

DESIGN
RIGHT



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Raking window head detail

Raked windows make an interesting feature with a sloped rather than horizontal window head that may follow the roofline. Careful design and installation is needed so they are weathertight, particularly at the low end of the rake.

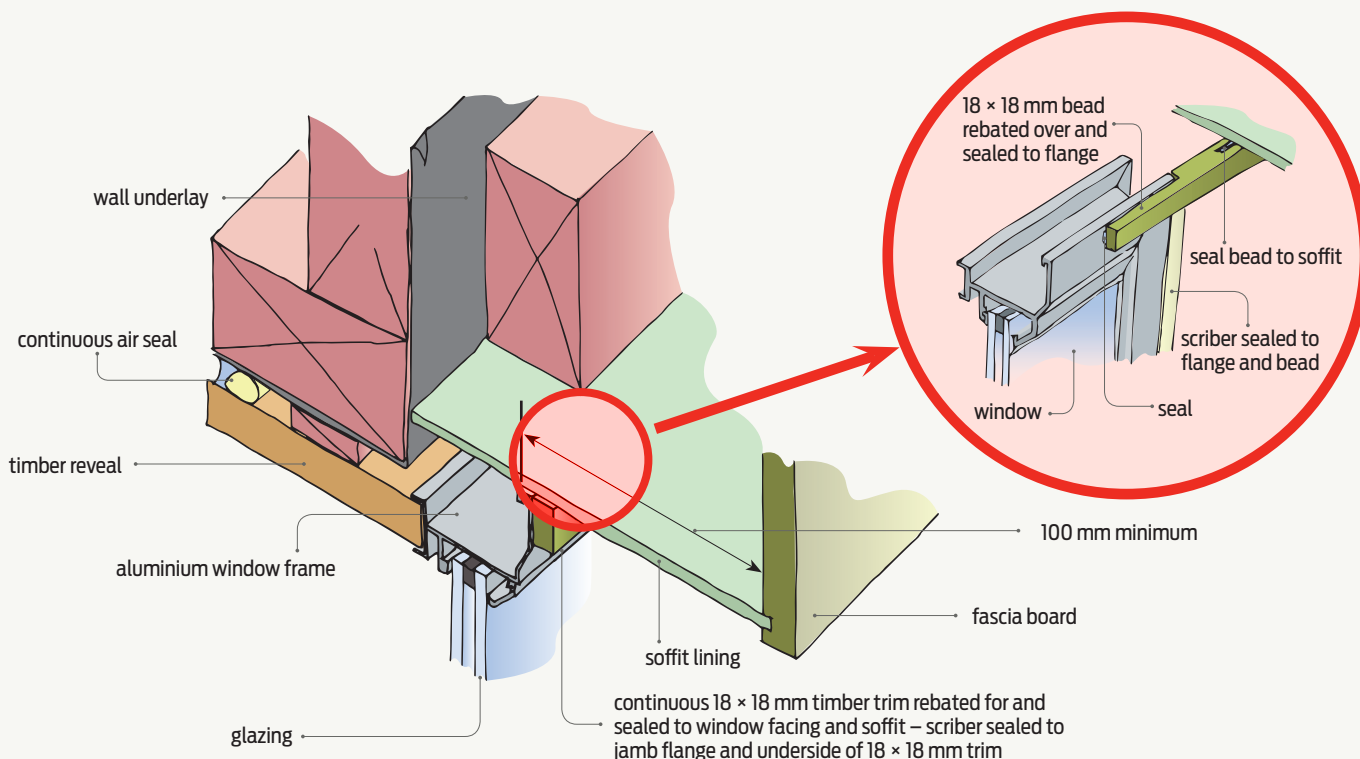


Figure 1 Raked window head directly under soffit (based on traditional soffit installation).
A window head detail based on BRANZ's soffit details in *Build 158* will be published in *Build 163*.

RAKED WINDOWS are often found where high-level glazing follows the roofline. The sloping head means that it may have rainwater flowing along as well as across the head flashing. Water accumulating at the low end of the rake makes this area of a raking window particularly vulnerable to water entry.

Always an alternative method

Acceptable Solution E2/AS1 to New Zealand Building Code clause E2 *External moisture* only applies to aluminium windows (with flanges that

overlap the cladding) with a horizontal head.

No solution is provided in E2/AS1 for the installation of any raked windows. For a building consent application, the raked window head detail must be designed and submitted as an alternative method.

However, some of the requirements of E2/AS1 may be applied to a raked window head detail (see Figures 1 and 2). For example, E2/AS1 allows a window directly under a horizontal soffit to be installed without a head flashing. Figure 1 shows this applied to raked windows.

Applicable E2/AS1 requirements

E2/AS1 window head flashings must deflect water to the outside of the wall cladding and:

- have a 15° minimum cross-fall
- have a minimum upstand behind the cladding above of:
 - 40 mm (35 mm minimum cladding cover plus 5 mm gap for drainage and ventilation) in low (L), medium (M), high (H) and very high (VH) wind zones
 - 65 mm (60 mm minimum cladding cover plus 5 mm gap) in extra high (EH) wind zones

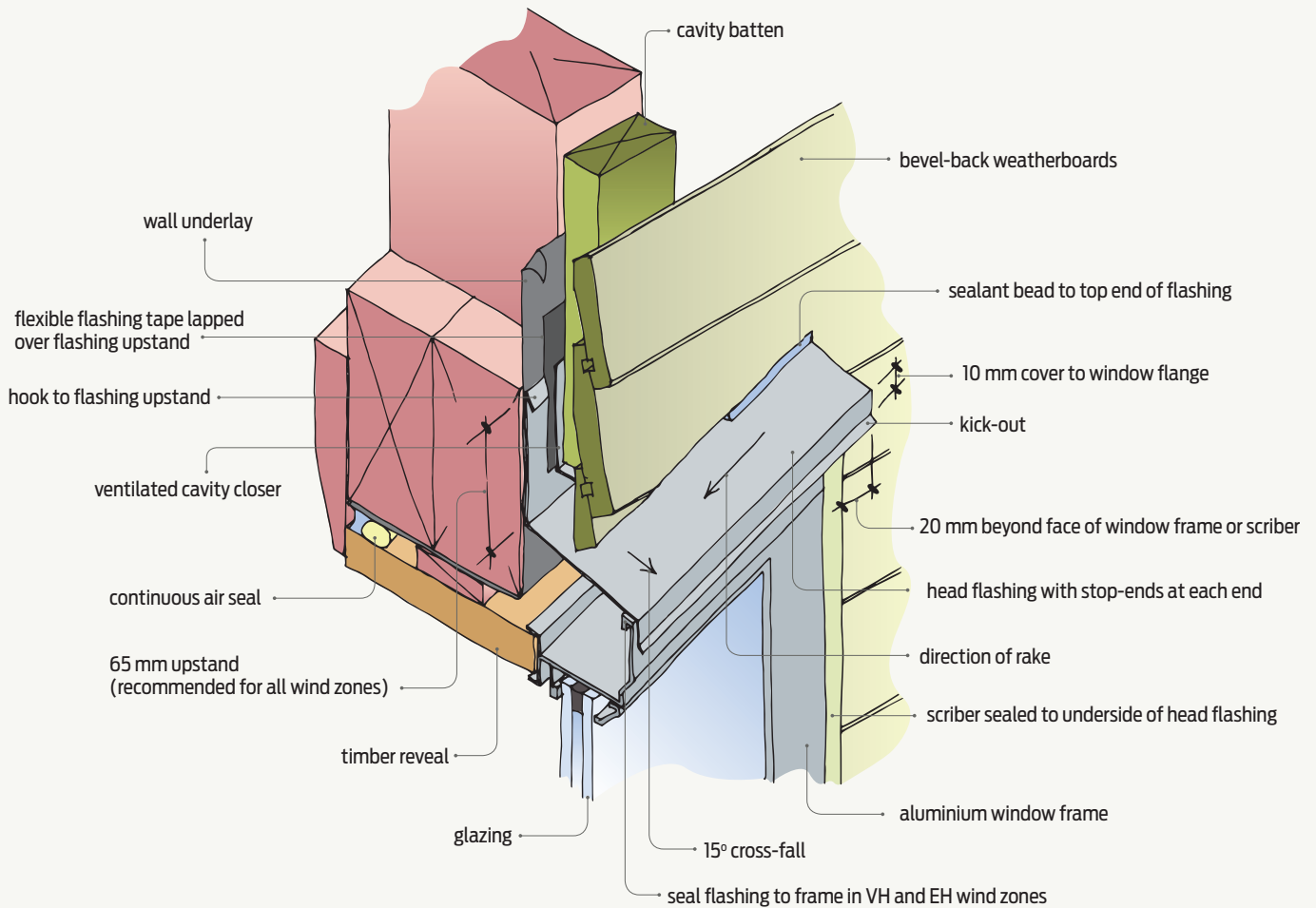


Figure 2 Raked flashed window head – preferred option.

- have:
 - in L, M, H and VH wind zones, either a hem or hook or a 25 mm increase in the upstand beyond the requirement of E2/AS1 Table 7
 - in EH wind zones, a hem or hook and a 25 mm increase in the upstand beyond the requirement of E2/AS1 Table 7
- be sealed to the face of the wall underlay with flexible flashing tape or be overlapped by an extra layer of wall underlay from above
- provide 10 mm minimum cover to the face of the window flange, and the exposed bottom

- edge of a head flashing must be folded out to form a bird's beak or kick-out
 - extend at least 20 mm beyond the face of the window frame or the scriber or rustic plug where horizontal weatherboards are installed (see Figure 2)
 - have sealant installed between the underside of the head flashing and the top of the window flange in VH and EH wind zones.
- For direct-fixed cladding, E2/AS1 requires a 50 mm length of sealant at each end of the flashing between the cladding and flashing. For

raked windows, install the sealant at the top end of the flashing only to allow the stop-end to discharge water.

Where a drained and vented cavity is installed, a horizontal flashing must have a 10 mm stop-end at each end that finishes at the inside face of the cladding. Raked windows require a 10 mm stop-end at the top and a kickout at the bottom (see Figure 3). The stop-ends **must not** pass through the cladding. The base of the drainage cavity above the window head must be closed off by a ventilated cavity closer. ➤

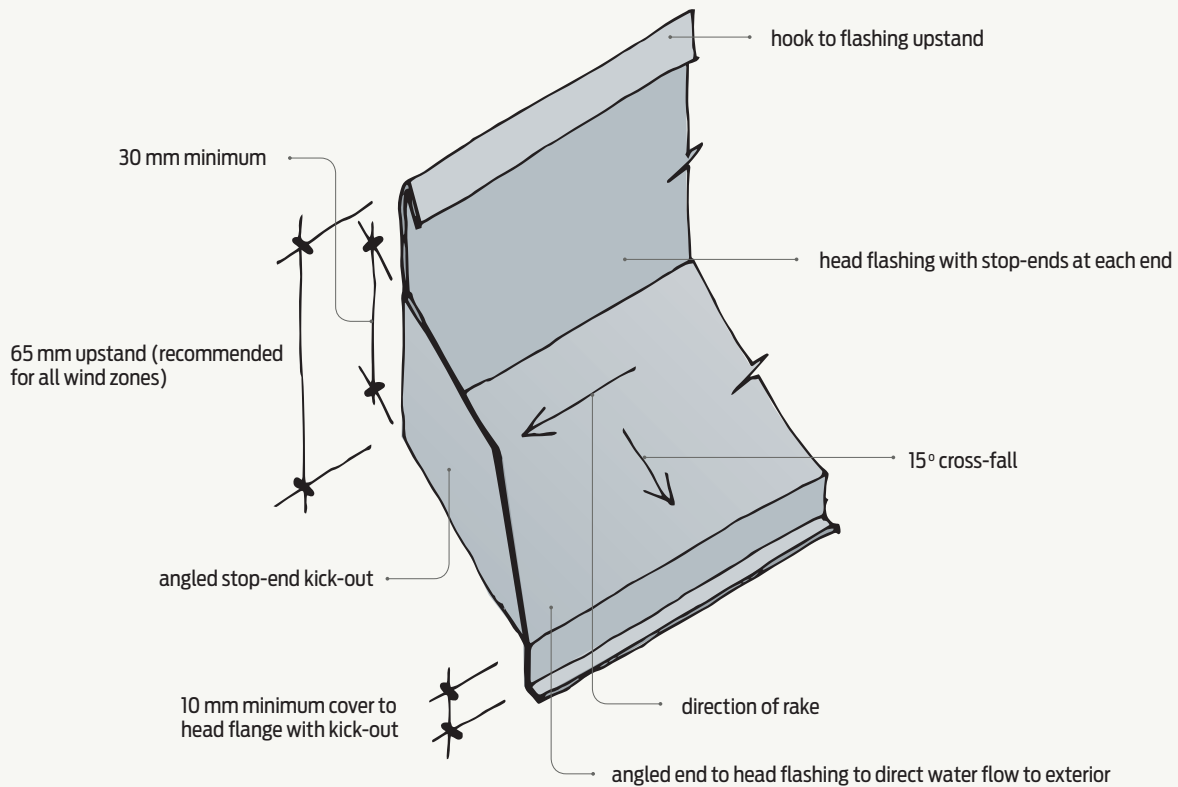


Figure 3 Head flashing shaped to deflect water.

Pointers when detailing a raked window head

The key elements to the detailing of a raked aluminium head (Figure 2) that overlaps the cladding are:

- getting water off the flashing at the bottom of the rake
- stopping water getting in at the top of the rake.

Key elements of Acceptable Solution E2/AS1 that can be applied to the raked flashing installation are the interaction of the flashing upstands (suggested increase in height), cladding cover and cover to the window flange.

Option 1 – Head as apron flashing

The preferred option is to consider the raked head flashing as an apron flashing with a stop-end kick-out (see Figure 3) at the bottom of the rake. This will discharge water to the outside for both cavity and direct-fixed claddings (having a cavity is preferred). A flashing stop-end as detailed in E2/AS1 is designed to prevent water being driven past the end of the flashing into a cavity. When applied to a raked window, it has two flaws:

- It does not deflect water to the outside face of the cladding as it terminates at the back face of the cladding.

- It is not of sufficient size to deflect the amount of water that may be present.

Key requirements include:

- sealing any cut in the cladding to allow the installation of the kick-out flashing
- sealing the top of the scribe to the underside of the head flashing.

Option 2 – Timber bead

A second option where the top of the window fits directly under a flat sheet soffit (see Figure 1) is to protect the junction at the raked head with a timber bead that is sealed to both the window flange and the soffit. ◀