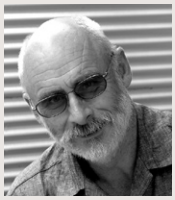

WEATHERTIGHTNESS AND BRICK VENEER CAVITIES

Brick veneer cavities have an important weathertightness function. Getting the detailing and construction of veneer claddings right is necessary to allow the water present to drain and dry.

By Trevor Pringle, BRANZ Principal Writer

Masonry (primarily brick) veneer, where the masonry weatherskin is separated from the structural frame of the building, was first used in New Zealand early in the 20th century. Currently, it has more than a 50% share of the domestic cladding market for new construction. As with many aspects of construction, practices have evolved over time, and we often lose sight of the original reasons why we built the way we did.

Brick veneer is porous

Brick veneer is a porous cladding – it readily allows water through the bricks and the mortar joints – and water running down the back face of the brick can occur quite quickly when the veneer is subject to an E2/VM1 test. The same will happen in wet weather.

Windows inserted into brick veneer are not sealed to the bricks, and water will pass through this junction.

Initial findings from BRANZ research into drying rates for water that gets behind wall claddings has shown quite clearly that, for brick veneer claddings, the movement of air behind the cladding, together with positive drainage down the back of the cladding, is critical to the cladding performance.

Good practice for brick veneer

So what is good practice for constructing a brick veneer cladding to ensure that the essential drainage and drying will occur? The following points are key to a 'well performing' veneer wall.

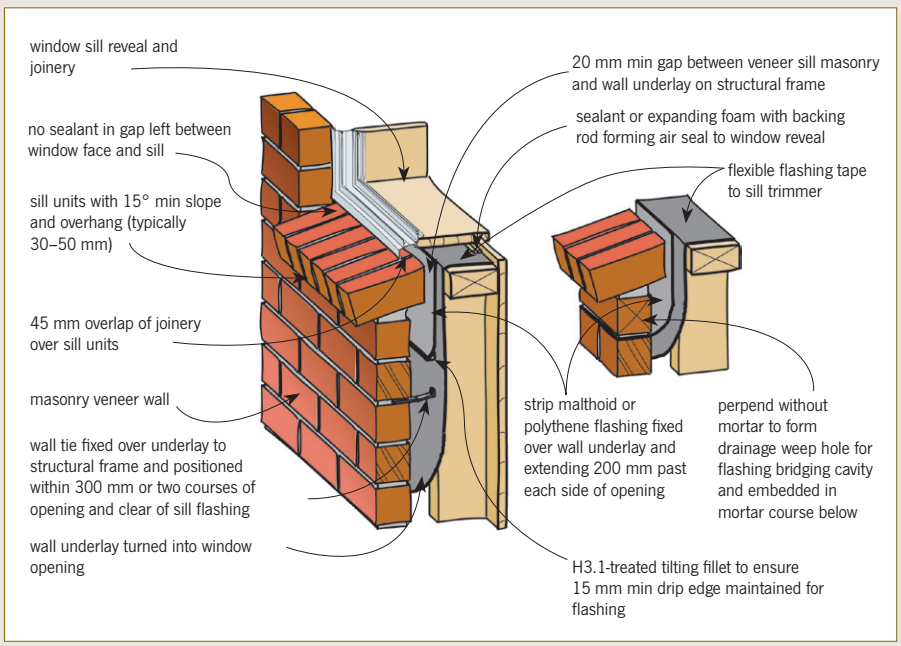

Figure 1: Window sill construction for masonry veneer walls.

AVOID MORTAR PROTRUSIONS AND BUILD-UP

Maintain the separation between the back of the veneer and the wall underlay so that water cannot track across the cavity. It is common to see mortar protrusions out the back of the veneer that almost bridge the cavity and an unacceptable build-up of mortar droppings on the ties and in the bottom of the cavity. Cavities can be between 40 mm and 70 mm wide, with BRANZ and NZS 4210: 2001 *Masonry construction: Materials and workmanship* recommending a minimum of 50 mm. Using a mortar board within the cavity as the wall is constructed is one way of reducing the amount of mortar droppings, although the number of ties required makes this difficult.

Leave out every third or fourth brick in the bottom course to allow mortar droppings to be cleaned out of the cavity – preferably after every 4 hours work or before the mortar sets.

CONSIDER FOUNDATIONS

Step the foundation at the bottom so the bottom of the cavity is a minimum of 50 mm below the floor level. The rebate in the slab edge or foundation wall must be waterproofed *before* the veneer is erected to prevent water being absorbed into the concrete. A mortar fillet installed before waterproofing will assist drainage.

KEEP WALL UNDERLAY INTACT AND IN PLACE

Ensure the wall underlay is undamaged – immediately repair any damage that occurs during bricklaying.

View through a clean-out opening showing a typical masonry veneer rebate, that accommodates a 70 mm wide brick and a 50 mm wide cavity between the foundation edge and the step at the base of the structural frame. Note the wall underlay is too close to the rebate.

Tape the wall underlay with PVC tape or strap halfway between stud positions to prevent the material being pushed out into (and bridging) the cavity when the insulation is installed to the walls.

INSTALL PENETRATIONS BEFOREHAND

Ensure all penetrations are installed before the veneer is erected – penetrations such as pipes must be taped off to the wall underlay to maintain gravity drainage of water. They can't be taped off effectively if pipe penetrations are installed after the veneer is erected.

LEAVE DRAINAGE/VENTILATION SLOTS OPEN

Leave every third vertical joint in the bottom course open to allow for drainage and for ventilation. Ensure the drainage slots will be above finished ground level.

Where the first course is less than 75 mm in height, the spacing of the drainage slots must be decreased to ensure a ventilation area of not less than 1,000 mm^2 per metre length of wall.

SLOPE TIES FORWARD

Slope ties forward towards the back of the veneer so that water is not able to track along the tie and get onto the underlay.

WINDOW INSTALLATION IS IMPORTANT

At the window sill, ensure any water that gets on the flexible sill flashing can drip clear of the wall underlay or drain to the outside. Figure 1 gives two options.

Windows are not sealed to the veneer along the jambs, and jamb flashings are an essential part of weathertightness detailing and construction. Terminate jamb flashings as shown in Figure 2, and ensure the jamb flashing overlaps the sill flashing.

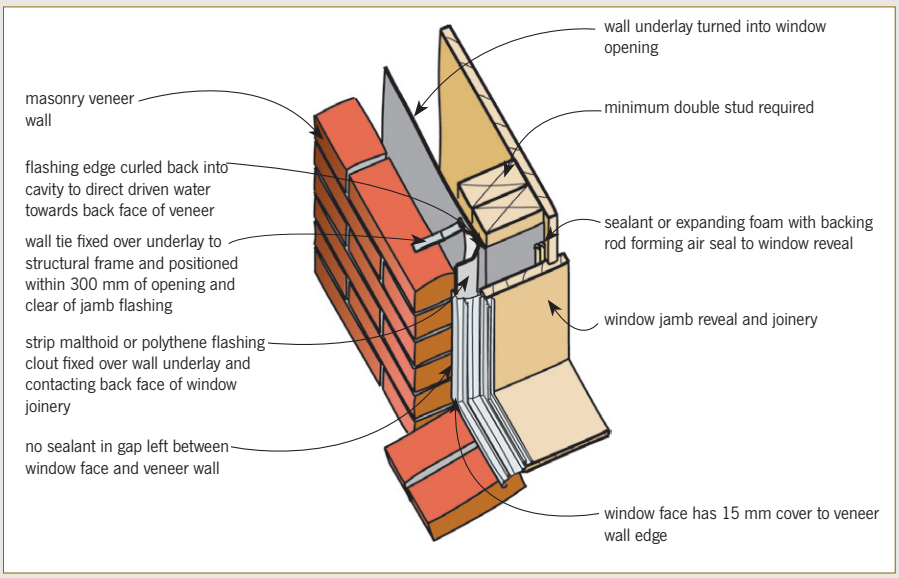

Figure 2: Window jamb construction for masonry veneer walls.

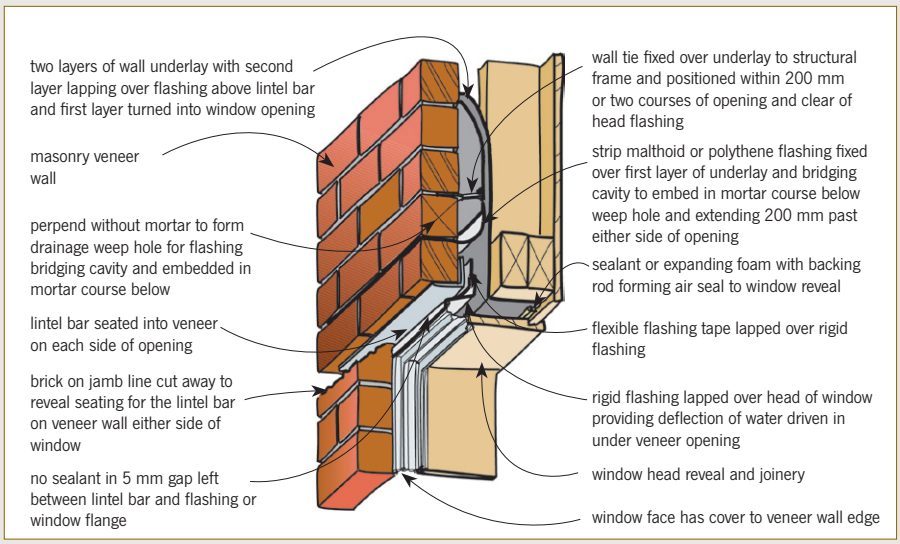

Figure 3: Window head construction for masonry veneer walls, with masonry continuing above the window.

Ensure drainage paths from the veneer are maintained across the tops of openings. There are a number of detail options across the head of the window. Figure 3 gives one option.

ALLOW VENTILATION AT THE TOP

Allow for ventilation at the top of the veneer wall by leaving a 10 mm gap to the soffit or by omitting the mortar in every third perpend of the top course.

USE CORRECT MORTAR JOINTS

Use either concave (ironed), weatherstruck or struck-flush mortar joints to facilitate water shedding. Tool off mortar joints to make them denser, harder and more durable.

CLOSE OFF THE CAVITY

Ensure the masonry veneer cavity is closed off from adjacent roof and subfloor spaces.

Detailing and constructing veneer cladding as above recognises the fact that water will be present, and it must be allowed to drain and dry.