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Sizing E2 roof flashings

It can be difficult to determine the critical dimensions for roof flashings in E2/AS1. We step through Table 7 to help clarify confusion when working out the minimum sizes of flashings.

THE REQUIRED DIMENSIONS of a roof flashing are determined by three factors – wind zone, roof pitch and roofing material. Wind zone has the most significant influence on flashing dimensions, especially for sites in extra high wind zones.

Look to E2/AS1

New Zealand Building Code Acceptable Solution E2/AS1 Table 7 prescribes the critical dimensions for flashings. These are in terms of the:

- cover – ‘X’ for transverse apron flashings (see Figure 1) and ‘Y’ for barge flashings parallel to the roof (see Figure 2)
- downstand – ‘Z’ for verge flashings and cappings (see Figure 2).

The dimensions given exclude any soft edge, turn-down or drip edge.

What are the situations in Table 7?

In Table 7, Notes 2–4 define Situations 1–3 which are in columns 4–6 of the Table (see Figure 3):

- For low, medium or high wind zones where the roof pitch is 10° or more, use the minimum dimensions given for Situation 1 (column 4).
- For any roof in a very high wind zone, and for roofs with a pitch of less than 10° in low, medium or high wind zones, use the minimum dimensions given in Situation 2 (column 5).

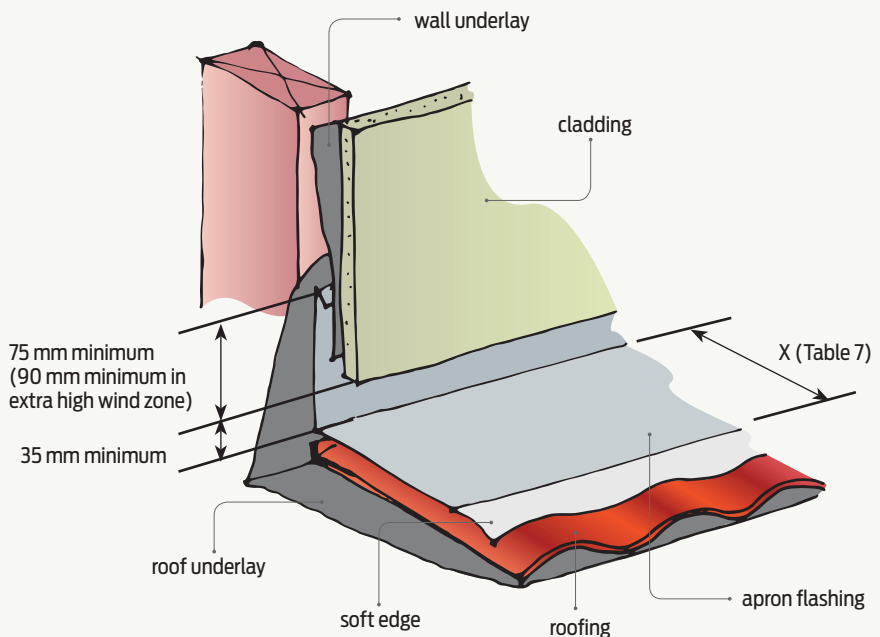


Figure 1 Transverse apron flashing.

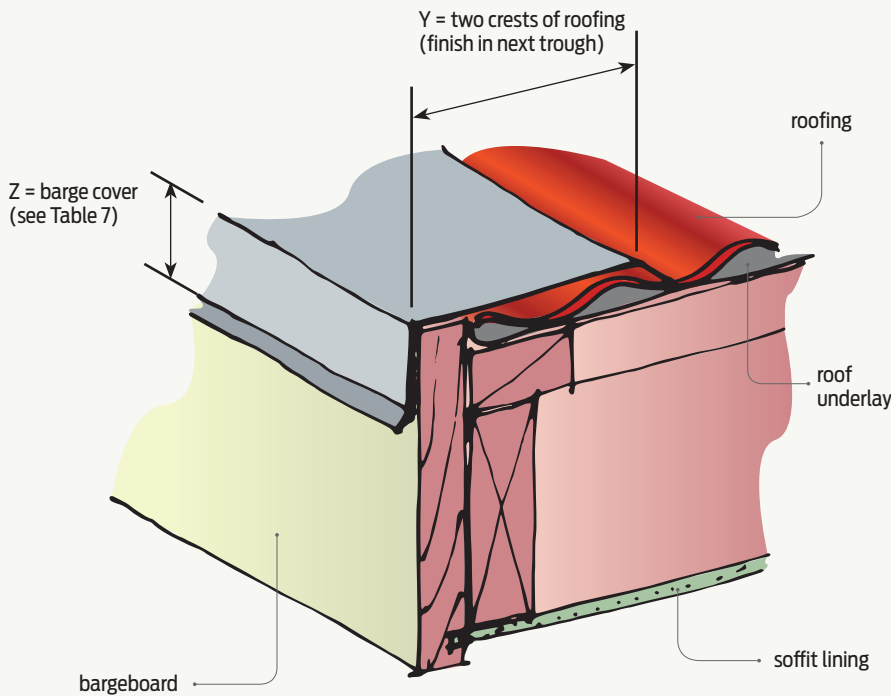


Figure 2 Barge flashing.

- For all roofs in extra high wind zones, use the minimum dimensions given in Situation 3 (column 6). Note that a change of roof pitch is not permitted in an extra high wind zone.

Working out X, Y and Z dimensions

Work through these steps to determine X and Z dimensions for a corrugated profile roof with a pitch of 8° in a medium wind zone:

1. Check Notes 2–4 on the second page of Table 7 to select the correct Situation (see Figure 3). Note 3 defines this roof as Situation 2.
2. Read down Situation 2 (column 5) on the first page of Table 7 (see Figure 4) and across the relevant rows to find the minimum dimensions:
 - For X, read across the row 'Aprons, transverse flashing'. This gives 200 mm minimum, excluding the soft edge (Note 4)
 - For Z, read across the row 'Overlap to barge board'. This gives 70 mm minimum, excluding drip edge (Note 8).

Y is governed by the geometry of the roofing material. For this corrugated profile roof, the flashing must cover two crests and finish in the next trough (see Figure 2).

Edge treatment of flashings

The exposed bottom edge of a flashing must have an edge treatment to stiffen the flashing and form a drip edge, allowing positive drainage. Acceptable edge treatments are:

- kick-out
- bird's beak (see Figure 5).

In extra high wind zones, flashing upstands must:

- have hems or hooks
- be 25 mm higher than given by Table 7 or the relevant figures.

In other wind zones, the top edge of the flashing may have:

- a hem or hook with upstand dimensions as shown in the relevant figures
- no hem or hook but upstand dimensions 25 mm higher than shown in the relevant figures. ➔

Table 7: continued		Metal flashings – general dimensions Paragraphs 4.6, 4.6.1.1, 4.6.1.2, 4.6.1.3, 4.6.1.4, 4.6.1.5, 4.6.1.6, 4.6.1.7, 5.1, 6.4, 6.5, 7.4.4, 8.3.8, 9.1.3, 9.1.10.2, 9.1.10.4 and 9.4.5.3			Figures 18, 62a, c, 64b	
Membrane roofs and decks	Lap under cladding above	115 min.	Situation 1 (2) minimum mm	Situation 2 (3) minimum mm	Situation 3 (3a) minimum mm	Figure reference (as example)
Type	Description	All (1)				
Windows	Window flashings					Figures 91

- NOTES:**
- (1) Unless otherwise dimensioned in details.
 - (2) **Situation 1:** Low, Medium, High wind zones, where roof pitch $\geq 10^\circ$ (X or Z values)
 - (3) **Situation 2:** All roof pitches in Very High wind zones, Low, Medium and High wind zones where roof pitch $\leq 10^\circ$. (X or Z values)
 - (3a) **Situation 3:** For all roof pitches in Extra High wind zone.
 - (4) Excluding any soft edge or turn-down to roofing.
 - (5) For buildings other than housing, slope shall be as per F4/AS1.
 - (6) For direct fixed window/doors, unless shown. Sill flashing must extend past the condensation channel. Ensure sill flashings are not installed with backwards slope.
 - (7) Excluding drip edge.
 - (8) Excluding drip edge.

Figure 3 New Zealand Building Code clause E2/AS1 Table 7 continued.

Range of roofing materials covered

E2/AS1 includes typical details for a selection of roofing materials, which are referred to in Table 7.

Profiled metal

This is corrugated, trapezoidal or trough section:

- transverse apron flashing (X) – see Figure 44b
- parallel apron flashing (Y) – see Figure 48a–c
- barge flashing (Y and Z) – see Figure 47a–c
- change in pitch (X) – see Figure 44a (not permitted in extra high wind zones)
- roof/wall ridge (verge) flashing (X and Z) – see Figure 45b.

For corrugate profiled roofing, Y must be large enough to cover two crests of the roofing, finishing in the next trough. Some combinations of roof dimension and roofing profile can result in large flashings, which may be a consideration when choosing the roofing profile.

Pressed metal tiles

Refer to E2/AS1 Figures 35a, 35b and 36b.

Flashings are generally supplied by the tile manufacturer and must meet the minimum dimensions of Table 7.

Where an overflashing is used, ensure:

- the minimum cover to the tile upstand is 35 mm
- the minimum cover behind the cladding is 75 mm
- a 5 mm minimum clearance is required between the bottom of the cladding and the overflashing.

For a barge flashing, dimension Z relates to cover to the bargeboard only. The total depth of the flashing will need to be larger to allow a minimum cover of 25 mm to the 40 mm tile edge upstand.

Masonry tiles

Refer to E2/AS1 Figure 26. X and Y are not specifically shown.

Minimum cover is given as:

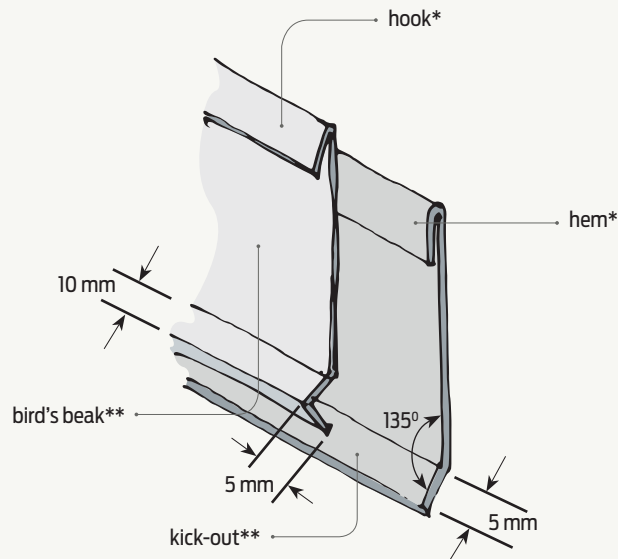
- 150 mm for the transverse flashing
- 150 mm for the parallel flashing, and it must cover at least one crest, finishing in a trough.

There must be 35 mm minimum clearance between flashing and cladding and 75 mm minimum upstand behind the cladding (total upstand of 110 mm). ◀

For more All Building Code clauses are freely available at www.building.govt.nz/building-code-compliance/.

Table 7: Metal flashings – general dimensions		Paragraphs 4.6, 4.6.1.1, 4.6.1.2, 4.6.1.3, 4.6.1.4, 4.6.1.5, 4.6.1.6, 4.6.1.7, 5.1, 6.4, 6.5, 7.4.4, 8.3.8, 9.1.3, 9.1.10.2, 9.1.10.4 and 9.4.5.3				Figure reference (as example)
Type	Description	All (1)	Situation 1 (2) minimum mm	Situation 2 (3) minimum mm	Situation 3 (3a) minimum mm	
Aprons: general	Transverse flashing over roofing		130 (4)	200 (4)	200 mm	Figure 7 and Figure 44 (X values)
	Parallel flashing over roofing		Two crests, finish in next trough – refer 4.6.1.1(b)			Figures 47, 48 (Y values)
Ridges/ hips	Transverse flashing over roofing		Refer Aprons: general			Figures 43, 45b, 46
Changes in roof pitches	Upper lap under roofing	250 mm min.			Not permitted under E2/AS1	Figure 44
	Transverse flashing over roofing		Refer Aprons: general			
Barges	Overlap to barge board		50 (8)	70 (8)	90 mm	Figure 47 (Z values)
Cappings	Overlaps to cladding		50 (8)	70 (8)	90 mm	Figure 10 (Z values)
	Slope to top: parapet and balustrade – metal capping	5° min.				Figures 10, 11, 12, 130
Roof or Deck to Wall – See membranes below	Slope to balustrade – flush-finished EIFS and fibre cement(5)	10° min.				Figures 117, 129, 130
	Overlaps to roofing		Refer Aprons: general			
	Lap under cladding above	75 mm min.			90 mm	Figures 7, 26, 30, 35, 37, 44, 48, 50
	Clearance below cladding	35 mm min.				
	Total upstand	110 mm min.				

Figure 4 New Zealand Building Code clause E2/AS1 Table 7.



*stiffen top edge and prevent moisture tracking behind the flashing

**stiffen bottom edge and provide a positive drip edge

Figure 5 Flashing edge treatments.