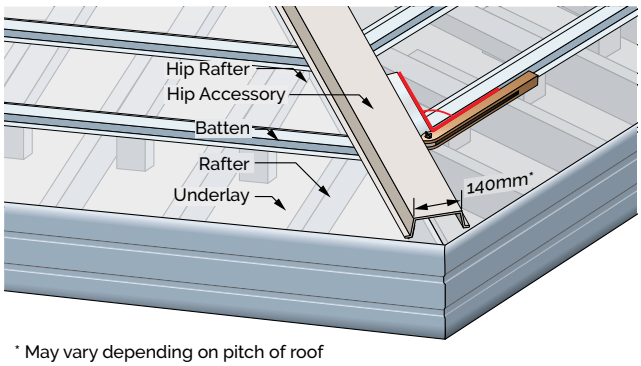


Figure 14.7.5.2 Cutting and bending a hip tile

A bevel set to the angle of the hip may then be used to mark the required angle for the hip tile. Alternatively measurements of the front and back of the tile along the front face of the tile batten may be used to provide the angle.



* May vary depending on pitch of roof

Figure 14.7.5.3 Tile bevel hip angle measurement

Note: Installation on steel battens is not covered by BRANZ Appraisal no. 1096.

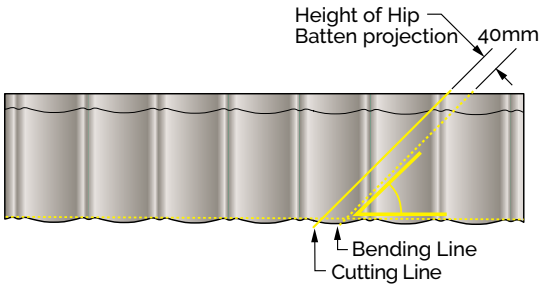


Figure 14.7.5.4 Transfer hip angle to the tile to be cut

Hip tiles are then laid to fill the gaps from the eave up, nailing through the front downturn and through the turn up into the hip accessory batten.

Bond, Milano and Classic need to be laid as described above as they are modular and require significant care in ensuring the modules line up down the roof.

Shake, Senator, Rockport, Oberon, Aspen and Alpine may be installed by pre-cutting and bending for the starting end of a hip. The angle of the hip tile is taken from the roof using a bevel; this is then transferred onto the tile on the ground. Each tile should be made a slightly different length so that when the roof is completed it will have a random pattern on the roof. This results in only having to measure the end hip tile gaps.

Each tile should supply two cut sections leaving a minimum wastage.

Careful cut tile selection and use of cut tiles for hips and valleys also reduces waste.

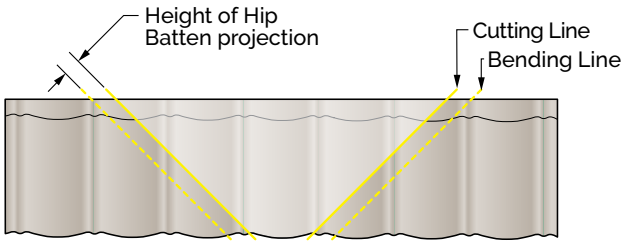


Figure 14.7.5.5 Hip cuts out of a tile

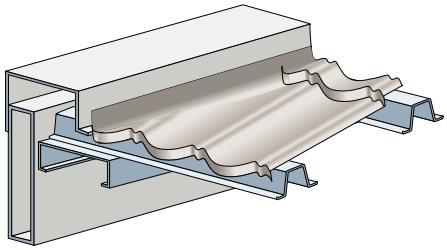


Figure 14.7.5.6 Hip cut against a batten

Note: the cut edge of a tile must be covered by accessories or other tiles on the roof to protect against weather.

14.7.6 Ridge tiles

Measurements for bending and cutting tiles are taken on the roof. Ridge tiles are **bent** before **cutting**.

All measurements need to be taken along the front face of the batten as this is where the tiles are fastened. Tiles need to be marked along a line where the batten will eventually be positioned.

The measurement is taken from the front of the headlap of the tile to the front of the ridge tile batten (A), this is the bend line. Add 40 mm for the turn up of the tile, this is the cut line. (Refer to **6.4 Use of fixing tools – guillotine and benders**).

Measurements along the ridge are required to ensure that the cut tiles are correct (do NOT assume that the ridge is exactly straight unless you have measured).

The measurements are transferred to tiles on the ground. The tiles are **bent**, **cut** and **stacked** in order as they will be laid on the roof.

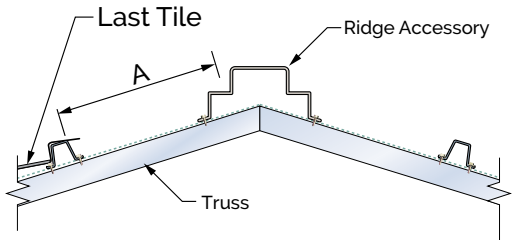


Figure 14.7.6.1 Standard ridge/hip setup

Note: Installation on steel battens is not covered by BRANZ Appraisal no. 1096.

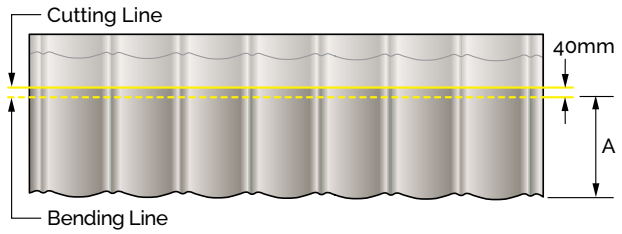


Figure 14.7.6.2 Standard ridge/hip cut and bend lines

Figure 14.7.6.3 Ridge tile being bent then cut

Bend the tile before cutting, if you cut and then bend the tile will bow excessively.

Installing ridge tiles

Fasten the ends of the front of the tile first (Steps **1** and **2** in **Figure 14.7.6.4**), then fasten the outside ends of the back of the tile so that the modules line up with other tiles on the roof, also fasten the back so that the pitch of the top course tile is the same as the roof (Steps **3** and **4** in **Figure 14.7.6.4**). By fastening each end the back of the tile will bow up (due to the distortion created when bending) (see **Figure 14.7.6.4**); push the centre of the tile down and nail the upturn to the ridge batten in several places (see **Figure 14.7.6.5**).

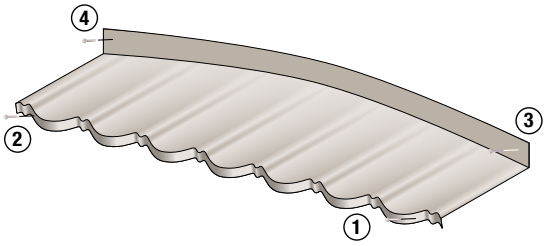


Figure 14.7.6.4

Note: Installation on steel battens is not covered by BRANZ Appraisal no. 1096.

Figure 14.7.6.5

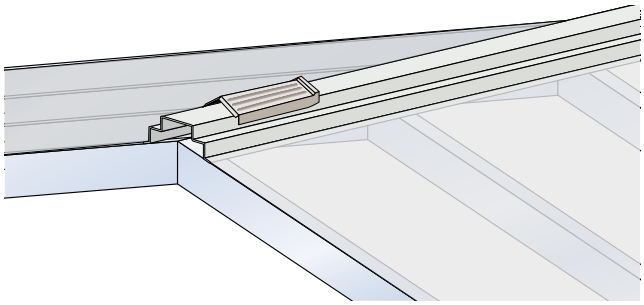


Figure 14.7.6.6 Ridge hip tile and Angle trim installed over a ridge accessory

Note: the cut edge of a tile must be covered by accessories or other tiles on the roof to protect against weather.

14.7.7 Valley tiles

Measurements for cutting and bending tiles are taken on the roof.

All measurements need to be taken along the front face of the batten as this is where the tiles are fastened. Tiles need to be marked along a line where the batten will eventually be positioned. Failure to follow this procedure will result in bends being incorrect on the modular tiles.

The measurements are then transferred on to tiles on the ground where they are **cut**, **bent** and **stacked** in order.

For Bond, Classic and Milano: the measurement is taken from the centre of the water channel of the tile, along the front face of the tile batten on the roof to 30 mm past the edge of the valley. The turn down is not parallel to the bend line, add 40 mm at the front (nose) of the tile and 30 mm to the back of the tile, this is the cut line (see **Figure 14.7.7.1**). (Refer to **6.4 Use of fixing tools – guillotine and benders**).

For Shake, Senator, Rockport, Oberon, Aspen and Alpine: the measurement is taken from the edge of the side lap of the tile, along the front face of the tile batten on the roof to 30 mm past the edge of the valley. The turn down is not parallel to the bend line, add 40 mm at the front (nose) of the tile and 30 mm to the back of the tile, this is the cut line (see **Figure 14.7.7.1**). (Refer to **6.4 Use of fixing tools – guillotine and benders**).

The slope on the cut made on valley tiles is required to make sure that the bottom edge of the valley tile appears straight in the valley.

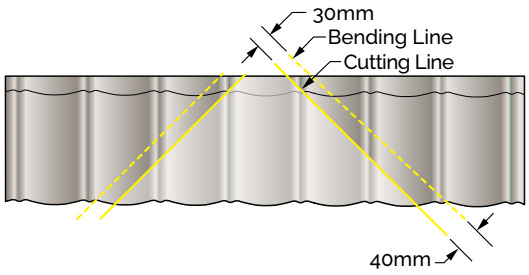


Figure 14.7.7.1 Cut and bend lines of a valley tile

Figure 14.7.7.2 Valley tile being cut then bent

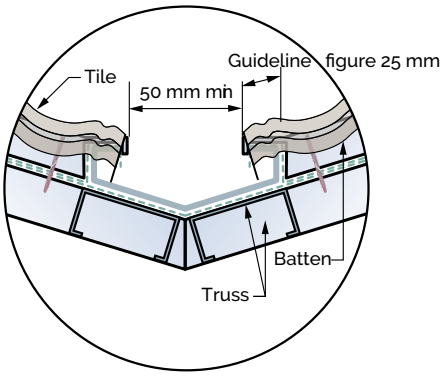


Figure 14.7.7.3

Cut and bend the tiles at the valley as straight as possible to obtain a straight line. Lay the valley tiles from the eave up. Never fasten into a valley.

Note: Installation on steel battens is not covered by BRANZ Appraisal no. 1096.

14.8 Use of fixing tools

Guillotine

The guillotine can be used to cut tiles or accessories as required.

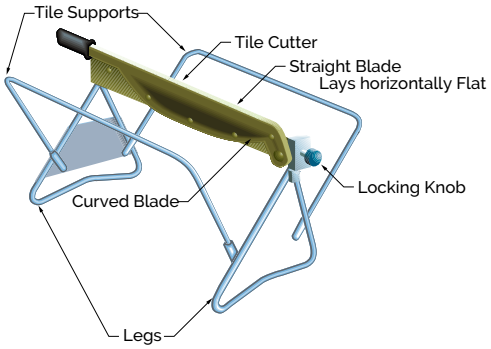


Figure 14.8.1

14.8.1 Gable, hip and valley tiles

Flattening the nose and headlap before cutting the tile will make cutting easier.

Figure 14.8.1.1

Cut along the marked line, a quick single motion down while pulling the guillotine blade towards yourself (to the left) will keep the blades together and usually ensure that a cut is made in one operation. If more than one cut is required move the tile closer to where the blades intersect as this is where the guillotines cutting power is greatest.

Hold the tile so that the largest side is held in the left hand, this gives you greater control over the tile being cut.

Cutting a tile

Figure 14.8.1.2

Bending a tile

Figure 14.8.1.3

Note: Installation on steel battens is not covered by BRANZ Appraisal no. 1096.

14.8.2 Ridge tiles

These are bent in the long tile bender before cutting to help reduce tile distortion (splay).

Figure 14.8.2.1

These tiles are cut along the length of the tile, so it will take several cuts to complete a ridge tile.

Start with the tile headlap to the right of the guillotine blade, make short cuts along the cut line pushing the tile into the first 1/3 of the cutting area of the guillotine. Continue the sequence until the tile is cut.

Figure 14.8.2.2

14.8.3 Short tile bender

The short tile bender is used for folding turn-ups required for gable, hip and wall tiles and for the turndowns into valleys. It clamps and flattens the tile turn-ups so that the tiles can be installed under accessories.

Short tile bender

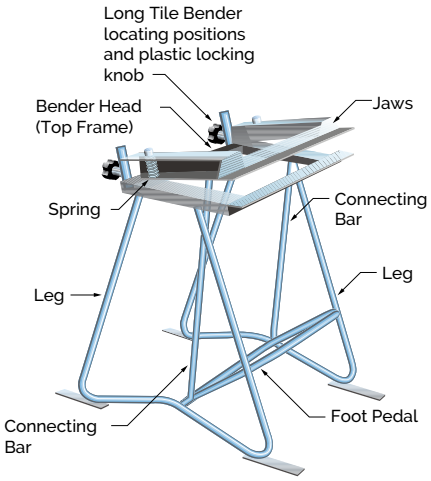


Figure 14.8.3.1

14.8.4 Long tile bender

This folder attaches to the back of the short tile bender. It can be used for folding ridge tiles and if necessary gable, hip or valley tiles.

Long tile bender

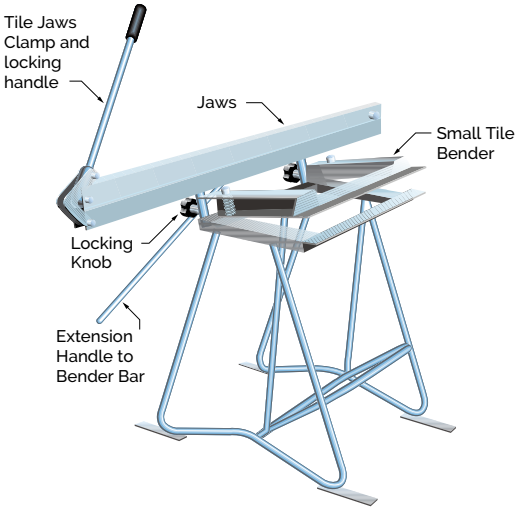


Figure 14.8.4.1

Note: Installation on steel battens is not covered by BRANZ Appraisal no. 1096.

Important information about this material

The Gerard Roofing System

RoofTG Pacific Ltd accepts no liability if the Gerard roofing system is not used in accordance with instructions contained in this publication.

Use only the current specification

This publication may be superseded by a new publication. RoofTG Pacific Ltd accepts no liability for reliance upon publications that have been superseded. Before using this manual check whether this is the current version; simply call the Gerard Roofs Helpline on **0800 104 868** or visit **www.gerardroofs.co.nz**

Substitution

RoofTG Pacific Ltd accepts no liability if the systems are not installed in accordance with instructions contained in this and other Gerard Roofs technical literature. Substitution of specified or recommended components with alternative brands can compromise performance dramatically. The Gerard roofing system is not generic and must be installed as specified including the use of Gerard branded components.

Use in Australia

This installation manual is based on installation in accordance with the New Zealand Building Code. For installation within Australia, this manual must be used in conjuction with the Installation Addendum which further outlines Australian-specific requirements.

Please note that local building codes may have additional requirements not outlined by Gerard and will supersede the installation recommendations outlined in this manual and the Installation Addendum.

Trade marks

Copyright

PO Box 18071
Glen Innes
Auckland 1743

P: **0800 104 868**

www.gerardroofs.co.nz

17 Avatonbell Drive,
Luscombe
Queensland

P: **1800 249 616**

www.gerardroofs.com.au

MAN0003 0125