

Horizontal profiled metal as a cladding

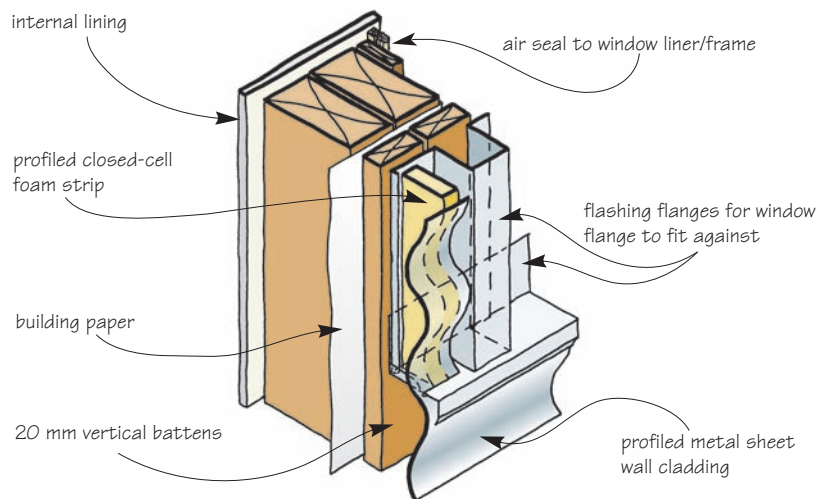


Figure 1: Horizontal profiled metal cladding with window flashing penetrating cladding.

On the surface, profiled metal as a sheet wall cladding should be a straightforward option, after all it's been used successfully on roofs for years. However, when used on walls it poses its own set of unique challenges.

Galvanised corrugated iron sheets have historically been used in New Zealand on farm and industrial buildings as a low-cost, durable and easy-to-install cladding option. More recently, profiled metal cladding has become a fashionable cladding solution for houses.

But houses require a greater level of performance than barns, and more care is needed for profiled metal to be a successful house cladding. The cross-sectional profile requires:

- careful detailing for effective weathertightness

- sufficient air flow behind the cladding for moisture and heat control.

In addition, metal materials require more care to:

- prevent corrosion at cut edges, penetrations and between building components
- allow for differing expansion rates.

Weathertightness

For designs to E2/AS1, all horizontal profiled metal cladding must be fixed to a drained and vented cavity as a

weathertightness backup to ensure the building paper, framing and insulation remain dry. The cavity is formed from 20 mm (minimum), H3.1-treated vertical battens. Battens that are treated with copper-based preservatives should be isolated from any unpainted metal cladding.

To be effective as a weathertightness backup system, cavities must provide adequate drainage and ventilation. The airflow in the cavity must be controlled so it can:

- prevent moisture entering the cavity
- carry away trapped moisture
- prevent excessive convective heat loss.

Airflow is controlled by closing the top of cavities, while the bottom should have a restricted opening

(1000 mm²/m length) to allow drainage. (Refer to E2/AS1 third edition, Fig. 66 'Cavity base closure' for details.) A vermin-proof closer at the bottom of the cavity not only restricts vermin but can also provide adequate airflow and drainage.

A 100 mm minimum clearance to paved ground (or 175 mm to cleared ground) prevents soil or debris from blocking the cavity (restricting drainage and airflow) and corroding the cladding.

Mind the gaps

Profiled closed-cell foam strips are needed to fill the gaps behind the profiled sections at the ends of sheets. This restricts air and moisture penetration, providing pressure equalisation around openings or junctions. The resulting still air space helps release any water so it can drain away.

Where the cladding is cut at an angle to the profile (e.g. under a sloping soffit), greater weather protection can be provided by either a

soft-edge flashing shaped along the cut edge, or by pressing the cut edge into a flat foam strip.

Air seals between the window reveals and framing on exposed sites can reduce the risk of high air movement carrying water past the cladding and into the wall.

Making fixings work

Metal responds less to humidity changes but more to temperature changes than wood. Therefore, provision must be made for movement between building elements.

Drilling oversized holes for fixing screws accommodates any movement, and neoprene or EPDM washers provide a good seal around the hole. 12-gauge hexagonal-head self-drilling screws make for easy replacement and torque control. Low-friction Teflon-coated tapes between the cladding and framing allow the metal cladding to slide with less noise.

NZ Metal Roof and Wall Cladding Code of Practice 2003 says fixing the

cladding in the trough gives twice the pull-out resistance of crest fixings.

How and where to flash

Flashings should be installed:

- across the tops of openings
- at doors and window sills under mitre joints and mullions
- at horizontal movement-control joints
- at penetrations.

As Figure 1 shows, the flashing must:

- have a stop-end to prevent water migrating off the flashing behind the cladding into the cavity
- have a drip-edge to break water surface tension, enabling water to drip off rather than track back under the flashing
- provide free drainage to outside.

The cut edges of all flashings should remain 5 mm clear of the profiled cladding to prevent damaging the protective coating and to allow water to drain.

