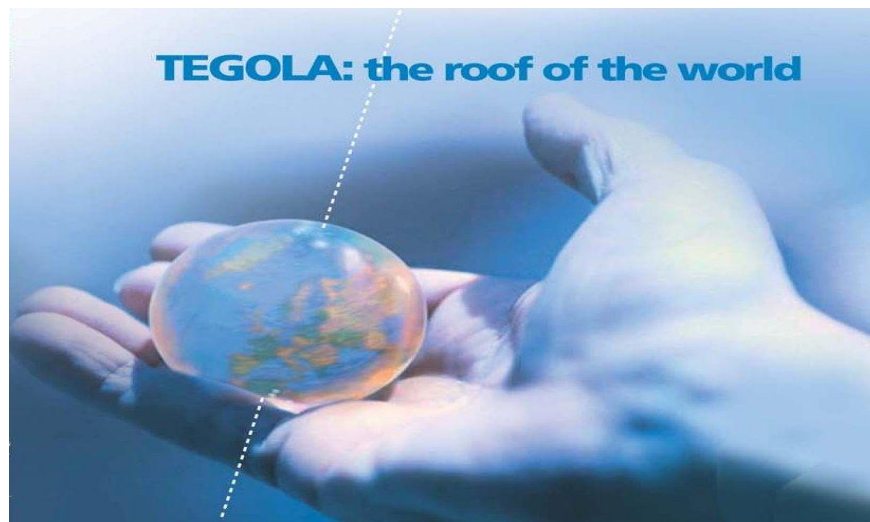




Technical / Flashing Manual

For Tegola Shingles in New Zealand



Technical / Flashing Manual
GBS-02-01 Revision A

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Technical / Flashing Manual GBS 02_01 – Revision A December 2008

REVISION: The present version of this Technical / Flashing Manual **GBS 02_01** is **Revision A, December 2008**.

GBS Group Limited assures the holder of the continuous updating of all its technical information. The latest version available should be downloaded from the website www.gbsgroup.co.nz. For more information you should contact the Sales Department on sales@tegola.co.nz.

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1.0 Introduction

This technical / flashing manual GBS 02_01 is intended to be used in conjunction with the summary document **GBS 02**, and the individual shingle installation instructions for each style of shingle contained in the documents **GBS 02_02 through GBS 02_11**. These documents illustrate the detailed aspects involved with the correct flashing and installation of Tegola Canadese bitumen based roofing shingles products when used in New Zealand.

The technical / flashing details provided by Tegola Canadese, Italy are based on common detailing acceptable to European building code regulations and accepted trade practice based on systems developed over many years and used successfully across Europe.

In New Zealand different methods and materials used in construction means some alternative flashing materials (namely butyl or EPDM rubber sheet membrane) can be used as a substitute to the European detailing provided. Some European details provided have two or more alternative methods that are considered acceptable for use in conjunction with the Tegola range of shingle roofing products.

Accessory products such as plywood, underlay (felt, peel & stick or torch on membrane), continuous ridge or box vents, butyl or EPDM rubber sheet, plywood and shingle nail fixings, mastic and metal flashings can be sourced locally in New Zealand and are not necessarily supplied by Tegola Canadese, Italy but when combined form the complete roofing system. Separate product information in electronic form (PDF files) relating to these accessories also forms part of this technical information.

Due to the excellent service history, reputation and European certification standards met by the manufacturer, Tegola Canadese, they are able to provide roofing solutions and products suitable to withstand the most severe climates. The combination of a high level of technical information and assistance available both locally and internationally, ensures a roofing solution can be tailored to meet even the most demanding of building designs.

Notes:

- *These specifications have been re-produced by the NZ distributor for Tegola Canadese shingle products in New Zealand, GBS Group Ltd. This information is given in good faith and represents the latest information available at the time of issue. It is the end users responsibility to ensure these products are used and handled correctly and in accordance with all current building code regulations.*
- *This product range complies with clauses, B2 (durability), E2 (external moisture) and F2 (hazardous building material) of the NZ Building Code.*
- *The collection of potable water has not been assessed and is outside the scope of this document. Please refer to GBS Group Ltd for additional information and details on local water quality testing that has been completed.*
- *The application of Tegola shingle roofing products should only be carried out by trained and certified applicators of Tegola shingle products and as per this technical information.*
- *The original specifications used to produce this document have been provided to GBS Group Ltd by the Importer of Tegola Building products, Avanti Building Products Ltd, P.O. Box 106235 Auckland. Avanti building products Ltd hold all warranty authority and control on behalf of Tegola Canadese - Italy".*

2.0 EAVES DETAIL (Drip Edge Flashing)

The drip edge flashing as described in GBS 02 document section 3.3 is installed at all roof eaves where plywood overhangs into the fascia gutter system and protects or caps the end of the plywood (fig1). The PVC extrusion is supplied in 2.7m lengths and fits 15mm thick plywood only. The folded metal version can be used to fit any thickness of plywood required and is recommended for use with the metal line (copper) range of shingles (fig 2). The typical flashing profile dimensions are detailed below in fig 3 & 4 for the particular type of material used.

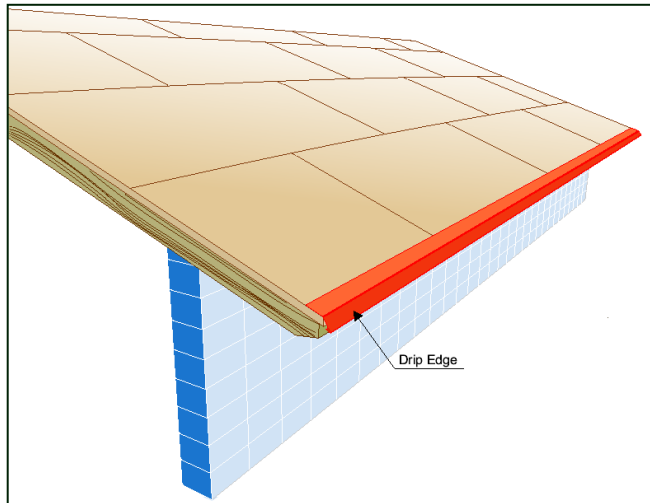


Fig 1

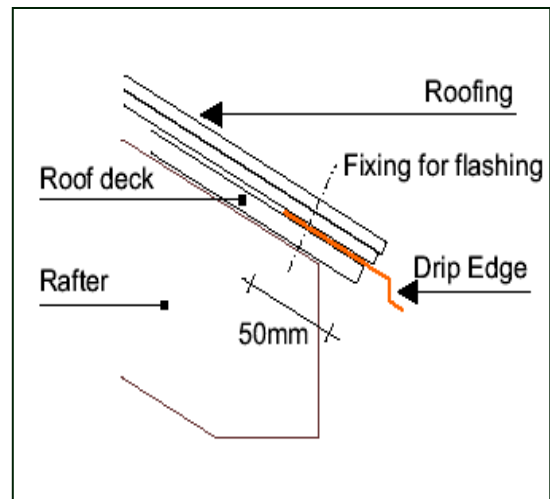


Fig 2

Typical Drip Edge Options	
<p>PVC Extruded Drip edge cap to protect plywood edge</p> <p>Drip Edge Profile</p>	<p>0.55 Gauge Galv Zinc or Coloursteel drip edge flashing</p> <p>Drip Edge Profile</p>

Fig 3

Fig 4

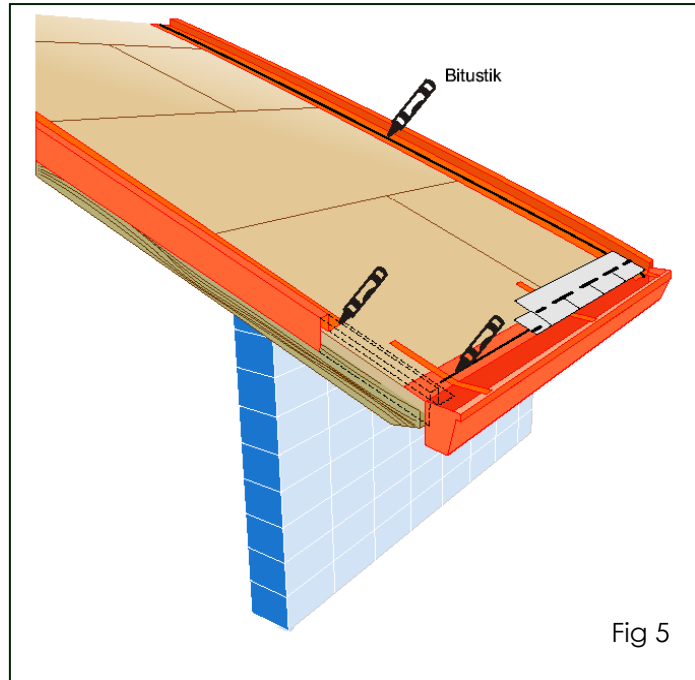
3.0 BARGE DETAILS

3.1 European Barge Detailing with Metal Flashing

Install lateral barge flashing (fig 5). Fix it to the Barge board and to the roof plane with appropriate fixings.

Do not nail through flashing on roof plane.

Apply a line of Bitustick/Mastic on the topside of the flashing (fig 5) then start to install the shingles as per shingles instructions.



Install lateral flashing as shown in figure 6 and fix to the barge board and roof plane as noted.

When installing the flashing do not nail through flashing face on the roof plane.

Apply a continuous bead of mastic (bitustick) on the flashing as per fig 7 then commence shingle installation as per shingle instructions

Do not fix shingles with nails closer than 25cm from the barge edge, refer fig 7.

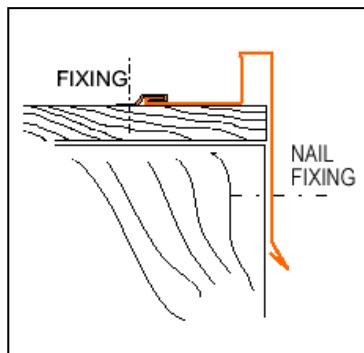


Fig 6

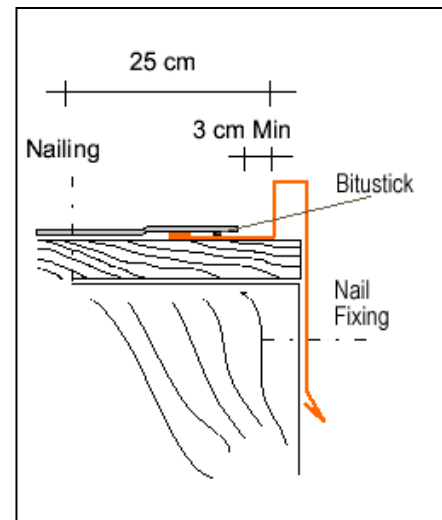
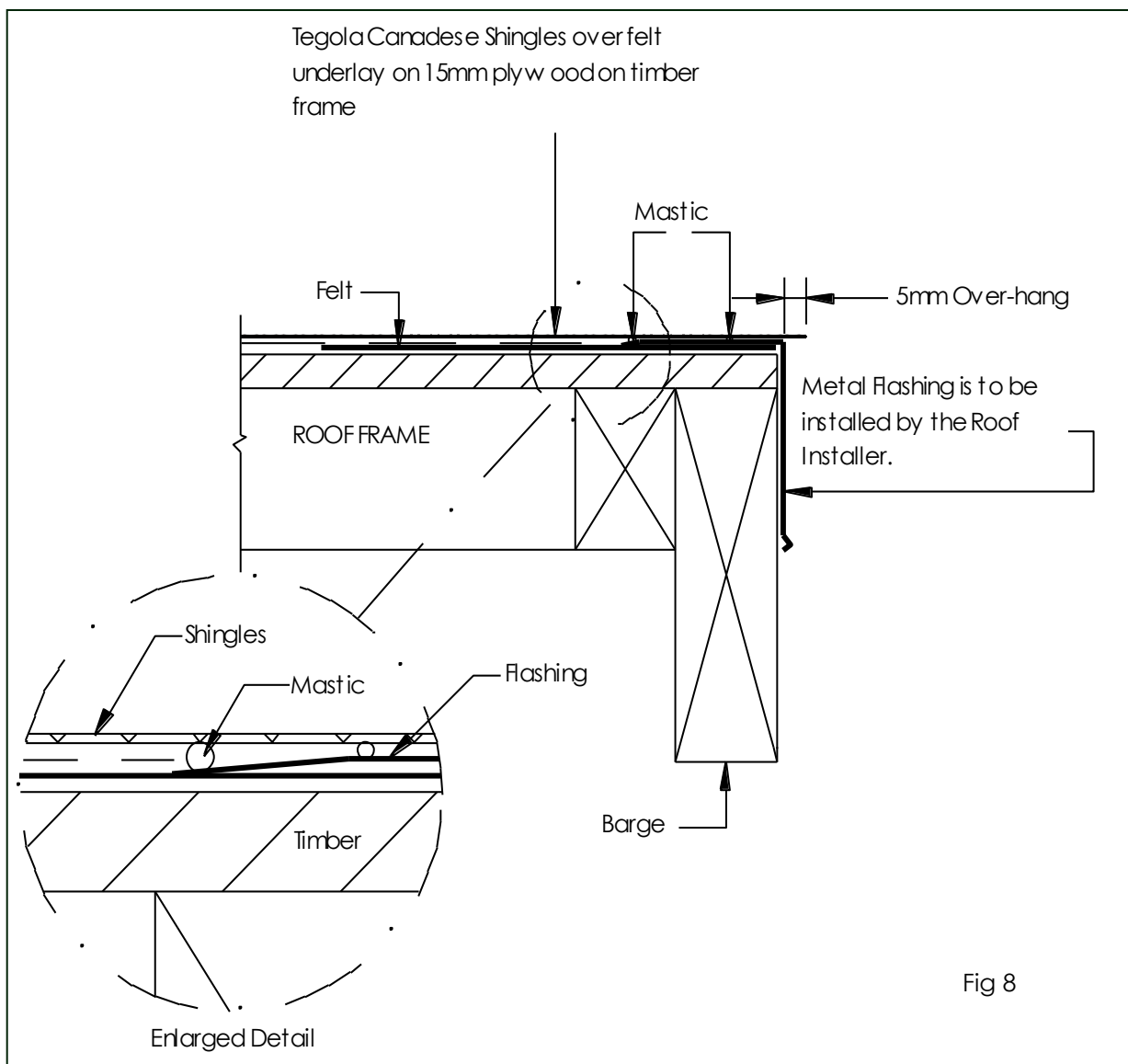


Fig 7

3.2 New Zealand Barge Detailing with Metal Flashing

In New Zealand it is common to use a folded 90 deg metal flashing detail as profiled in fig 8. The drip edge and underlay is installed then the barge flashing fitted.

A double continuous bead of mastic is run on top of the metal flashing as detailed from eaves to ridge and shingles installed slightly overhanging the barge board. The exact dimension of the vertical leg of the flashing is determined by the compliance document E2 / AS1 which forms part of the NZ building code requirements. Also refer to GBS 02 document section 3.4 for additional barge detail information.



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3.3 European Barge Detail using Timber Batten (alternative to section 3.1 & 3.2)

Fix a triangular timber batten (min H3 treated) on the barge end with screws as per fig 10.

Commence shingle install as per shingle installation instructions and fig 9.

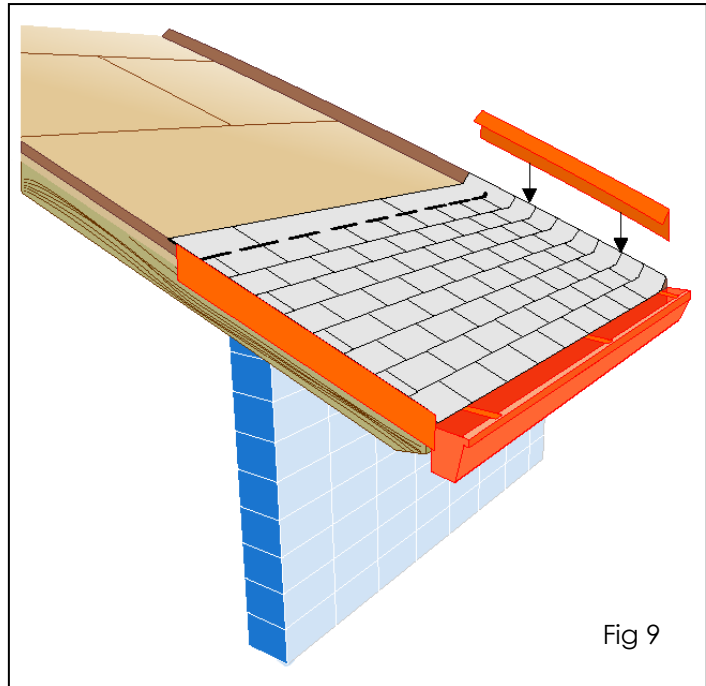


Fig 9

Do not fix shingles with nails at a distance less than 25cm from the lateral edge as per fig 10

At the lateral edge nail them on to the wooden battens as per fig 10.

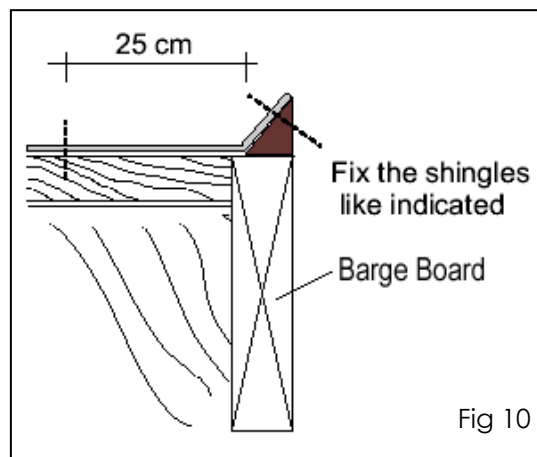


Fig 10

Install lateral flashing. Fix it to the vertical face of the barge board, as detailed in fig 11.

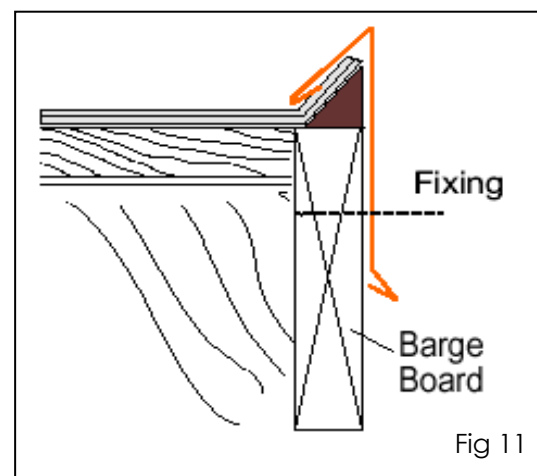
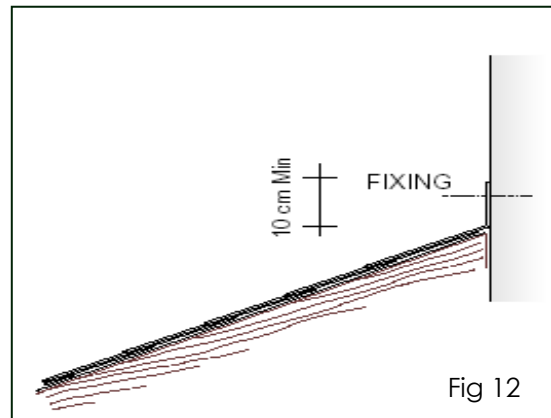
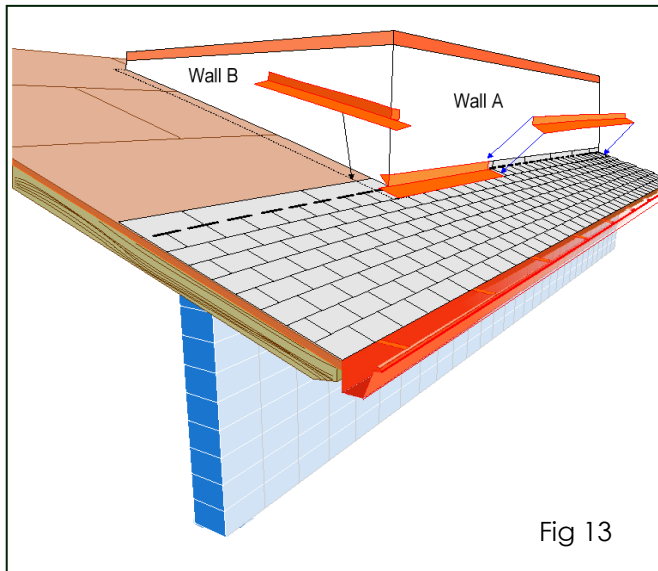


Fig 11

4.0 APRON / SIDE FLASHING DETAILS

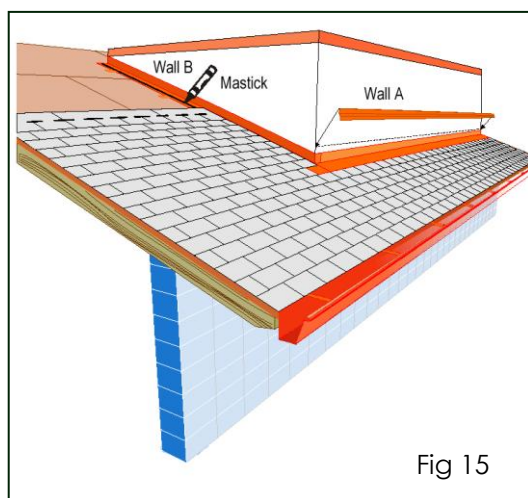
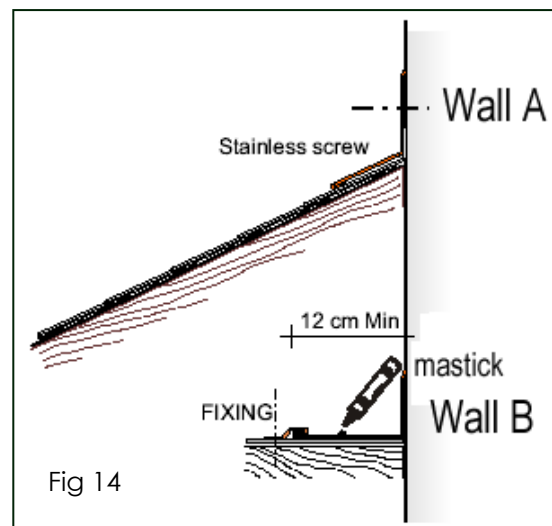
4.1 European Two Piece Metal Flashing Method (suitable for new or re-roofing)

Install the shingles and when intersecting with a vertical wall fig 13 (wall A), bend the shingles up the wall and fix with high adherence nails, refer fig 12.

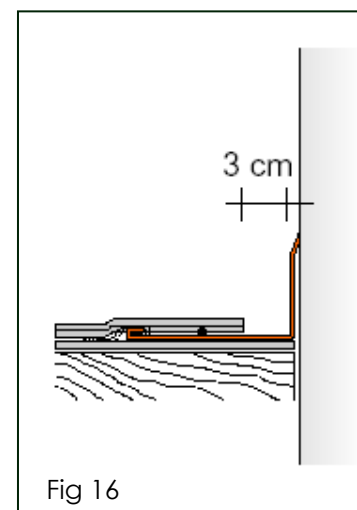


Install the first flashing to wall A as per fig 13 and then wall B as per fig 13 paying particular attention at the corner to cut, bend, silicon and close the flashing with rivets.

Apply a bead of mastic as noted in fig 14 B prior to installing shingles.



Continue to install shingles as per fig 15 and leave a 3cm gap between the end of the shingles and wall B, refer fig 16. Do not nail through flashing when installing shingles.



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Because structural movement may occur between the roof plane and the vertical walls two flashing profiles are required to guarantee a waterproof solution.

Install the secondary metal flashing to wall A (fig 15) first then wall B and fix with stainless screws or with screw anchors, see fig 17 A & B. Pay attention on the corners to cut, bend, silicone the joint and fix with rivets.

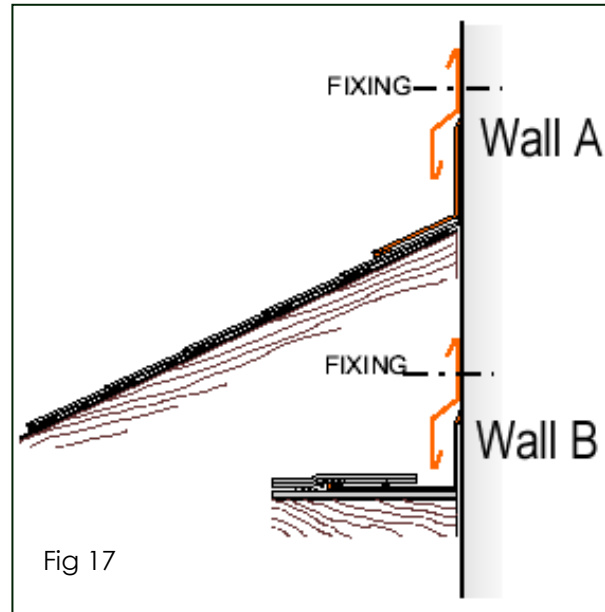


Fig 17

4.2 European Timber Batten and One Piece Metal Flashing

Install the shingles and when intersecting with a vertical wall fig 18 (wall A), bend the shingles up the wall and fix with high adherence nails as per fig 19 A.

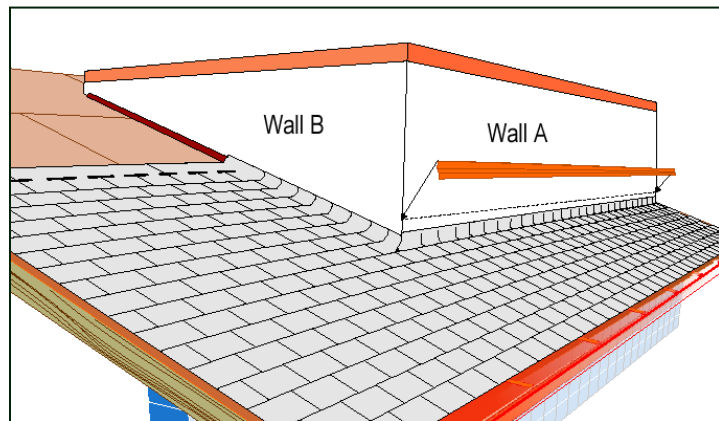


Fig 18

Pay attention when cutting the last row of shingles adjacent to the wall and if necessary use mastic to seal.

Install a triangular batten (H3 treated) to the lateral (raking) walls only and fix with self tapping screws as per fig 19 wall B.

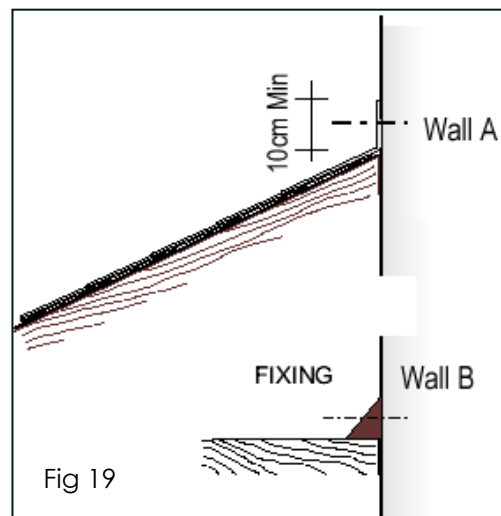
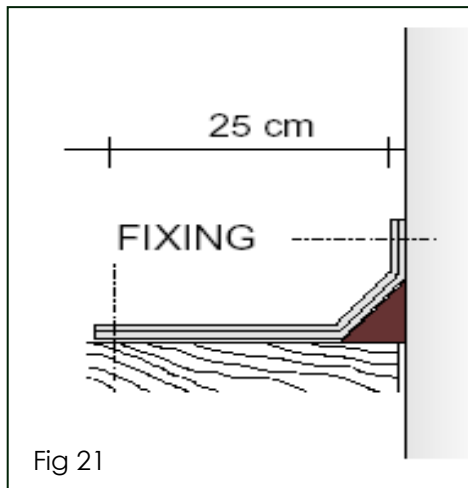
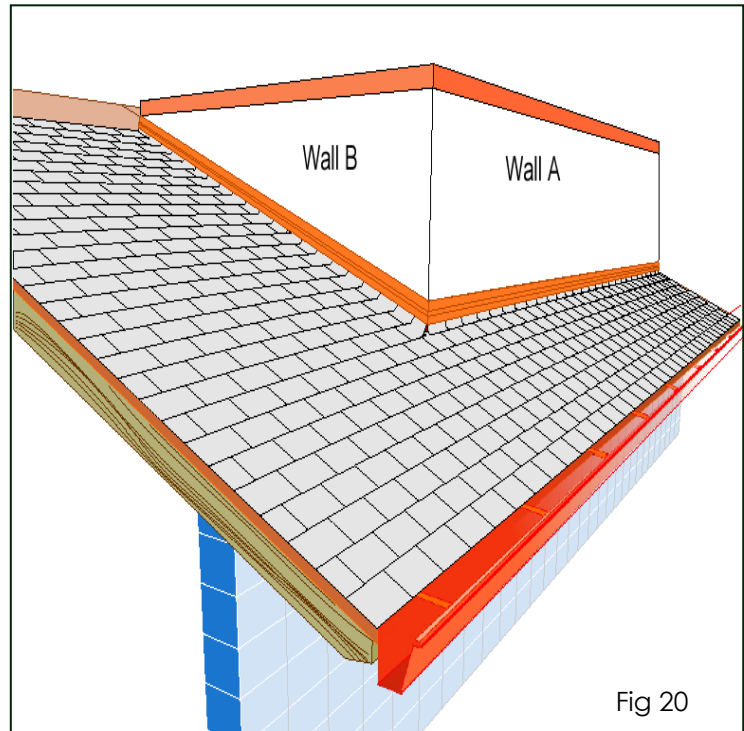


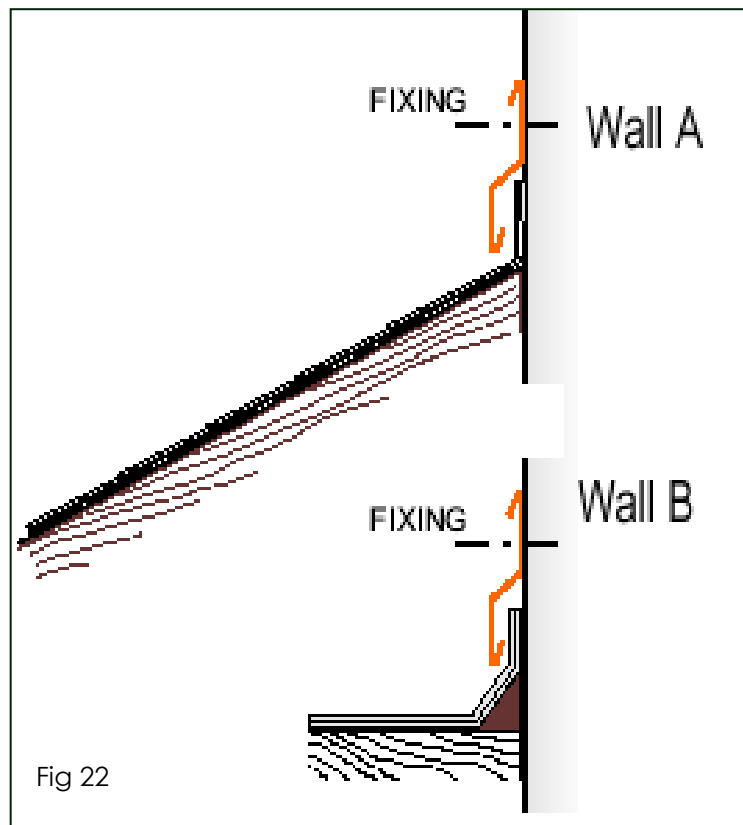
Fig 19

Continue to install shingles up the roof plane fig 20 (wall B) and when intersecting with the wall bend shingles up the wall and fix with high adherence nails. Do not fix shingles to the roof plane with nails closer than 25cm from the wall as per fig 21.



When shingle installation is complete install the secondary metal wall flashing profiles as detailed Fig 22 (A and B). Fix with self tapping screws.

The use of a continuous silicon bead on the back of the flashing will provide extra weatherproofing. Pay attention on the corner to cut, bend silicon and fix with rivets.



4.3 Rubber EPDM Apron / Step Flashings (Common NZ Method)

As per GBS 02 document section 3.5, roof planes that intersect with vertical walls (either parallel or transverse) can be flashed using Butyl or EPDM rubber sheet product as detailed below.

4.3.1 Raking (Step Flashing) Detail

Butyl or EPDM rubber sheet can be used to protect the junction between the end of the shingle course and the vertical framed wall. The rubber sheet is cut into a series of 300mm x 150mm sections and is woven between each course of shingle as installed from the eaves to ridge. The membrane is run up the vertical face of the wall 150mm and extends minimum 150mm out on the roof.

To divert water away from the wall at the eaves a proprietary folded metal 'kickout flashing' is generally installed prior to installation of the shingles and membrane as detailed below in figures 23 through 26.

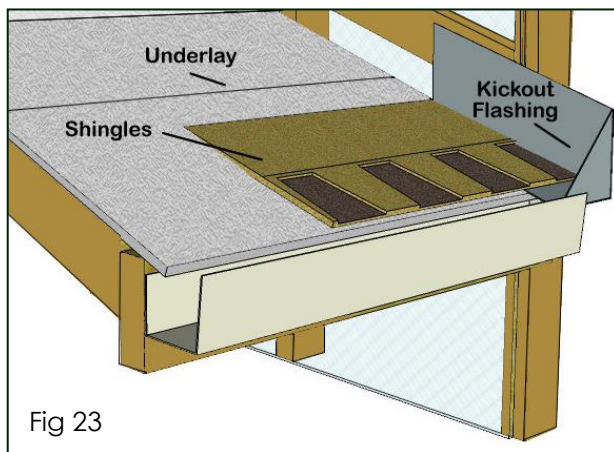


Fig 23

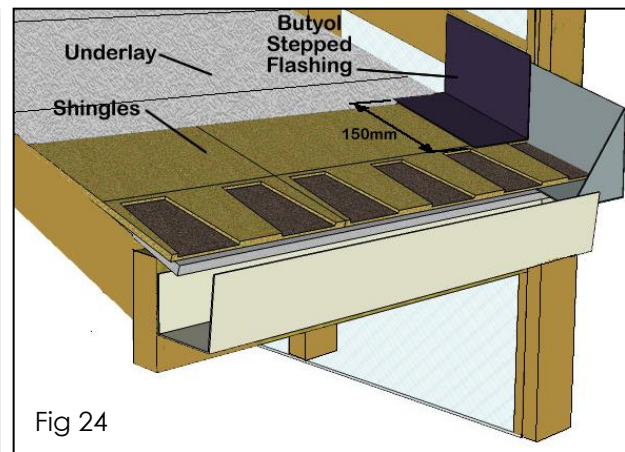


Fig 24

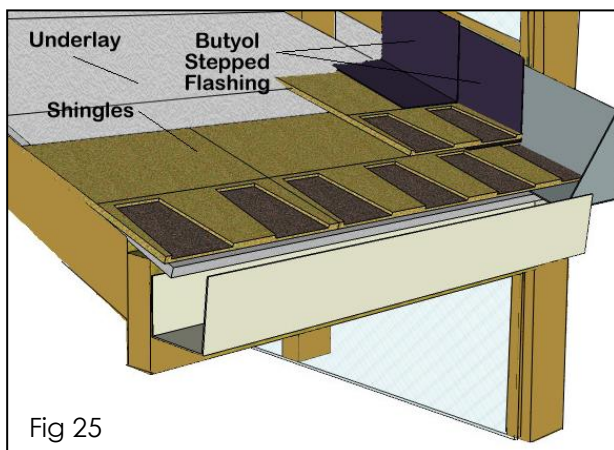


Fig 25

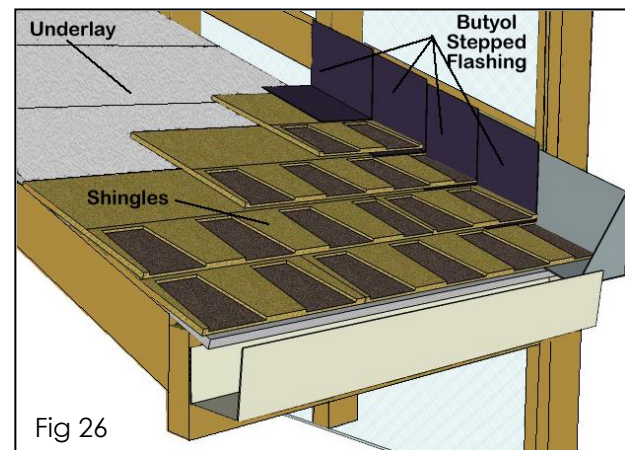
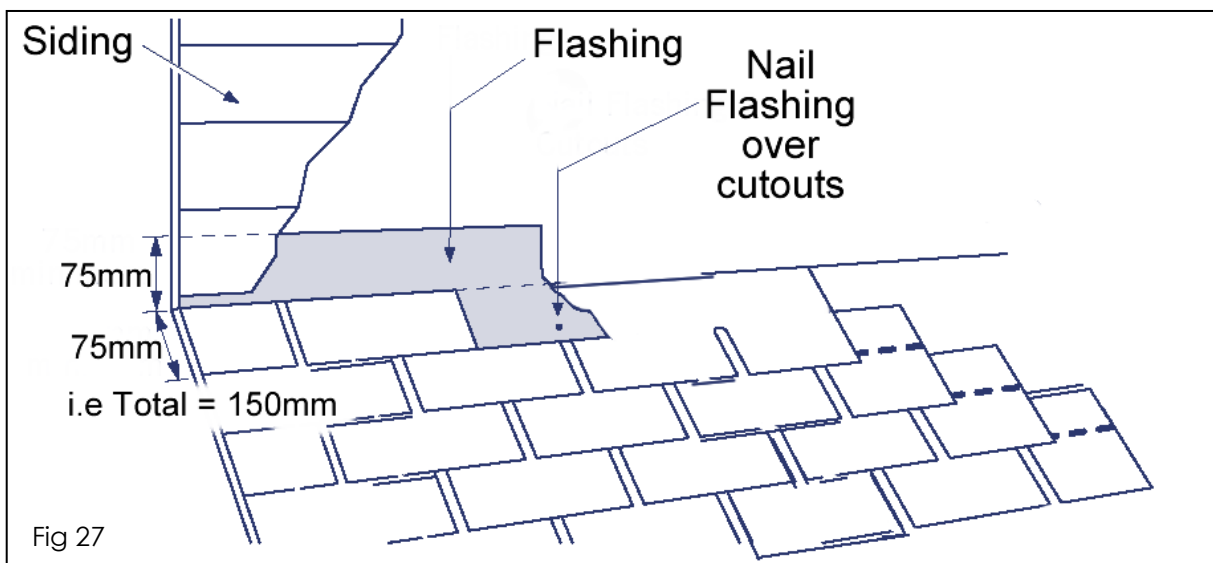


Fig 26

4.3.2 Vertical Front Wall Apron Detail

1. As shingle installation proceeds up the roof plane minor adjustments of the shingle exposure to each row may be necessary to ensure the shingle that intersects with the wall is minimum 150mm wide.

2. As detailed in fig 27 the EPDM or Butyl strip is installed minimum 150mm up the wall and minimum 100mm out over the top shingle course. Use Mastic and nails to fix to the roof slope. Avoid laps along the length of the flashing if possible otherwise overlap minimum 150mm (no fixing of lap required). Dummy shingles can be installed over the membrane for visual appearance, fasten with small pin nails and cover with mastic.



5.0 CHIMNEY FLASHING DETAILS

5.1 Two Piece Metal Flashing

Install the shingles as per fig 28, bend the shingles up the vertical face of the chimney and fix with high adherence nails.

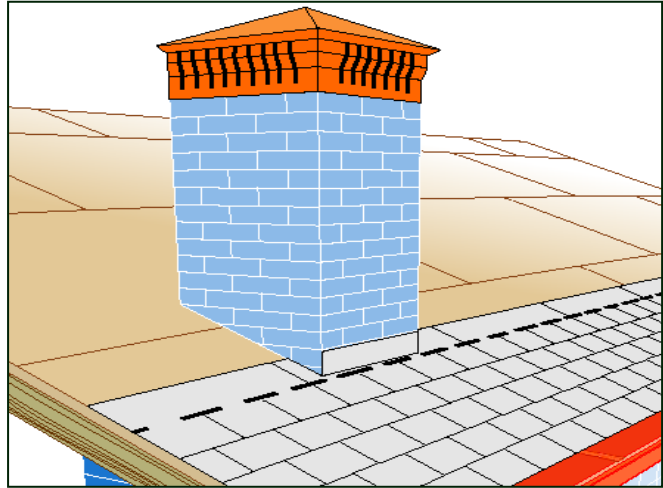


Fig 28

Structural movement may occur at the junction between the roof plane and the chimney therefore two flashing profiles are required to guarantee a waterproof solution. The profile of the first flashing is indicated as shown in Fig 29.

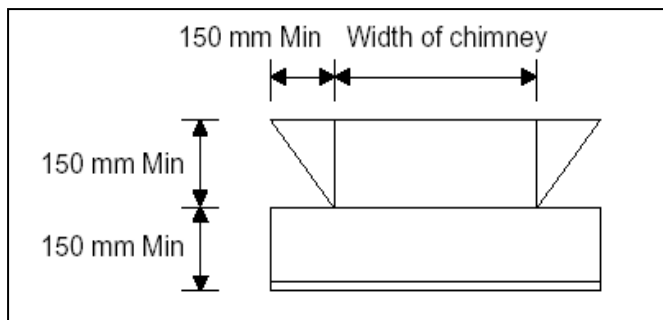


Fig 29

Install the first metal flashing profile and fix to the chimney as detailed in fig 30.

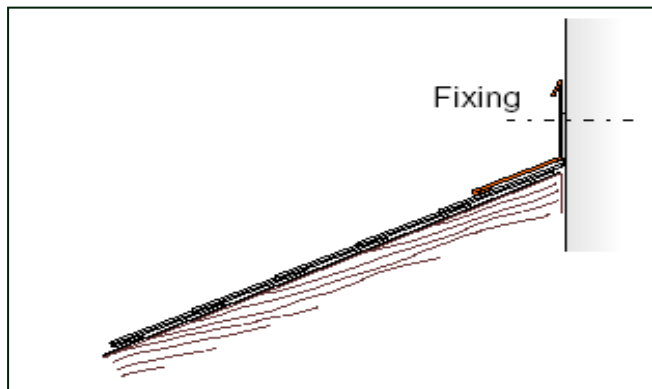


Fig 30

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When installed the metal flashing should appear as detailed in fig 31.

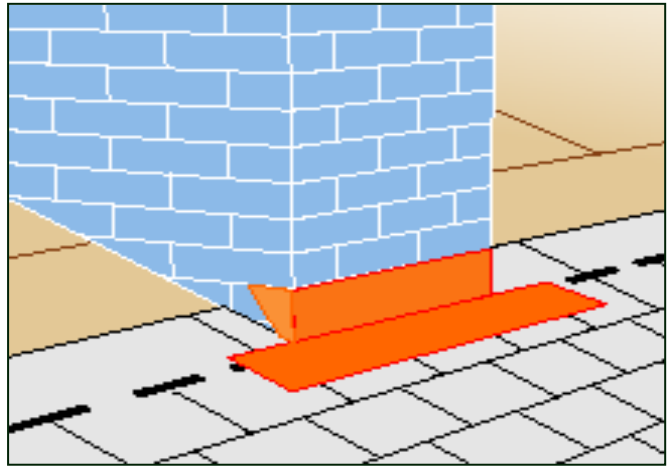


Fig 31

Install lateral flashings as detailed in Fig 32.

Pay attention at the corner to cut and bend the flashings, use silicon to waterproof and fix with rivets.

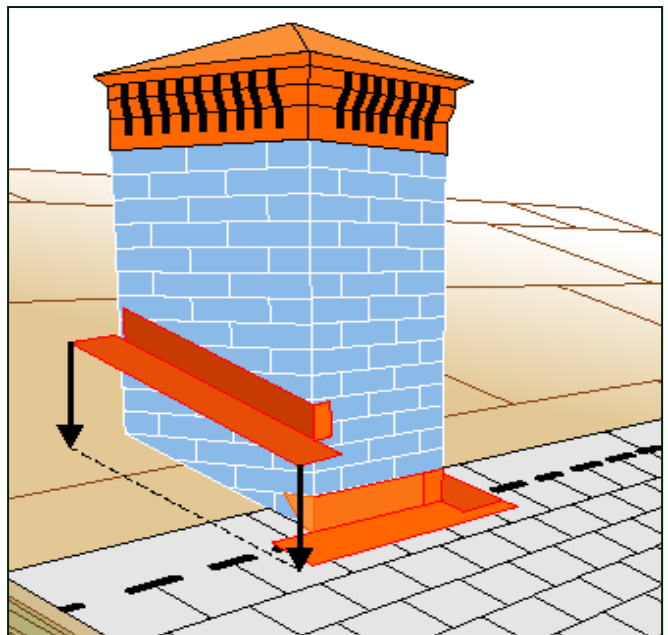


Fig 32

Install mastic on metal flashing prior to installing shingles as detailed in figure 33. Do not nail through the metal flashing when installing shingles.

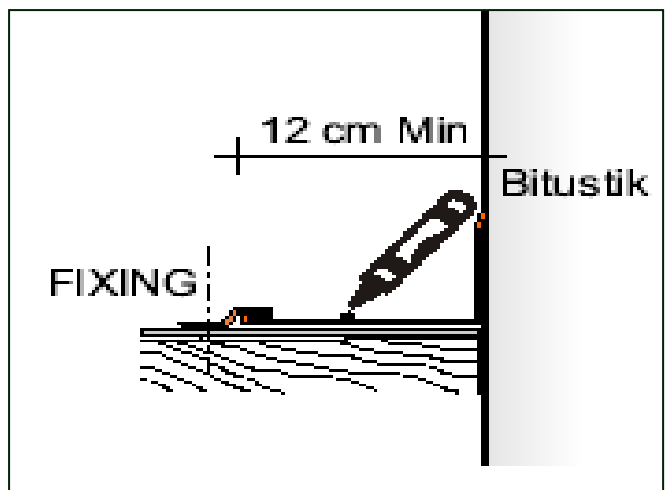


Fig 33

Continue to install shingles to sides of chimney as per fig 34 and ensure a 3cm gap against chimney as per fig 35.

Do not nail through flashing under shingles.

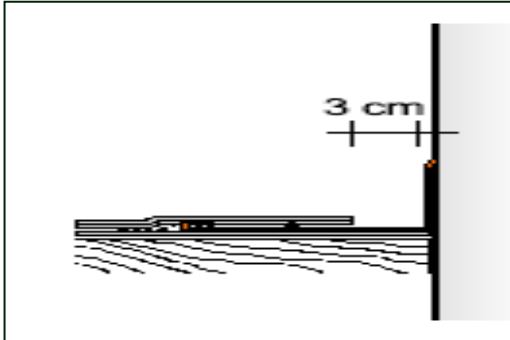


Fig 35

Having shingled just passed the top side of the chimney as per fig 36, install the upper flashing (profile fig 37) as per fig 36 and 38.

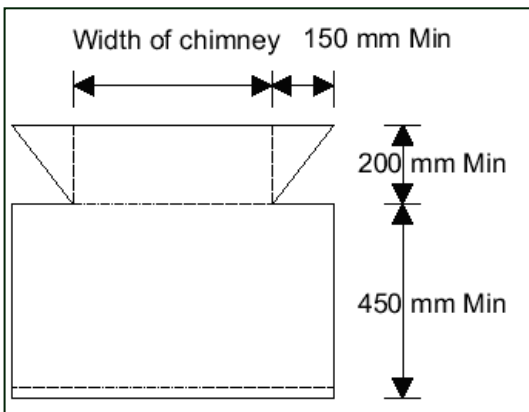


Fig 37

Pay attention on the corners to bend, cut, silicon and fix with rivets as per Fig 38.

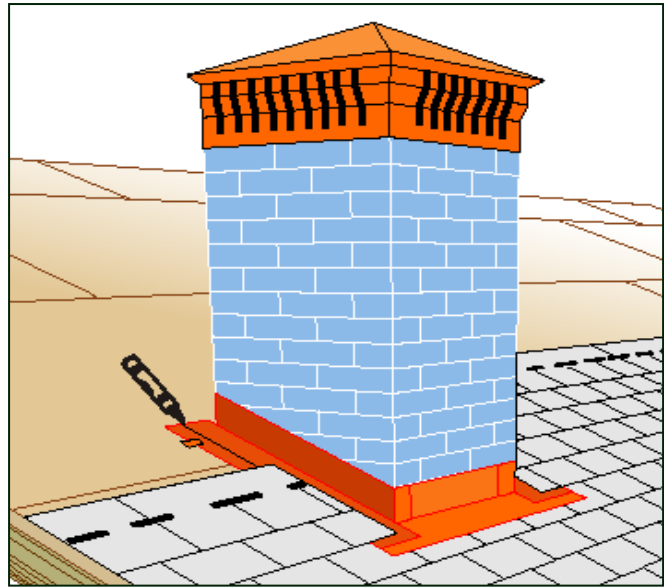


Fig 34

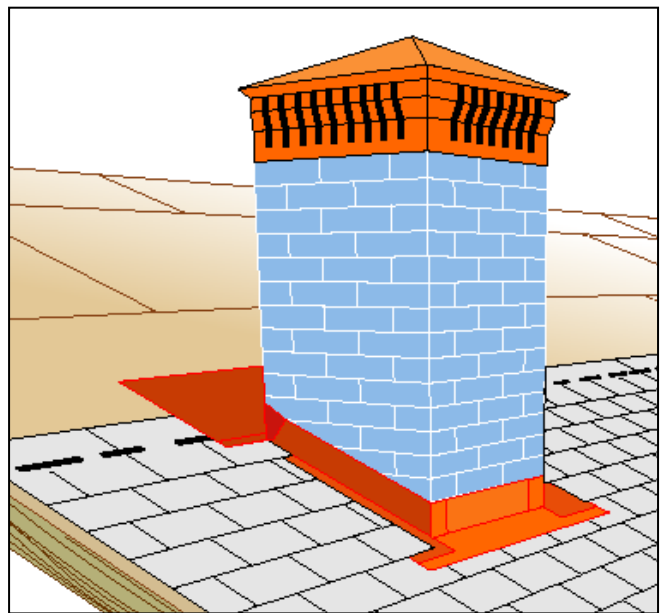


Fig 36

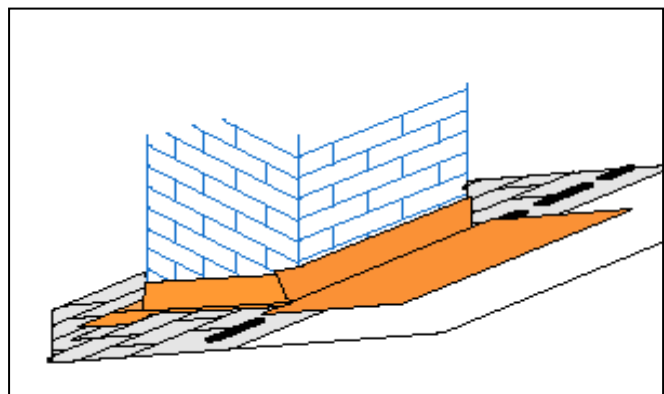


Fig 38

Complete the shingle installation to the remaining roof plane as per fig 39.

Ensure no nailing through metal flashings under shingles, use mastic to fasten shingles in this area.

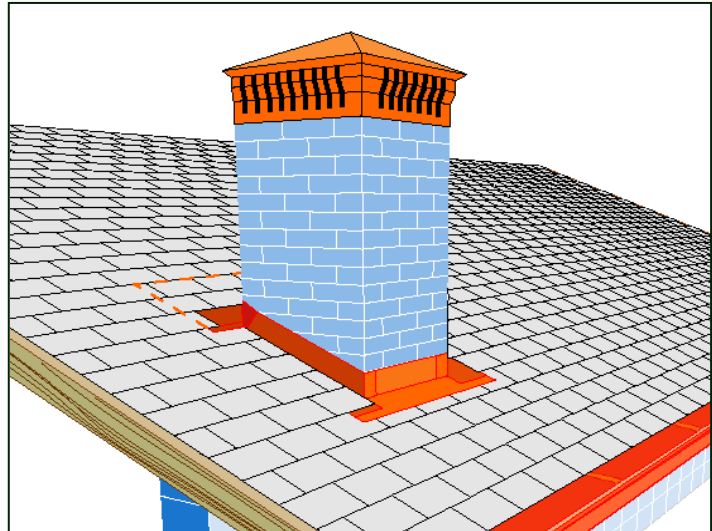


Fig 39

Structural movement can occur at the chimney / roof junctions, therefore two flashings profiles are necessary to give a waterproof solution as per fig 40.

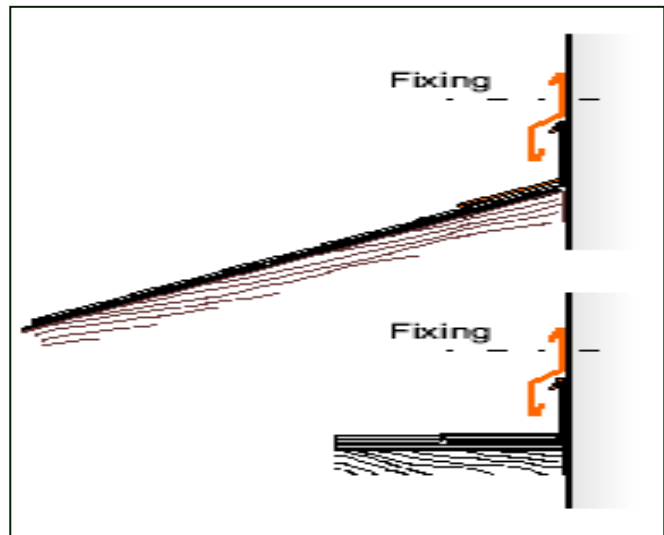


Fig 40

Install secondary metal flashings around the chimney as per fig 40 and 41.

Fix with appropriate screws or anchors and cut, bend, silicon and fix with rivets.

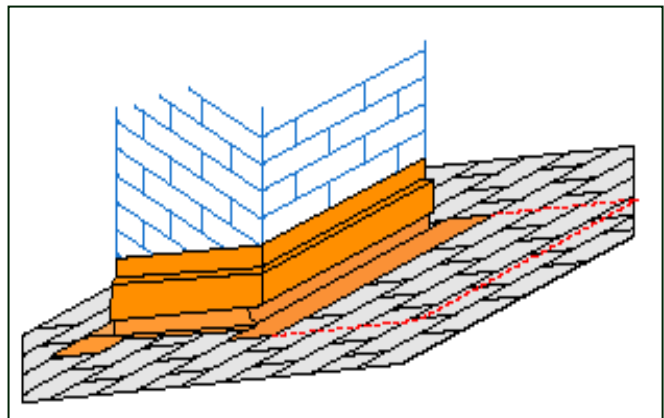


Fig 41

5.2 Membrane / Metal Chimney flashing

Install the shingles below the chimney as per fig 42, bend and fix with nails to the vertical face of chimney.

Apply a suitable peel and stick or torch on membrane to the bottom edge of the chimney as per fig 42.

Pay attention at the corners to cut and adhere correctly.

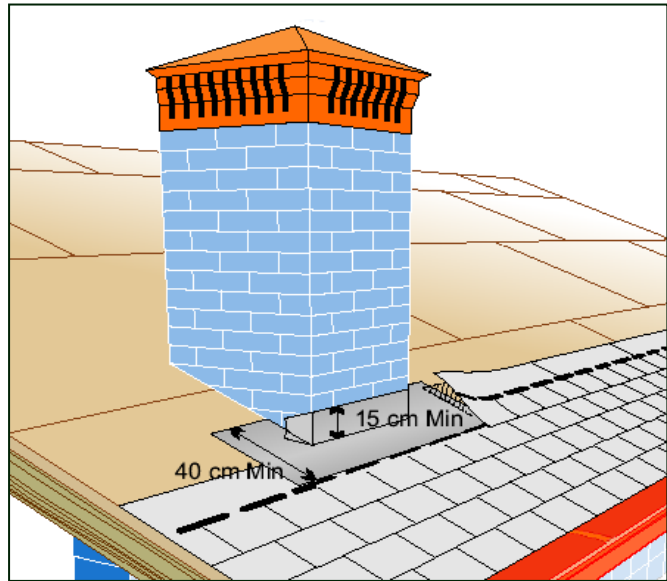


Fig 42

Cut shingles as required and torch or mastic adhere the shingles onto the membrane refer fig 43.

Do not nail through the membrane.

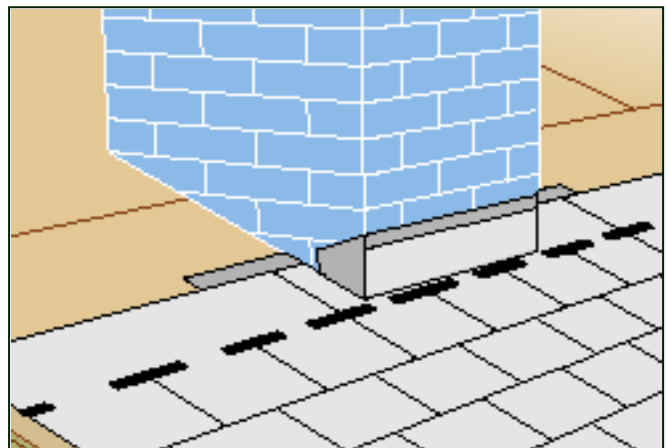


Fig 43

At the lateral sides of the chimney apply a peel and stick or torch on membrane as per fig 44.

Again pay attention at corners.

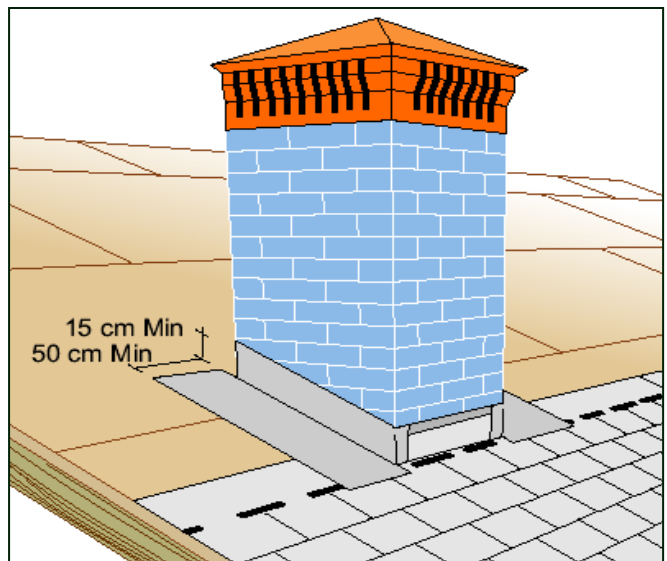


Fig 44

Torch or mastic adhere shingles onto the membrane to the sides of chimney as per detail 45 and 46.

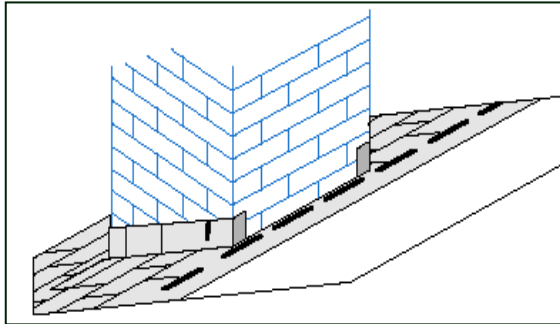


Fig 45

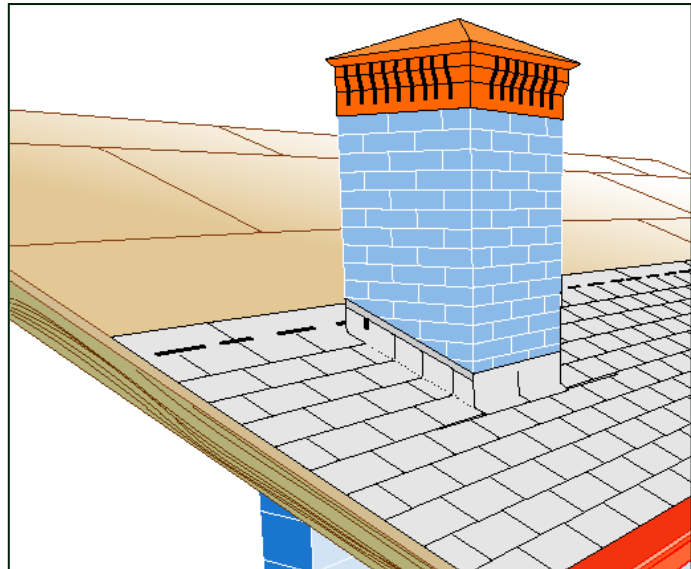


Fig 46

Install peel and stick or torch on membrane to the top side of the chimney as per figs 47 and 48. Again pay careful attention at the corners.

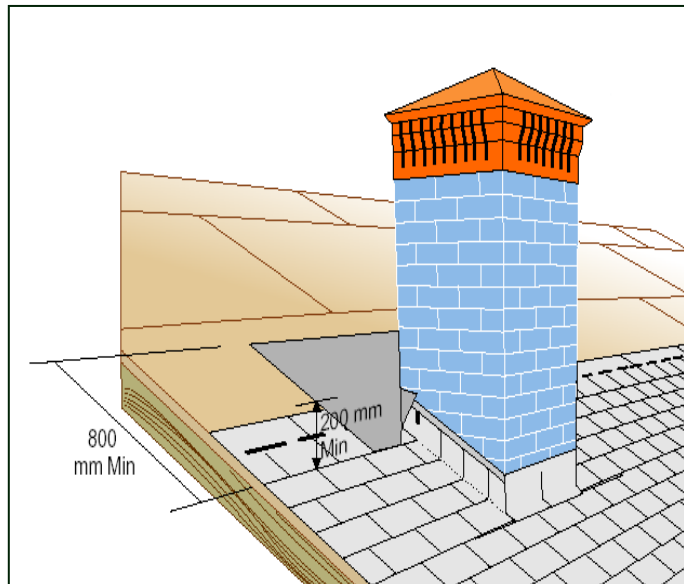


Fig 47

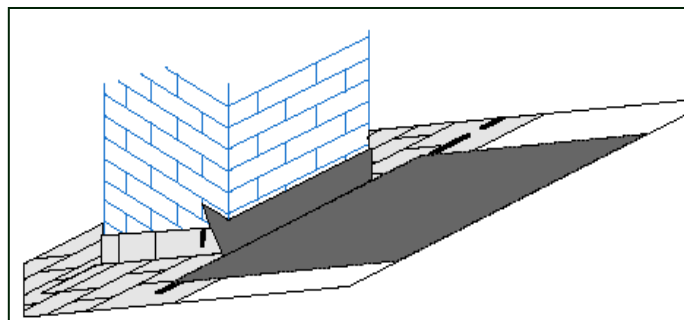


Fig 48

Complete the shingle installation to the remaining roof plane as per fig 49.

Be careful not to nail through the membrane.

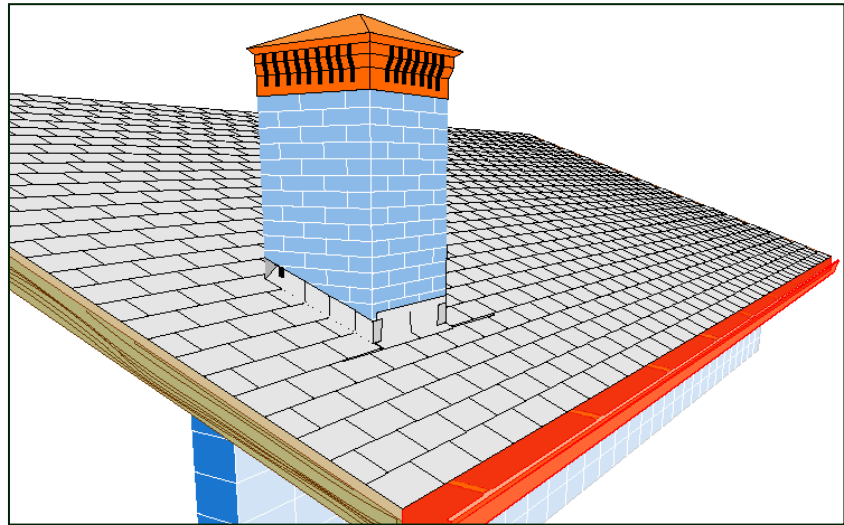


Fig 49

Due to possible structural movement around the chimney/roof junction it is necessary to use a secondary metal flashing to ensure a waterproof solution.

Install flashings as per fig 50.

Fix with appropriate anchors. Bend, cut, silicon and fix with rivets.

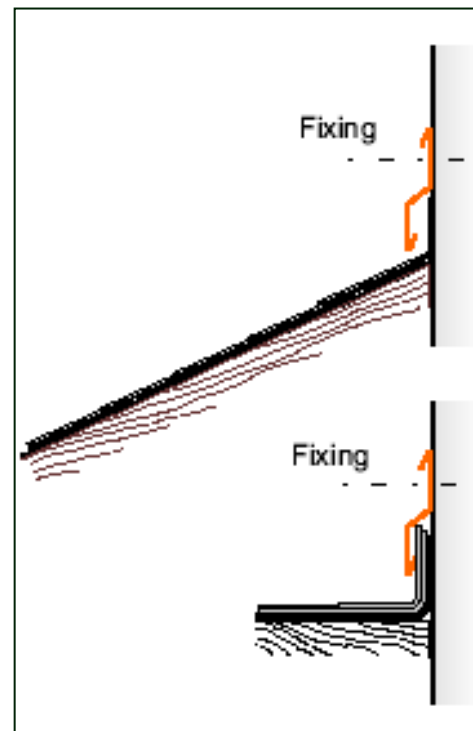


Fig 50

5.3 EPDM Rubber sheet membrane as Chimney Flashing

In NZ it is common to use EPDM or rubber sheet material such as 'Butynol' or 'Butylclad' as a substitute for a 'torch on' or 'Peel n Stick' type membrane product as described in the European detailing supplied by the manufacturer. The common method for constructing a new chimney in NZ that penetrates the roof plane is using lightweight timber framed construction which is typically clad with any number of different materials from lightweight sheet or weatherboard products to brick or stone work seated on structural metal angles.

Ideally construction of the timber chimney frame is completed prior or during the installation of plywood to the main roof plane surface. Prior to installation of the chimney building wrap and external cladding material the rubber sheet membrane , eg "butynol" or "butylclad" needs to be installed during installation of the shingled roof surface using the same principles as referred to in section 4.3.1 & 4.3.2 (page 11, 12).

Identical principles apply for the bottom and top flashings when using Butynol, including the use of 'step' flashings as referred to earlier which are cut and laid in between each row of shingles installed adjacent to the lateral raking sides of the chimney.

6.0 VALLEY FLASHING DETAILS

GBS 02 document section 4.4.3 details common principles for the installation and forming of valleys for both Tegola granular and metal based shingle products. In addition consult the 10 individual shingle installation documents **GBS 02_02 through GBS 02_11** which outline specific requirements for the particular style of shingle to be installed.

Generally all granular covered shingle styles do not require the use of a continuous profiled metal valley tray. Valleys are formed through the installation and overlapping of the shingles using either the “crossed” or “cut” method including the use of the appropriate membrane under the shingles for additional protection.

The individual shingle instructions for metal faced shingles detail the use of a continuous profiled metal valley tray for use with Tegola metal faced shingle products e.g. copper and zinc.

7.0 RIDGE & HIP CAP DETAILS

Refer to individual shingle installation documents **GBS 02_02 through 02_11** which provides information on the correct forming (cutting) and installation of ridge and hip caps for the particular style of shingle to be installed.

If necessary heat the caps on the reverse, sanded side to form to the particular pitch of the roof slope. Also refer to **GBS 02 document section 4.4.1 page 23** for additional ridge and hip cap information.

Typically in NZ prefabricated proprietary continuous ridge vent sections are installed under the ridge caps as part of the ventilation requirements. Refer to **GBS 02 document section 4.4.2 page 23** and the “trimline” product information PDF for further information.

7.1 Single Pitch Ridge

Install the last row of bituminous shingles up to the ridge line and then cut any additional overhanging shingles.

Apply single pitch ridge flashing on top as per fig 51 and fix by nailing through the vertical face of the flashing.

For very high wind areas additional sealant can assist holding down the top edge of the flashing and prevent wind driven rain.

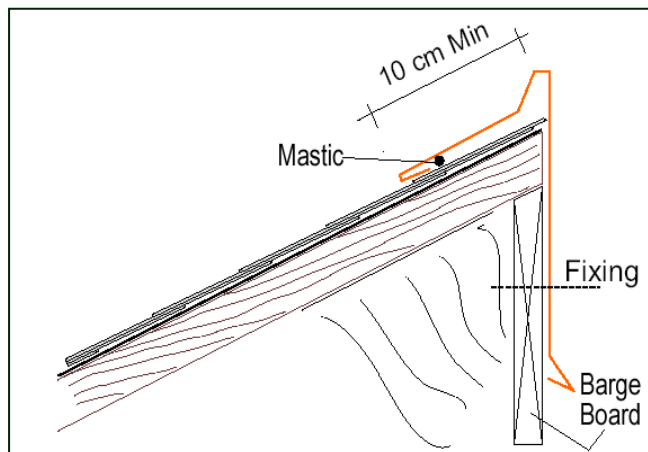


Fig 51

8.0 Dormer Flashings

8.1 Metal Apron Flashings and Valley Tray

Install the shingles below the dormer as per fig 52. Bend shingles and fix to the vertical face of the dormer. Due to possible structural movement install the flashing profile shown in fig 53 and fix only to the vertical face of the dormer.

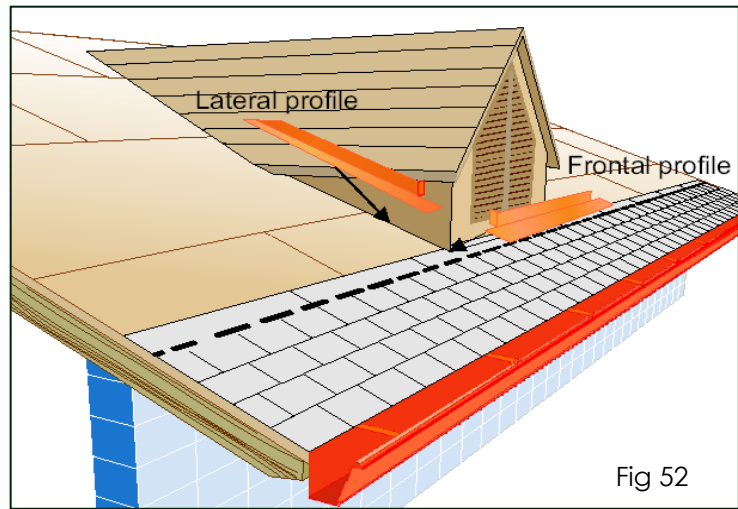


Fig 52

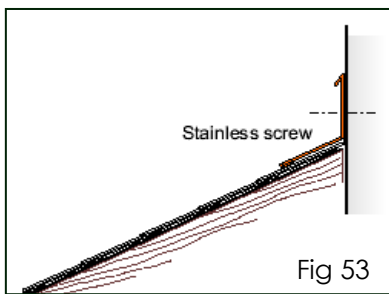


Fig 53

Next install the lateral flashing as per fig 54. Pay attention on corners to cut, bend, silicon and fix flashings with rivets.

Apply mastic as noted prior to installing shingles.

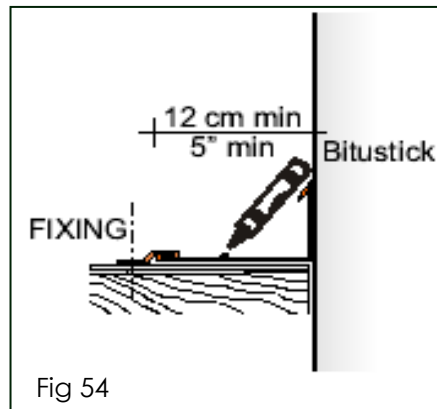


Fig 54

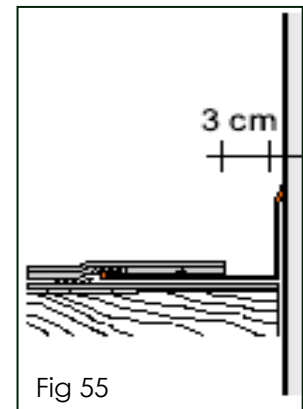


Fig 55

Install shingles up to the bottom of the valley (fig 56) leaving a 3cm gap against the wall as per fig 55.

Do not nail through the flashings.

Install the drip edge and gable end flashing to the dormer as per fig 56.

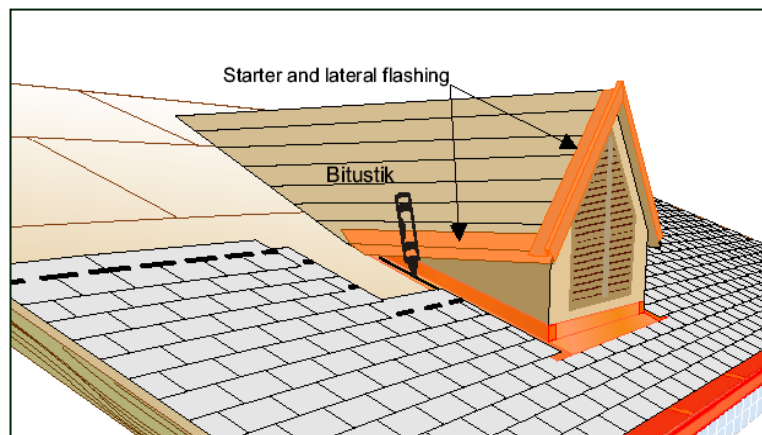
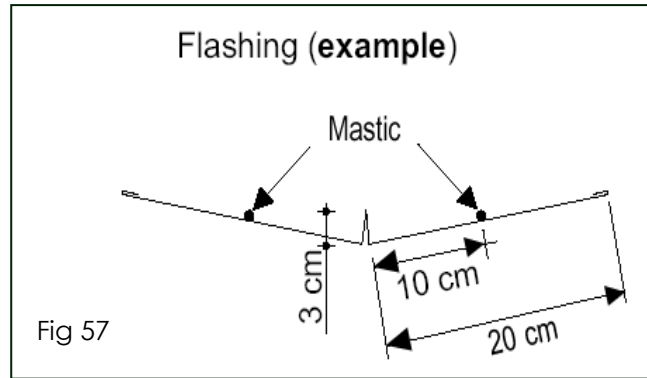


Fig 56

Install the metal valley tray similar to the profile shown in fig 57.

Pay attention at the dormer ridge to cut, bend, silicon and rivet the two pieces of valley gutter together.



Complete installation of shingles to the main roof plane across to the centre line of the valley gutter and use mastic to waterproof.

Do not nail through the metal flashings. Use mastic on every shingle row to glue shingles together and to glue them on to the valley flashing.

It is important to select the appropriate underlay to use under the shingles to the dormer roof. If any of the items listed below occur it is recommended to upgrade to a peel and stick or torch on membrane under the shingles in lieu of standard felt underlay.

1. If dormer roof pitch is less than 20 degrees.
2. If dormer is positioned at the eaves with more than 5m of main roof plane above the dormer ridge.
3. In geographical locations encountering heavy snowfall.

Install the shingles on the dormer roof across to the centre of the valley. Use either the "crossed" or "cut" method to form the valley as detailed in the individual shingle installation instructions and section 4.4.3 of GBS 02 document. Do not nail through the metal flashings. Use mastic on every shingle row to glue shingles together and to glue them onto the valley flashing.

Use a line of mastic along the valley axis to complete the waterproof detail as per fig 58. Complete ridge capping as required.

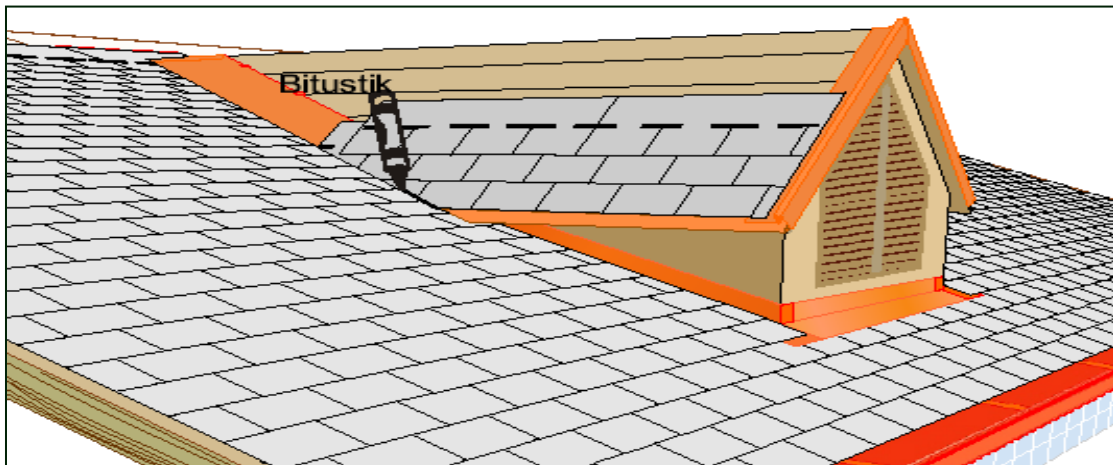


Fig 58

8.2 Dormer – Metal Apron Flashing and Membrane Valley Tray.

Install the shingles below the dormer as per fig 59. Bend shingles and fix to the vertical face of dormer.

Due to possible structural movement install the metal flashing profile shown in fig 59 and 60 and fix only to the vertical face of the dormer as per fig 60.

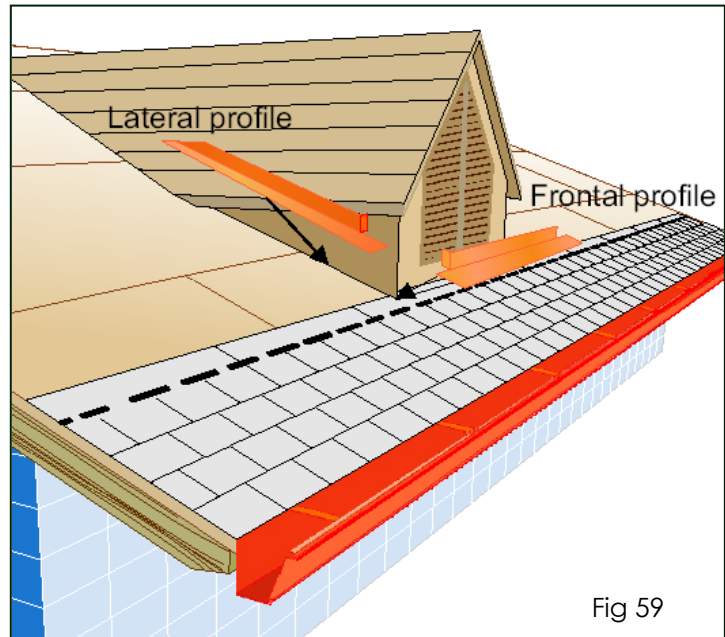


Fig 59

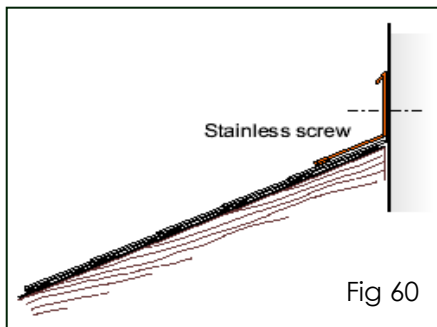


Fig 60

Then install lateral flashings as per fig 62. Pay attention on the corners to cut, bend, silicon and fix flashings with rivets. Apply mastic as noted in fig 62 and 63 prior to installing shingles.

Install shingles up to the lowest point of the valley leaving a 3cm gap against the wall as per fig 61.

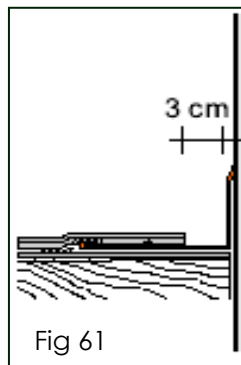


Fig 61

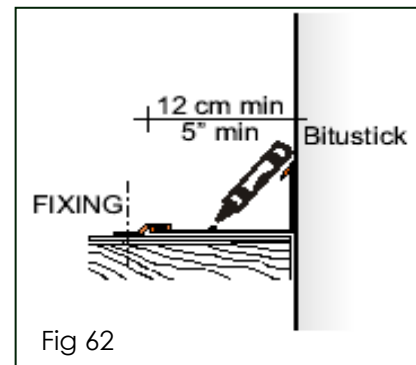


Fig 62

Do not nail through metal flashings. Install the drip edge and barge flashings to the dormer as per fig 63.

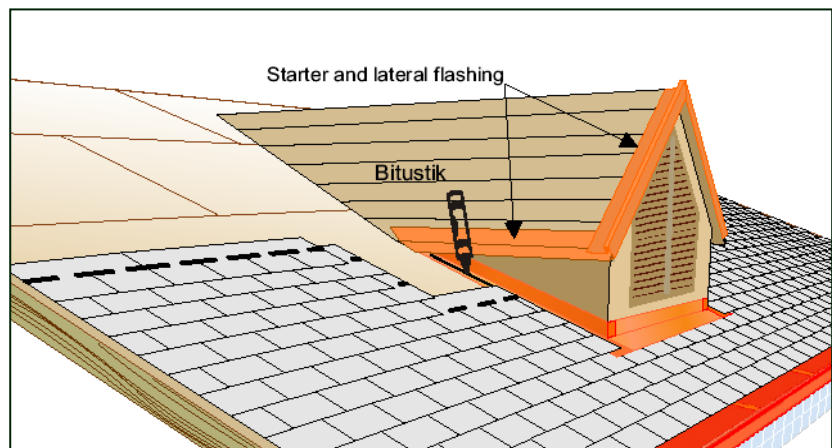


Fig 63

Install peel and stick or torch on membrane (100cm wide) on the centre line of the valley as per fig 64.

Pay attention at the dormer ridge to overlap membrane at least 10cm.

Ensure the membrane adheres to the drip edge flashing on the dormer and the shingles on roof plane below the valley as per fig 64.

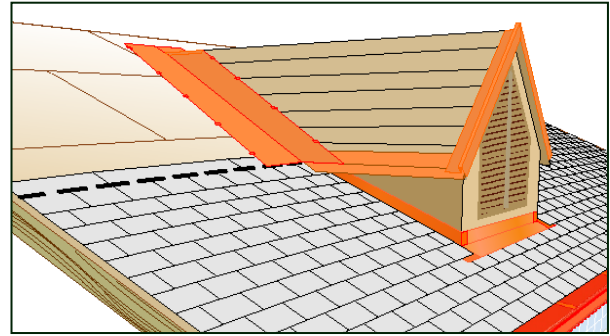


Fig 64

Install shingles on the main roof plane overlapping the centre of valley by minimum of 250cm as per fig 65.

Heat and apply shingles to the torch on membrane (valley) or use mastic to adhere shingles to a peel and stick membrane (valley).

Ensure no nailing less than 40cm from the centre axis of the valley.

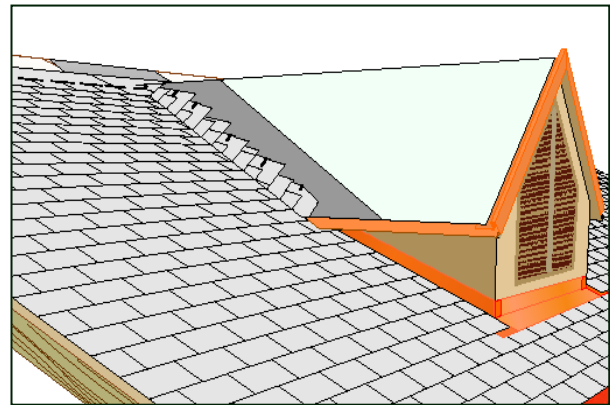


Fig 65

It is important to select the appropriate underlay to use under the shingles to the dormer roof. If any of the items below exist it is recommended to upgrade to a peel and stick or torch on membrane under the shingles in lieu of standard felt underlay.

1. If the dormer roof pitch is less than 20 degrees.
2. If the dormer is positioned at the eaves with more than 5m of main roof plane above the dormer ridge.
3. In geographical locations encountering heavy snowfall.

Install shingles on the dormer roof as per fig 66. Torch adhere shingles onto torch on membrane in the valley or use mastic to adhere to a peel and stick membrane with no nailing closer than 40cm from the valley.

Mark the centreline of the valley with a chalkline and cut shingles as required. Use mastic to the centre of the valley for waterproofing as per fig 66.

Complete ridge capping as required.

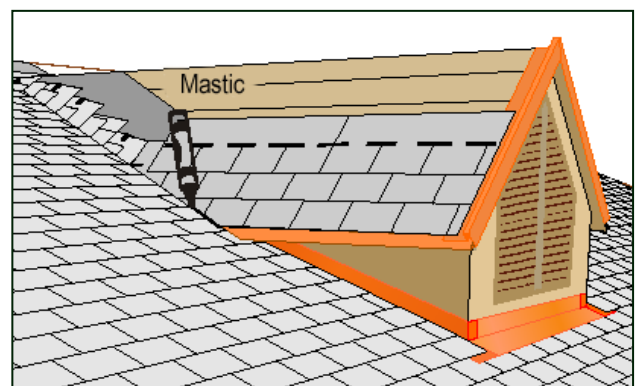


Fig 66

9.0 Ventilation Accessories

9.1 “Trimline” Ridge Vent Product

Section 3.7 of document GBS 02 details the use of prefabricated ridge ventilation as the most visually appealing method of providing the required amount of “air change” to roof space areas.

Below is a section through a standard 1.2m length of “Trimline” ridge unit supplied in 225mm or 275mm widths to suit the ridge cap to be cut from the type of shingle being installed. (Refer to individual shingle installation instructions for the particular style of shingle to be used).

For detailed ridge vent installation instructions refer to GBS 02 document section 3.7 and the “Trimline” accessory product PDF file for correct ridge vent installation instructions or consult your local distributor.

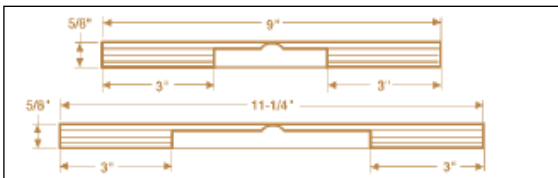


Figure 67 shows a cross sectional view of the 225mm and 275mm wide “Trimline ridge vent profile.



Figure 68 details an example of the “Trimline” ridge vent profile installed over the roof ridge.

9.2 Tegola “Special” Ventilator

Due to roof slope design, exposure to the elements or a lack of Hip or Ridge vent options may mean the installation of either the Tegola ‘special’ or ‘standard’ roof vents may become the preferred method of achieving minimum roof space ventilation requirements. Fig 69 details the “special” type.



Fig 69

The recommended method of set out for Tegola “special” vent units relative to the ridge line is as detailed below (fig 70).

For minimum airflow requirements and air chamber calculation information consult the Tegola Canadese “Roofing Technologies” document chapters 4,5 and 6.

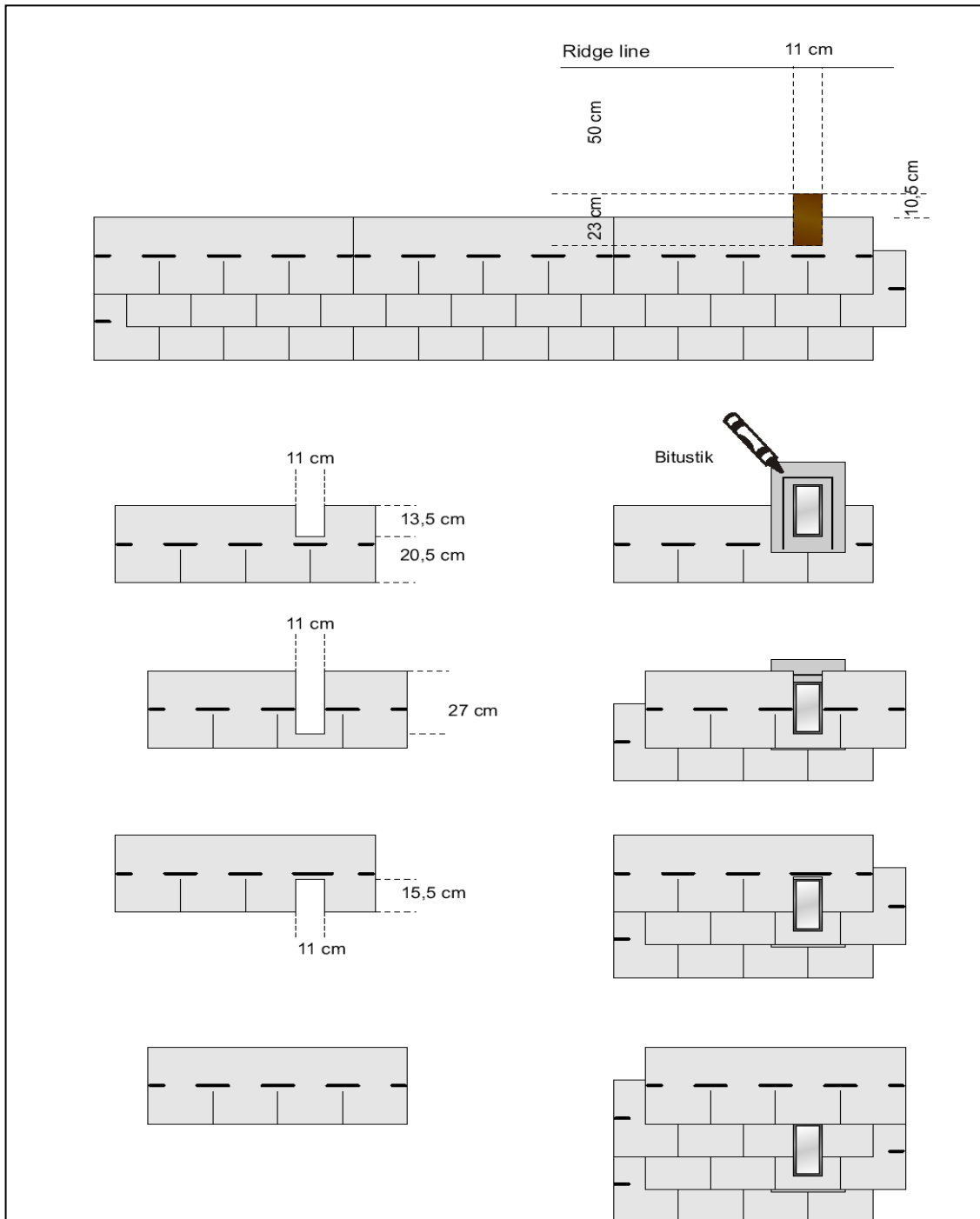


Fig 70

9.3 Tegola “Standard” Ventilator

Due to roof slope design, exposure to the elements or a lack of Hip or Ridge vent options may mean the installation of either the Tegola ‘special’ or ‘standard’ roof vents become the preferred method of achieving minimum roof space ventilation requirements. Fig 71 shows an example of the “standard” type.



Fig 71

The recommended method of set out for “standard” vent units relative to the ridge line is as detailed below fig 72.

For minimum airflow requirements and air chamber calculation information please consult the Tegola “Roofing Technologies” document chapters 4,5 and 6 .

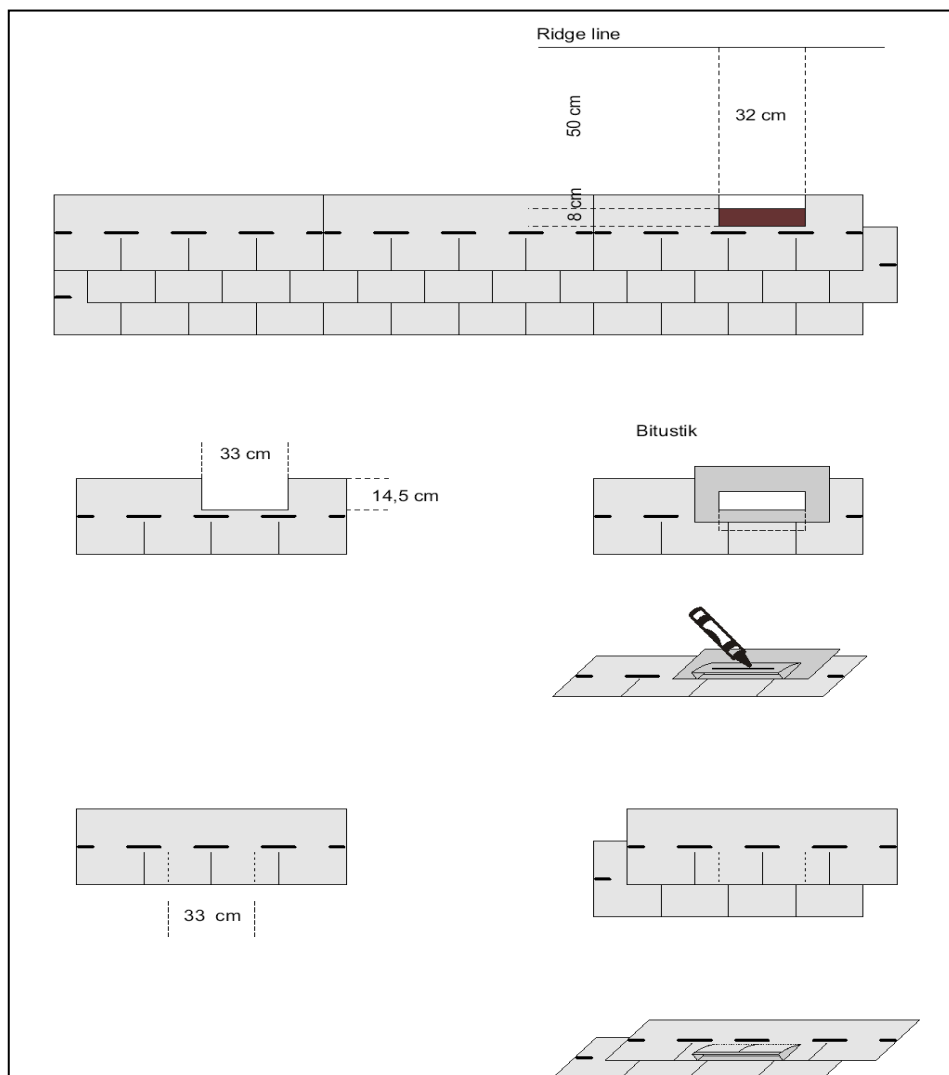


Fig 72

9.4 Eaves (Air Inlet) Ventilation

The most common method used in NZ to provide fresh air inlets for new buildings is to set the top edge of the timber or metal fascia approximately 10 mm below the underside of the plywood shingle substrate. Timber nogs at the back of the fascia must not restrict the airflow into the roof cavity.

Refer to document **GBS 02 fig 22 page 20** which confirms this detail.

Other acceptable alternatives may be the installation of a continuous vent strip by the owners representative in conjunction with the installation of the soffit cladding material.

In a re-roofing situation it may be preferred to install a series of preformed proprietary metal or PVC type grills which can be retrofitted into the existing soffit material by the owners representative (refer to photo details below fig 73 & 74).

Fig 73



Fig 74



Figures 73 & 74 above show a typical proprietary PVC type soffit vent with insect mesh that can be suitable to provide fresh air inlets to allow effective air change in the roof cavity.

10.0 Generic Vent Pipe – Flashing with Membrane

The majority of residential and commercial buildings have circular vent or services pipework projecting through the roof. The document GBS 02 section 3.5 dicusses the different methods available to flash this detail.

If the preferred method is for the roofer to flash around pipe work with the use of Butyl or a EPDM rubber sheet, then the pipework will need to be installed after installation of plywood but prior to commencing shingle installation. **Refer to GBS 02 document section 4.1 page 16 paragraph 1 and figures 75 – 77 below.**

1. Before installing the flashing install the shingles up to the underside of the vent pipe and if necessary trim to suit (refer to detail 75). Then install the preformed rubber flange as detailed and adhere to the piping using the appropriate contact adhesive or cold bitumen mastic.

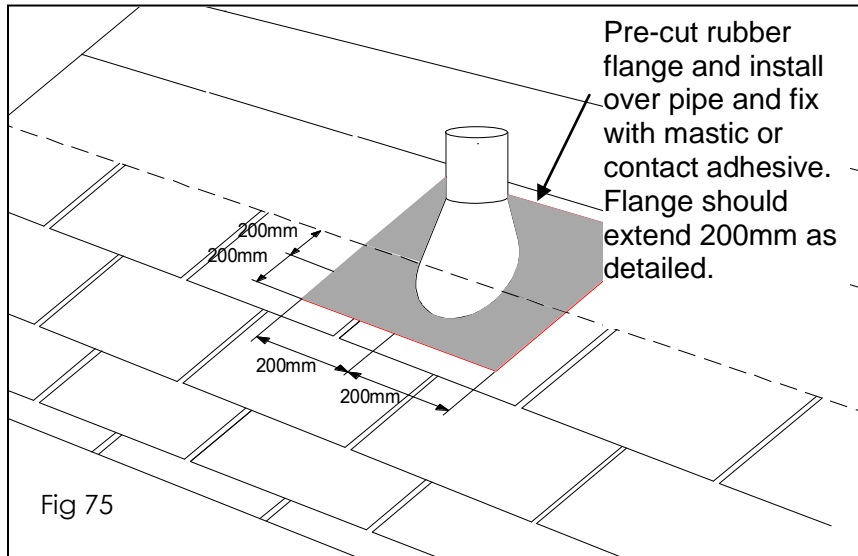


Fig 75

2. Once installation of the flashing is completed continue to apply the shingles. Trim shingles as required to fit neatly around the pipe.

Adhere shingles with mastic where they overlap the rubber flange, do not nail through rubber flange, refer 76.

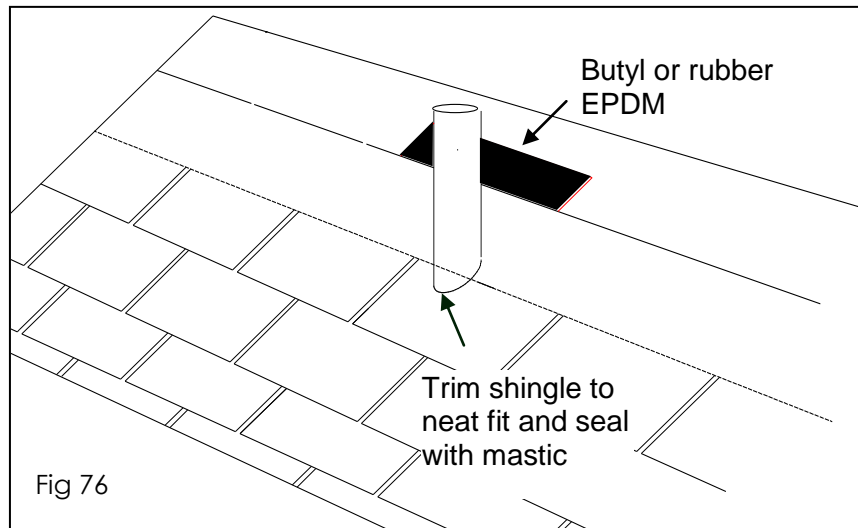


Fig 76

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3. The completed installation should appear as per fig 77 . Critical aspects are that the lower part of the rubber flange must overlap the lower shingles and the sides and upper shingles shall cover the rubber flange completely.

