build right

by John Harper, BRANZ Technical Writer

Sill flashings for windows and doors

In previous editions of BUILD we've talked about window/door heads and jambs. It's now time to look at sills.

In this series of articles we are only considering face-fixed windows. Sills for face-fixed joinery are the easiest to detail because the overlap of the sill flange to the cladding is in the natural weathering direction, but there are still a few issues to consider.

Rebates in trimming studs discouraged

The primary role of the sill flashing is to collect water that may get in past a jamb facing and direct it outside. Therefore the sill flashing must bridge the gap between the window reveal and the wall framing to ensure it collects this water. In the past the sill flashing was rebated into a sawcut in the trimming stud to provide the proper water collection capacity at the bottom of the jamb. However, sawcuts in studs are now discouraged for four reasons:

1. the protection offered by preservative treatment of the timber framing might be compromised by cutting studs in an area where dampness could be expected
2. a sawcut would structurally weaken the doubling stud (see NZS 3604: 1999, Figure 8.5)
3. an end upturn on the sill flashing would need a 'rebate' (more than a sawcut) in the stud, which is more difficult to do
4. the wall underlay and securing tape, which is turned into the window reveal, would need to be cut, thus breaching the secondary protection.

Using packers

One option to overcome these problems is to install 20 mm packers down the edge of the doubling studs, finishing short of the sill trimmer. This effectively forms a rebate to accommodate the sill tray, which achieves a better result than a sawcut and is easier to construct (see Figure 1).

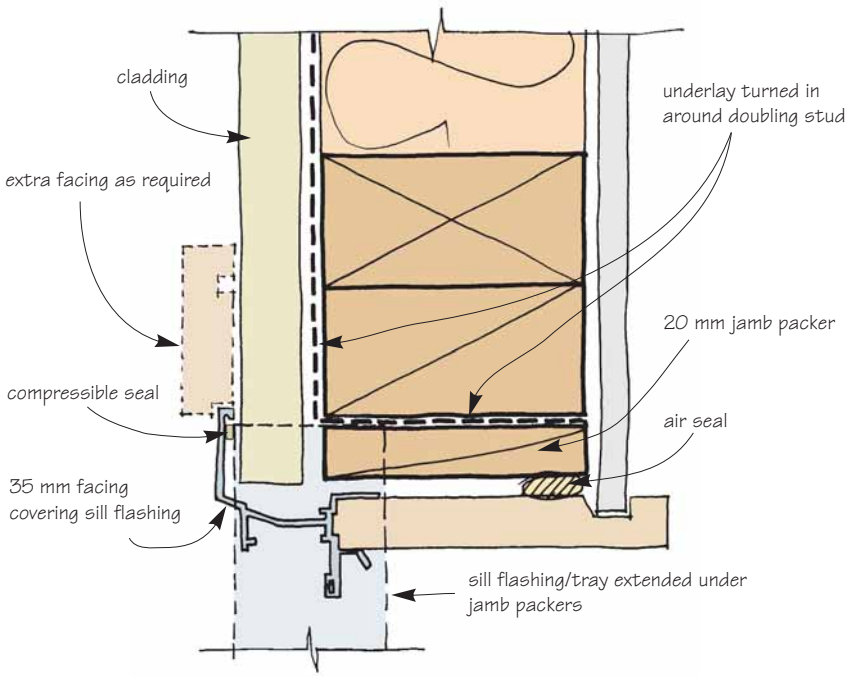

Figure 1: Window jamb section.

This means the lintel must span an extra 40 mm, which should not be a problem unless you are right on the edge of a step in the lintel span tables in NZS 3604.

Using upturns on flat trays

If the sill flashing is set relatively flat (often called a sill tray), it should have upturns on the ends and along the back to ensure any water runs out the front only. If the flashing is sloped forward sufficiently (at least 15°) water will run off the front, but it may still be a good idea to put upturns on the ends, especially as this is where the main water collection will be.

Where possible, make the sill tray/flashing deep enough to collect any water that might leak through the mitre cuts in the aluminium frame or fixings for mullions. Where this can't be done, ensure that the aluminium sill section is factory fitted with soaker flashings to direct any leakage to the outside.

Covering the ends

A weakness with many sill flashings is where they are left exposed either side of the window frame. An advantage of

wide window facings is that they will cover these sill-flashing projections, offering better assurance of weather protection. Using 35 mm facings/flanges on aluminium windows will provide cover to the ends of the sill flashings where these are accommodated under the 20 mm jamb packer without the need for additional timber facings. They may also cover the downturn of the flashing along the bottom edge, though this is not so essential (in which case you may want the sill flashing colour-matched to the frame). See Figures 1 and 2.

Fitting in around brackets

Sill flashings/trays are usually made long enough to cover the full width of the window. However, problems may arise where support brackets are required for windows installed beyond the wall framing (e.g. face-fixed windows over thick claddings), or those that are large and double glazed, where weight is an issue.

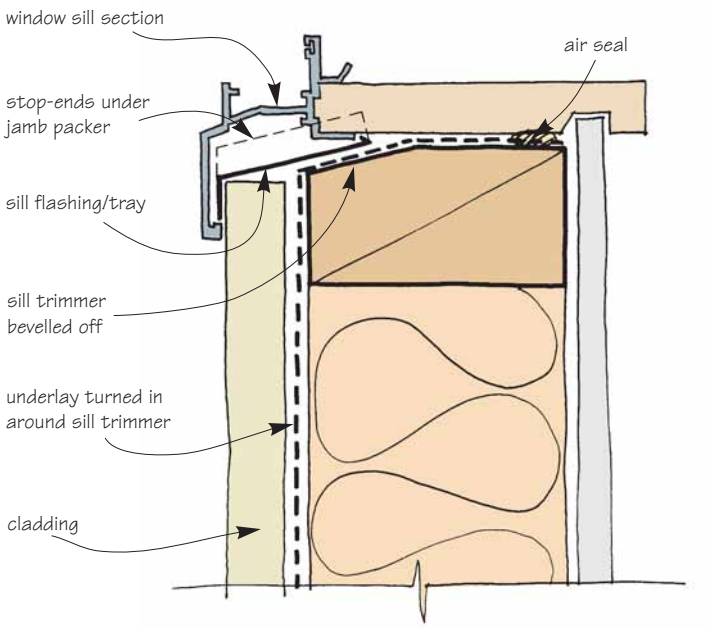

Figure 2: Window sill section.

Brackets to support such windows can conflict with the sill flashings. One solution is to install short sections of sill flashings (say 200 mm long) only under the ends of the windows. This provides water collection where it is necessary, under the jamb lines, and leaves the rest of the sill area for the support brackets. If you do this, install soaker flashings under mullion lines to collect any water that might leak through the mullion/sill joints.

In the next edition we will look at the management of air infiltration around the frame for both direct-fixed and cavity situations.

Comment from Graham Rowe, General Manager, BRANZ Information Services

The details published in this series on door and window penetrations are only one way of executing such details. They are not necessarily new, or special in any way, or part of an Acceptable Solution. Any dimensions given for components are provided to ensure other parts of the detail will 'work' and all have been considered carefully by BRANZ technical staff.

These details reflect traditional practice used for timber joinery but adapted to aluminium joinery. As always, there are many alternatives to those given here. For example, the WANZ WIS approach to window installation, published in *BUILD* August/September 2002, does not require the use of 35 mm window facings. Research at BRANZ has shown that although the amount of cover for flashings and claddings is critical to the design of wall penetrations, it can be achieved in different ways. ›‹