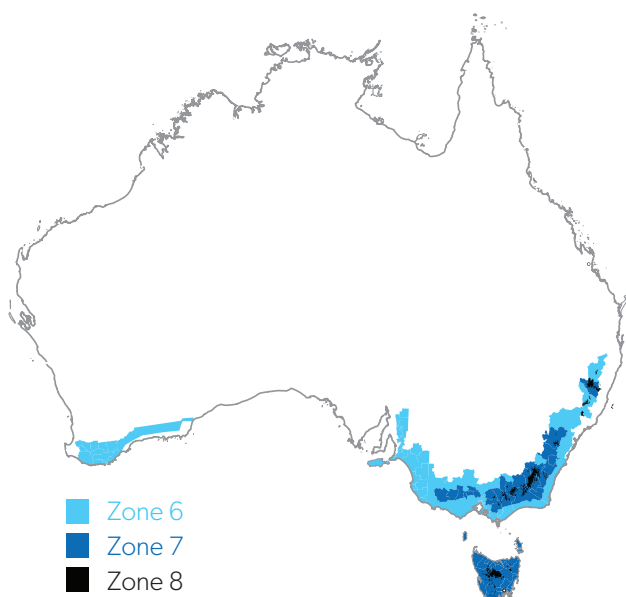


LOW AND HIGH LEVEL ROOF VENTILATION INSTALLATION DETAIL FOR LOW PITCHED ROOFS NCC 2022 COMPLIANCE FOR VENTILATION OF ROOF SPACES- LOW & HIGH LEVEL VENTILATION (0 - 15 DEGREE ROOF PITCH)

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 NCC 2022 Volume 1 Table F8D5 and Table 10.8.3 ABCB Housing Provisions standard.



This document provides ventilation guidance for roofs pitched less than 15 degrees.

Table 10.8.3: Roof space ventilation requirements

Roof Pitch	Ventilation Openings
<10°	25,000mm ² /m provided at each of two opposing ends
≥ 10° and < 15°	25,000mm ² /m provided at the eaves and 5,000mm ² /m at high level

Table Notes:

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

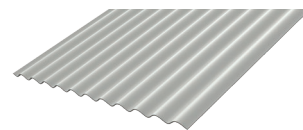
Note: For 5000mm²/m high level options (10 to 15 degree roof pitch), please refer to PAB 19 - High Level Roof Ventilation Installation Detail.

Open profile claddings are able to provide 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. Profile openings can be used in conjunction with vent devices to meet the ventilation requirements, i.e. corrugated profile opening with a whirlybird at the high level.

Utilising cladding profile openings must consider the impact of construction practices such as scribing flashings, foam infills and upturns/downturns.

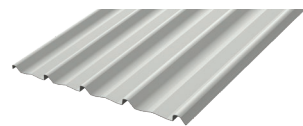
Corrugated (i.e. CUSTOM ORB®)

High level ventilation -
7,500mm²/m



Trapezoidal (i.e. TRIMDEK®)

High level ventilation -
21,000mm²/m



Close Pitched Trapezoidal (i.e. SPANDEK®)

High level ventilation -
12,000mm²/m



Determination of Ventilation opening requirement to meet NCC Compliance

Flow chart to calculate ventilation opening requirement

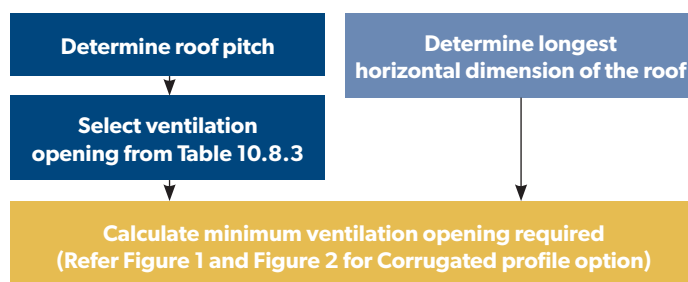
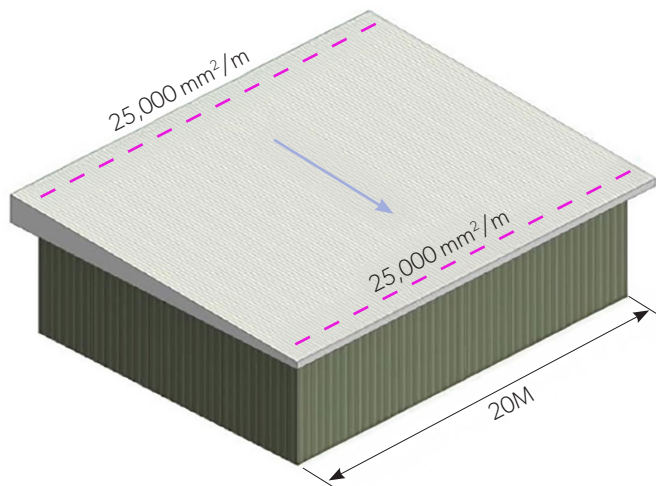
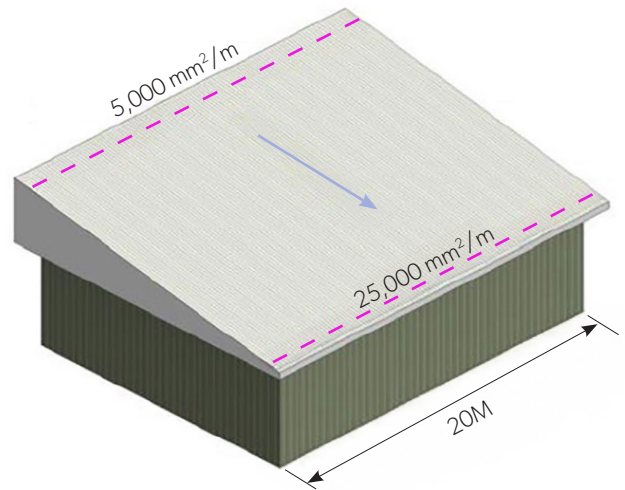


Figure 1: Calculation for a Skillion roof with 8 degree pitch

Ventilation device

- **Roof Pitch = <10 degrees**

- Longest Horizontal Dimension = 20m
- Provide ventilation device with open area of 25,000mm²/m at high and low level
- NCC Minimum Ventilation free open area required
 - Low level = 25,000mm² /m x 20m = 500,000mm²
 - High level = 25,000mm² /m x 20m = 500,000mm²
- Ventilation opening provided at:
 - Low & high level (Ventilation device @25,000mm²/m)
 - = 25,000mm²/m x 20m
 - = 500,000mm²
- **Meets the requirement**

Figure 2: Calculation for a Skillion roof with 12 degree pitch

Ventilation device

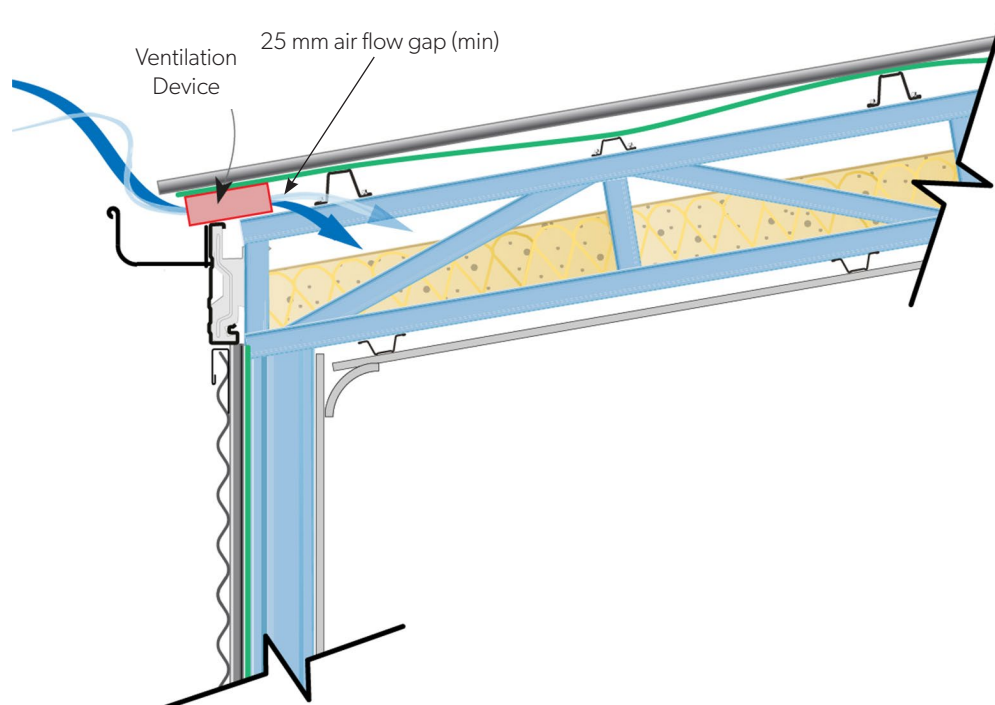
- **Roof Pitch = Between 10 to 15 degrees**

- Longest Horizontal Dimension = 20m
- Provide ventilation device with open area of 25,000mm²/m at low level
- NCC minimum Ventilation free open area required
 - Low level = 25,000mm² /m x 20m = 500,000mm²
 - High Level = 5,000mm² /m x 20m = 100,000mm²
- Ventilation opening provided at:
 - Low level (Ventilation device @25,000mm²/m)
 - = 25,000mm²/m x 20m
 - = 500,000mm²
 - For high level refer PAB 19
- **Meets the requirement**

Notes:

1. For High level roof ventilation requirements of 5,000mm²/m can be achieved using open profile cladding and correct detailing shown in PAB -19.
2. When working out low and high level ventilation requirements, calculate NCC minimum free open ventilation area. Then calculate ventilation opening solution which should meet or exceed NCC requirement.
3. Low level ventilation openings should exceed high level ventilation openings. A general good rule of thumb is to have a ventilation ratio of 2:1 low level to high level openings.

Figure 3: Low level ventilation for low pitch roof (< 15 degrees) using ventilation device



Notes:

1. It is recommended for some vent devices to use an additional drip edge flashing underneath the vent device to maintain weather proofing function.
2. It is recommended to provide high front gutter for some vent devices to maintain weather proofing function.

Figure 4: High level ventilation for low pitch roof (< 10 degrees) using ventilation device

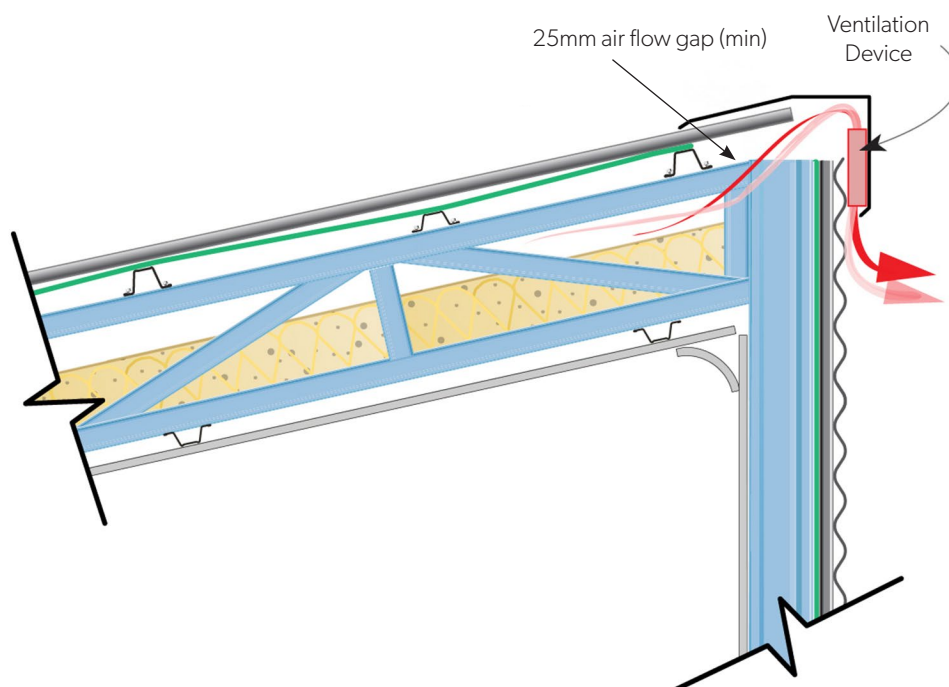
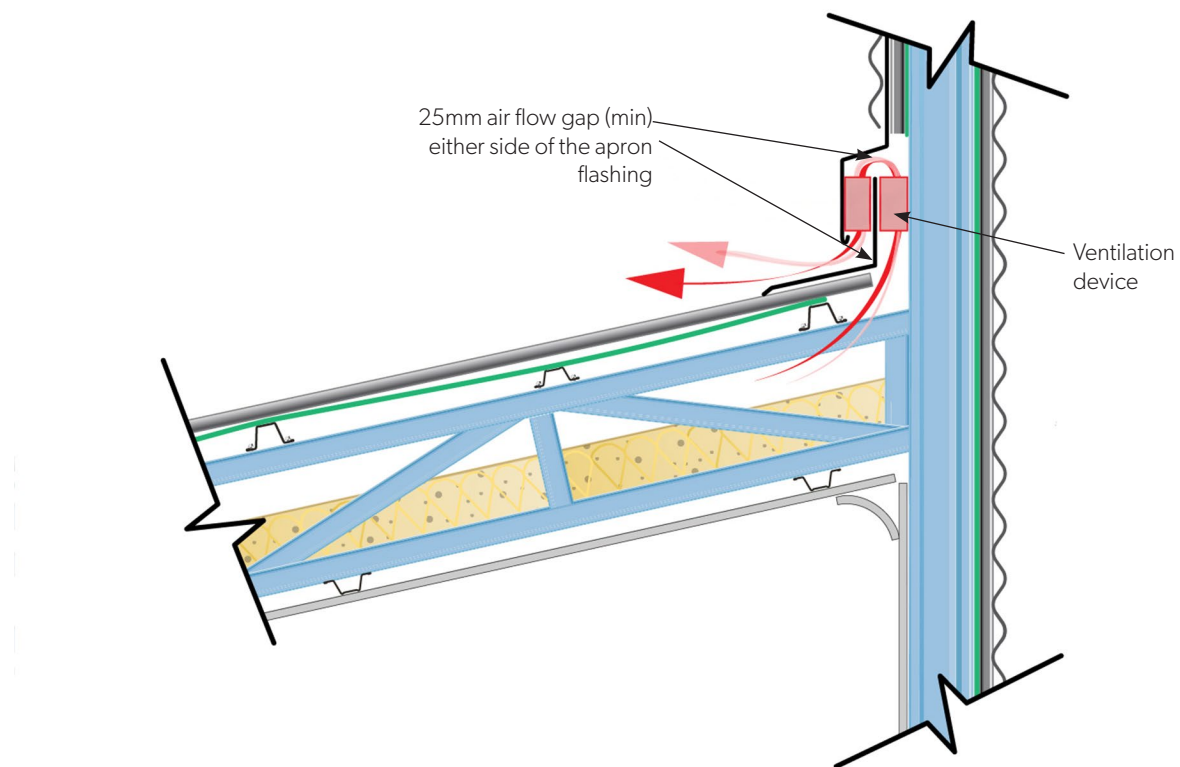
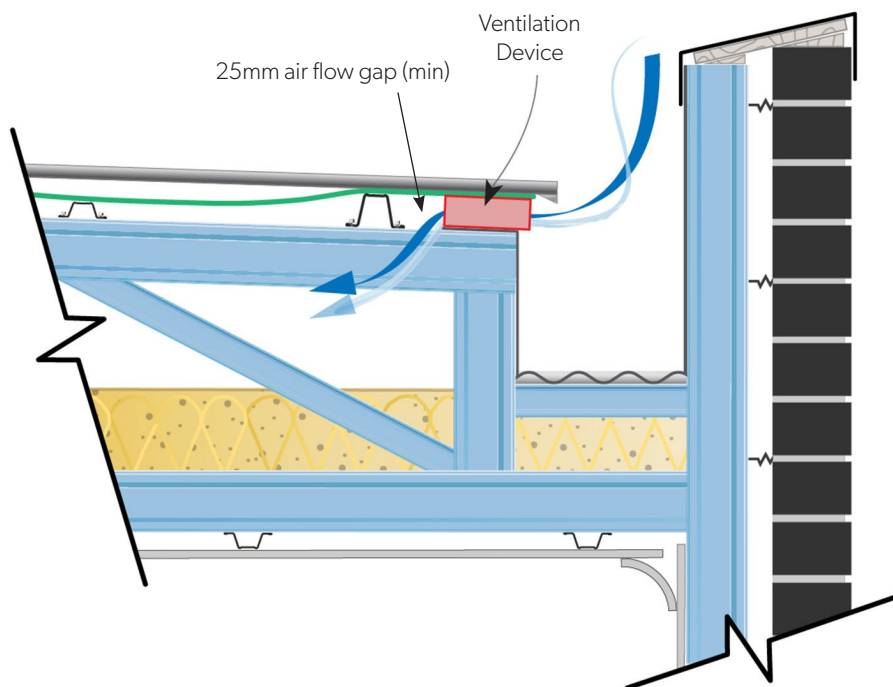


Figure 5: High level ventilation for low pitch Apron construction (< 10 degrees) using ventilation device



Note: For aesthetic reasons, the high level flashings can be continued around the wall to roof junction for continuity and detailing simplicity.

Figure 6: Low level ventilation for low pitch roof (<15 degrees) with box gutter using ventilation device



Note: It is recommended for some vent devices to use an additional drip edge flashing underneath the vent device to maintain weather proofing function.

Low level and High level profile ventilation for BAL 12.5 to BAL 40

For bushfire zones BAL12.5 to BAL 29 ember resistant aluminium mesh/BAL 40 ember resistant stainless steel mesh or a BAL compliant ventilation device with apertures no larger than 2mm can be used (as per AS 3959). This facilitates ventilation while meeting the bushfire resistance requirement.

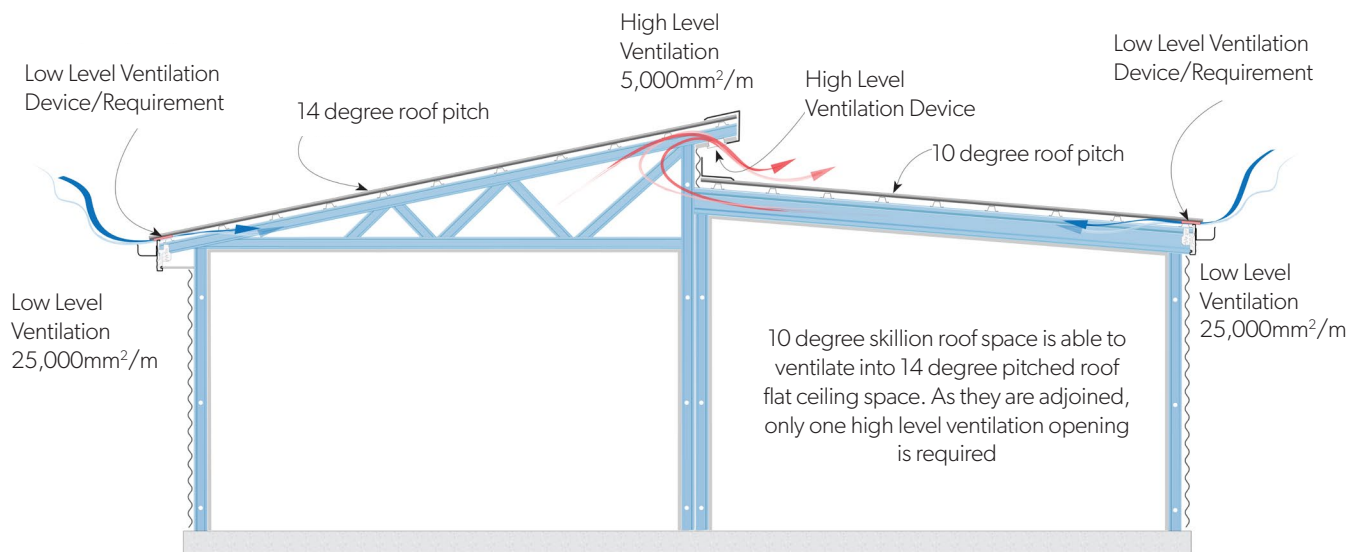
Aerosol migration for marine zones (1km from surf or exposed marine and 100m from calm) can be reduced by installing non-corrosive aluminium mesh with aperture less than 2mm. Application of mesh to windward side of the roof as minimum.

Drip Edge Flashing

The use of drip edge flashing is recommended for low level ventilation. Drip edge flashing side-laps must be installed in accordance with SA HB-39 (ie., overlaps sealed and riveted). Further guidance is provided in the Lysaght Flashing guide. Drip edge flashing is mandatory for 0-10 degree pitched roofs and for eaveless or zero-lot construction.

Construction Scenarios

Below is an example of when a roof comprises of one roof space with multiple roof types, combining requirements for Part 10.8.3. In this instance the low level ventilation requirements for each roof type are applicable, however, only one high level opening is required as the lower roof opening is discharging into the larger roof space.



AUSTRALIAN STANDARDS

Australian Standard	Definition
AS 1562.1:2018	Design and installation of sheet roof and wall cladding - Part 1: Metal
AS 3959:2018	Construction of buildings in bushfire-prone areas
AS 4200.1:2017	Pliable building membranes and underlays Materials

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