PAB19

LYSAGHT PRODUCT ADVISORY BULLETIN

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HIGH LEVEL ROOF VENTILATION INSTALLATION DETAIL

NCC 2022 COMPLIANCE FOR VENTILATION OF ROOF SPACES - HIGH LEVEL (10 - 75 DEGREE ROOF PITCH)

In climate zones 6, 7 and 8 a roof must have a roof space that is ventilated to outdoor air through evenly distributed openings in accordance with Table 10.8.3 of the NCC 2022 ABCB Housing Provisions Standard.

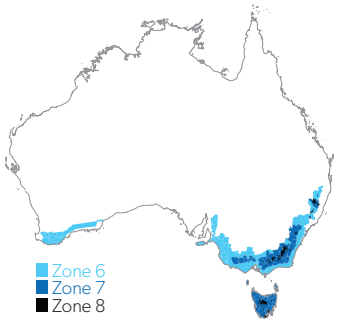


Table 10.8.3: Roof space ventilation requirements

Roof Pitch	Ventilation Openings
<10°	25,000 mm²/m provided at each of two opposing ends
≥ 10° and < 15°	25,000 mm²/m provided at the eaves and 5,000 mm²/m at high level
≥ 15° and < 75°	7,000 mm²/m provided at the eaves and 5,000 mm²/m at high level, plus an additional 18,000 mm2/m at the eaves if the roof has a cathedral ceiling

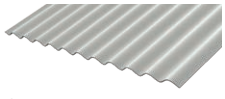
Table Notes:

1. Ventilation openings are specified as a minimum free open area per metre length of the longest horizontal dimension of the roof.

2. For the purposes of this table, high level openings are openings provided at the ridge or not more than 900mm below the ridge or highest point of the roof space, measured vertically.

Open profile claddings are able to provide low and high level ventilation pathways. Examples include corrugated and trapezoidal profiles as shown below. To utilise ventilation pathways via profile openings, openings are to be unobstructed.

Weather proofing details (such as scribing and infills) restrict profile openings. Therefore for calculations, 5,000 mm²/m is used for all profiles in this high level ventilation document.



Corrugated (i.e. CUSTOM ORB®)

Low Level Ventilation - 7,500 mm²/m

High Level Ventilation - 7,500 mm²/m

Trapezoidal (i.e. TRIMDEK®)

Low Level Ventilation - 6,500 mm²/m

High Level Ventilation - 21,000 mm²/m

Close Pitched Trapezoidal (i.e. SPANDEK®)

Low Level Ventilation - 11,000 mm²/m

High Level Ventilation - 12,000 mm²/m

This document provides guidance for roofs pitched between 10 to 75 degrees.

For 10 to 75 degree roof pitch ▷ High level ventilation of 5000mm²/m is the required DTS measure.

This can be achieved via evenly distributed ventilation openings at ridges, including the inherent continuous openings in profiled steel roofing.

High level openings are openings provided at the ridge or not more than 900mm below the ridge or highest point of the roof space, measured vertically.

High level ventilation calculations are applicable for skillion, gabled and hipped roofs. For gable and hipped roofs, high level ventilation area calculations are outlined in Figures 1 and 2 as examples.

Where roof insulation is used for thermal and condensation purposes, high level ventilation pathways can be achieved by terminating the pliable membrane or blanket and foil at the ridge batten, refer to Figures 3a and 4a. High level ventilation pathway can also be achieved where no membrane is used, refer to Figures 3b and 4b .

An example of incorporating high level ventilation while meeting bushfire resistance requirements is shown in Figure 5.

Flow chart to calculate ventilation opening requirement

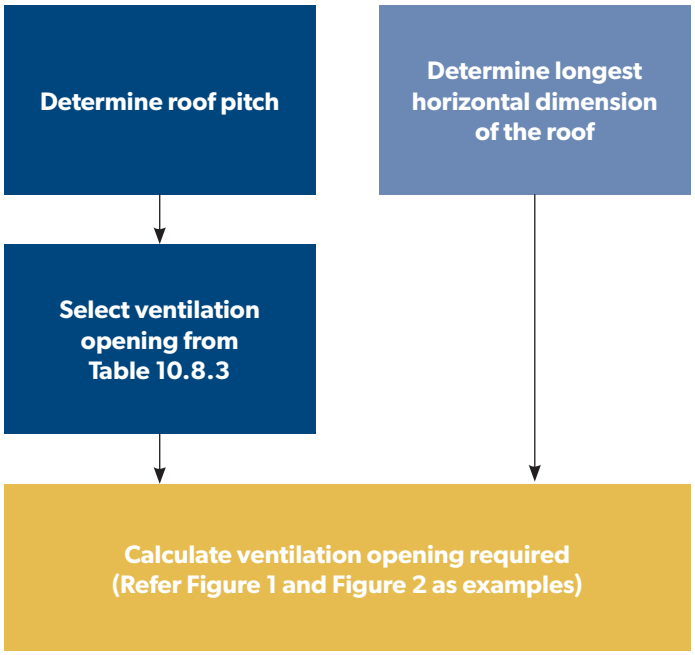
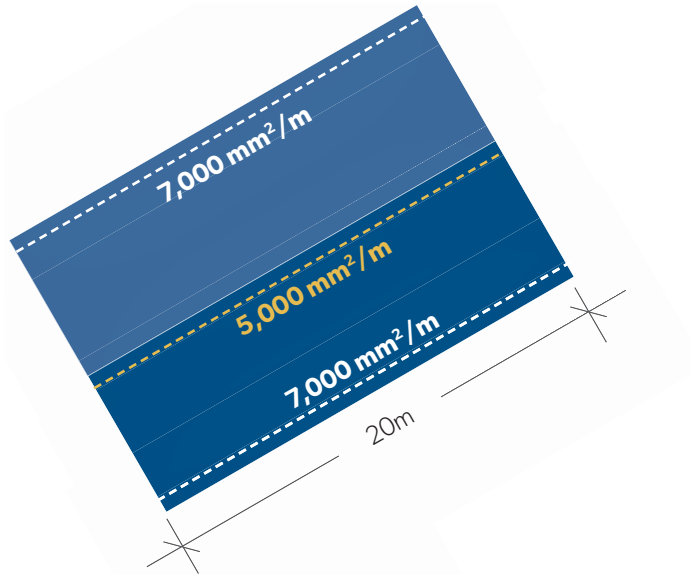
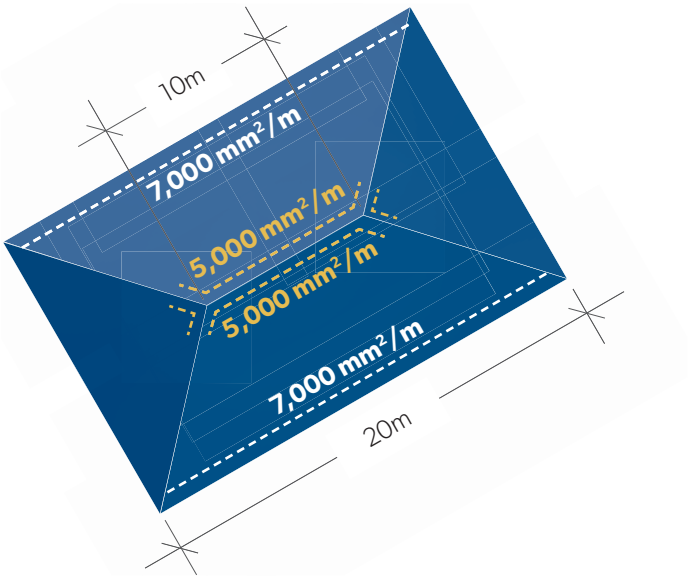


Figure 1: High level ventilation calculation for a gable roof.



- Roof Pitch = 22 deg
- Longest Horizontal Dimension = 20 m
- NCC minimum ventilation free open area required/m = 20 x 1 x 5,000 = 100,000 mm^2
- Ventilation opening provided (ridge cap both sides with membrane cut detail) = 20 x 2 x 5,000 = 200,000 mm^2 > 100,000 mm^2
- The high level ventilation openings provided by the profile exceed the requirement.

Figure 2: High level ventilation calculation for a hipped roof.



- Roof Pitch = 22 deg
- Longest Horizontal Dimension = 20 m
- NCC minimum ventilation free open area required/m = 20 x 1 x 5,000 = 100,000 mm^2
- Ventilation opening provided (ridge cap both sides with membrane cut detail) = 10 x 2 x 5,000 = 100,000 mm^2 meets the requirement. If ridge length is insufficient to meet the high-level ventilation area for the requirement, hip flashings can be used for additional high level ventilation. A maximum length of 900 mm vertically down the hips is accessible.

Notes:

1. High level ventilation can be applied to other roofing details e.g. Apron.
2. When working out high level ventilation, calculate NCC minimum free open area. Then calculate ventilation opening solution which should meet or exceed NCC requirement

Figure 3a: High level profile ventilation for trussed roof (10 to 75 degree roof pitch) with membrane cut detail. Corrugated roof sheeting example.

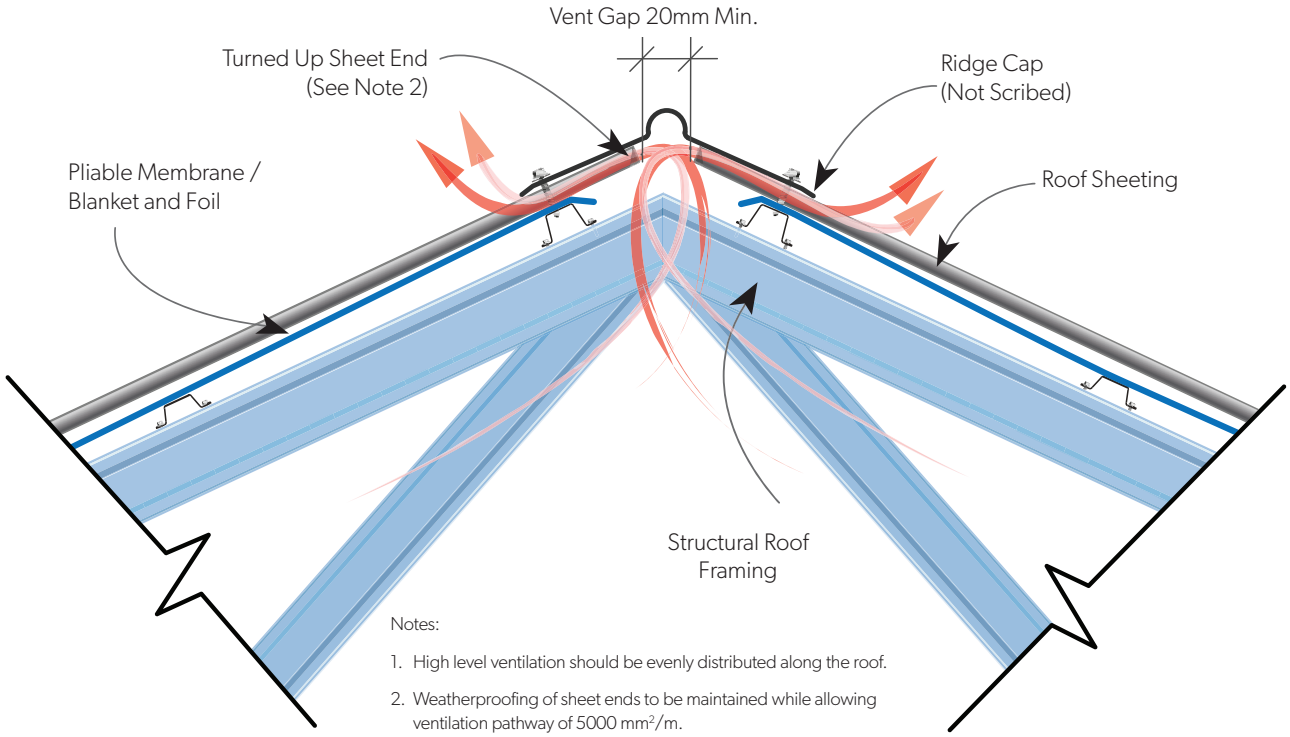
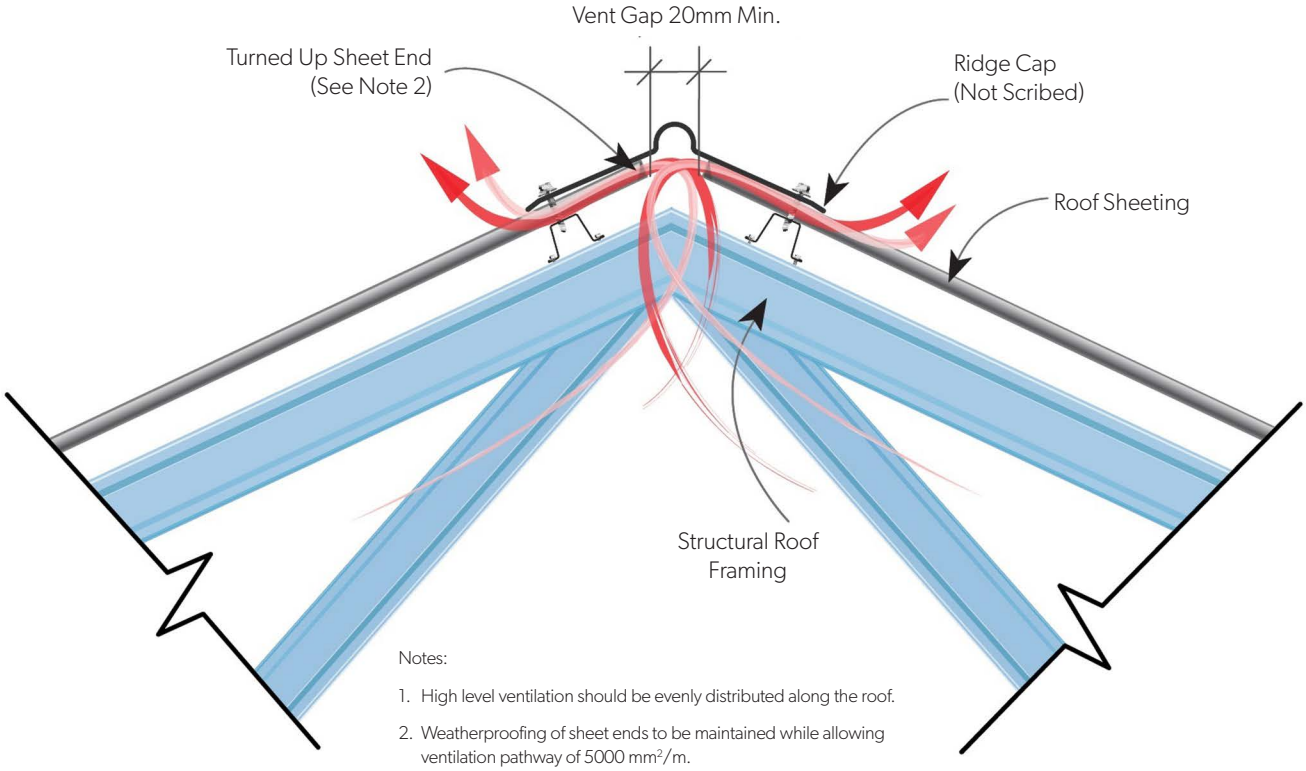


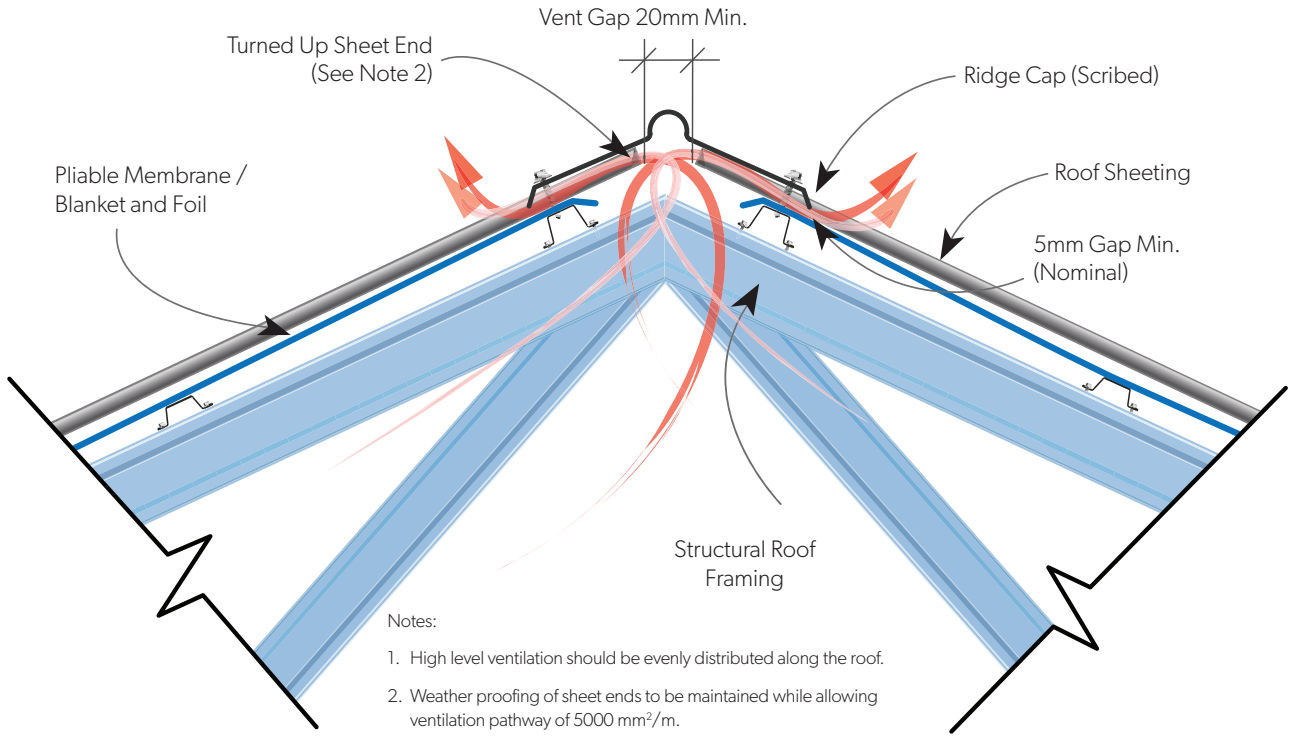
Figure 3b: High level profile ventilation for trussed roof (10 to 75 degree roof pitch) with no membrane.



Notes:

1. High level ventilation should be evenly distributed along the roof.
2. Weatherproofing of sheet ends to be maintained while allowing ventilation pathway of 5000 mm^2/m.

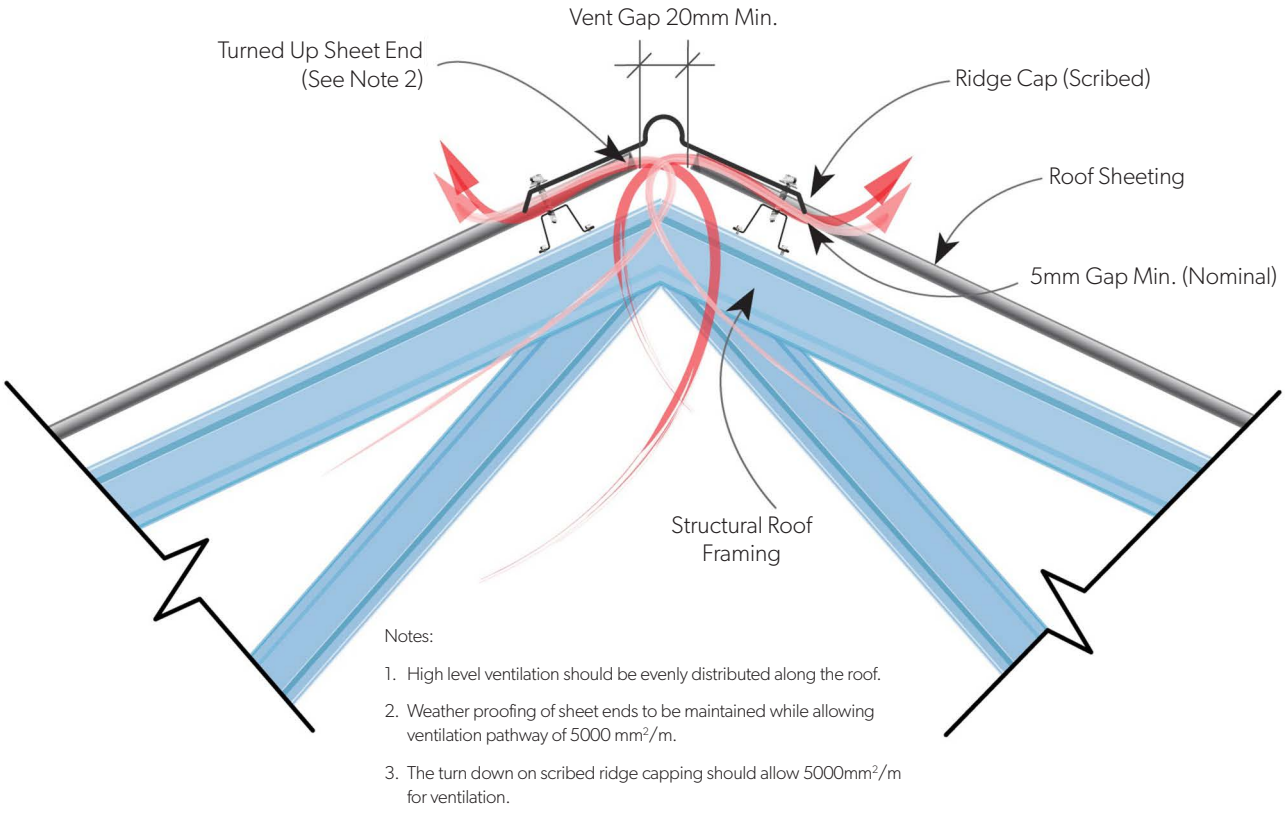
Figure 4a: High level profile ventilation for trussed roof (10 to 75 degree roof pitch) with membrane cut detail. Wide pan roof sheeting example.



Notes:

1. High level ventilation should be evenly distributed along the roof.
2. Weather proofing of sheet ends to be maintained while allowing ventilation pathway of 5000 mm^2/m.
3. The turn down on scribed ridge capping should allow 5000mm^2/m for ventilation.

Figure 4b: High level profile ventilation for trussed roof (10 to 75 degree roof pitch) with no membrane.

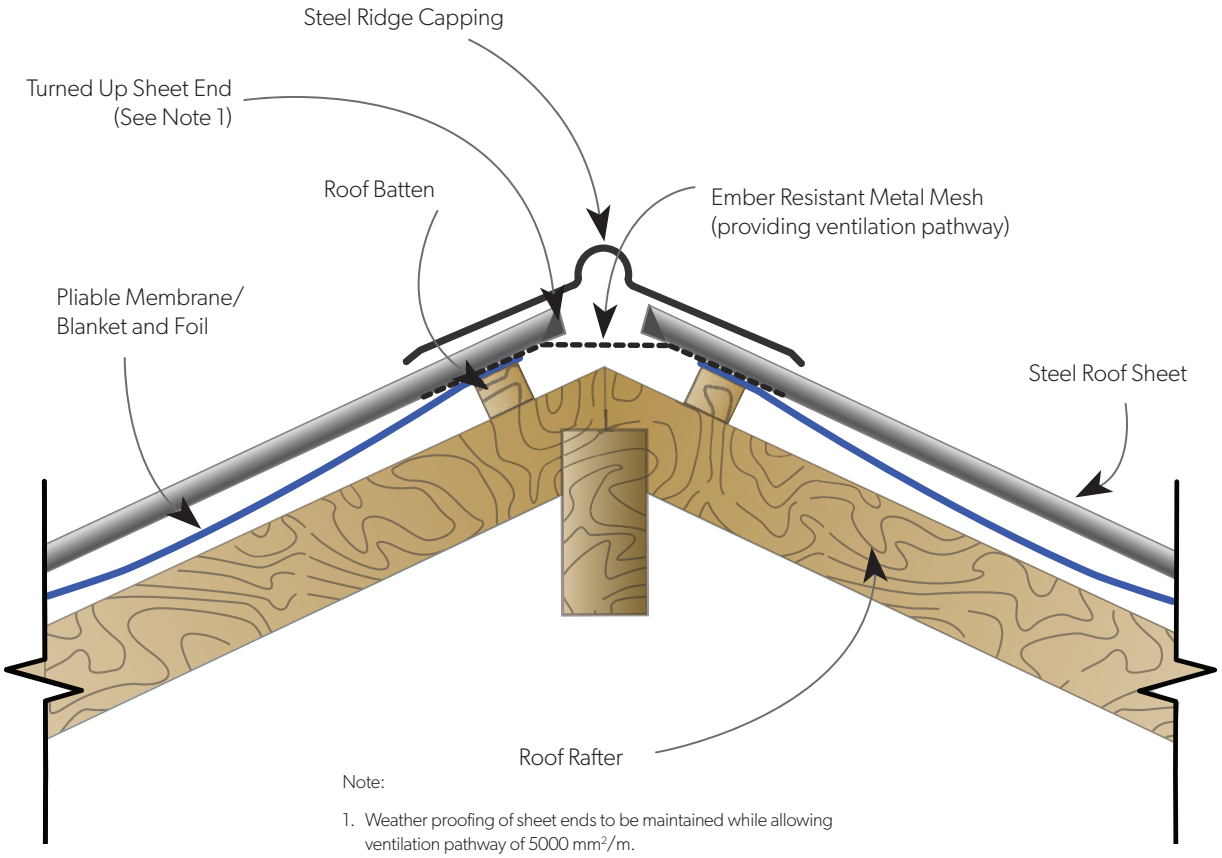


Notes:

1. High level ventilation should be evenly distributed along the roof.
2. Weather proofing of sheet ends to be maintained while allowing ventilation pathway of 5000 mm^2/m.
3. The turn down on scribed ridge capping should allow 5000mm^2/m for ventilation.

Figure 5 : Ember resistant steel mesh for BAL 12.5 to BAL 40.

For bushfire zones BAL12.5 to BAL40 ember resistant steel mesh with apertures no larger than 2mm can be used (as per AS3959). This facilitates ventilation while meeting the bushfire resistance requirement.



Note:

1. Weather proofing of sheet ends to be maintained while allowing ventilation pathway of 5000 mm^2/m.
2. When using steel framing compiling to NASH Standard Steel Framed Construction in bushfire prone areas, mesh is not required.

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