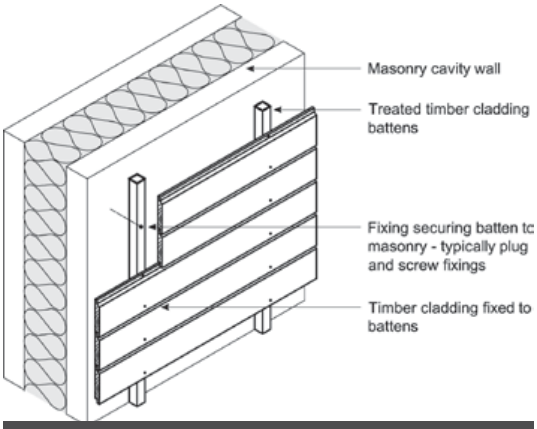
Brookridge

Backing structure tips for timber cladding

Good design detailing is imperative to the aesthetic appeal, robustness and long-term durability of timber cladding. Providing a ventilated cavity behind the cladding, designing out moisture traps and avoiding differential exposure to moisture will enhance durability and reduce the risks of differential weathering.

The cavity behind any timber cladding

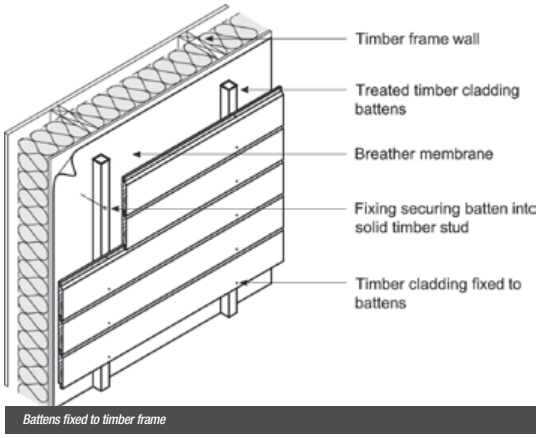


Battens fixed to masonry

The cavity behind any timber cladding should not be less than 19mm in width but is usually determined by the size of battens necessary to accommodate the fixings for the boards. For standard nails, the battens should be at least 2.5 times the thickness of the boards to be fixed, but with improved nails (such as annular ring shank) or screws, a batten twice the thickness of the board is adequate.

Generally, battens to which the boards are fixed should be not less than 38mm x 38mm.

Battens



Battens fixed to timber frame

Where cladding battens are installed over a timber frame structure, they are normally fixed into the solid timber studs through the breather membrane and sheathing board using maximum 600mm centres.

Where cladding battens are installed over a masonry structure, they are normally fixed at maximum 600mm centres using suitable plug and screw type fasteners. A damp proof course (DPC) may be specified between the timber batten and the masonry structure to reduce the risk of prolonged moisture transfer from the masonry to timber batten.

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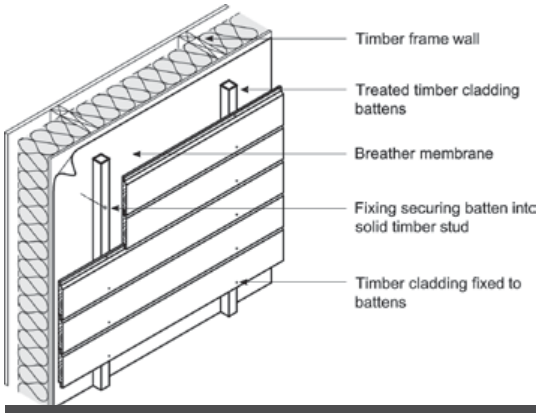
Battens

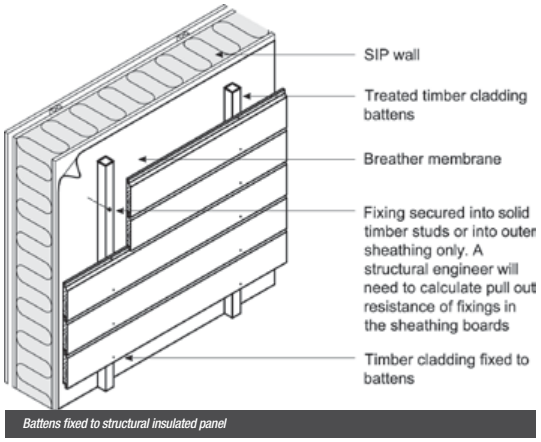


Battens fixed to timber frame

Depending on the imposed load of the cladding and likely wind loadings, a structural engineer may need to determine the exact fixing specification. Where cladding battens are to be fixed through layers of insulation, a structural engineer should be asked to calculate what fixings are required, as fixings will have to resist bending forces due to the weight of the cladding as well as the more typical shear and withdrawal forces. Support battens should not exceed 600mm spacing, whether vertical or horizontal, to limit the span of the cladding board and therefore its thickness.

Limiting the spacing of the support battens with the relatively close spacing of fixings will tend to restrain any natural tendency for the boards to twist, bow or cup. Also, if boards are to be used green, batten centres should preferably be reduced to 400mm or maximum 500mm centres. Although single fixings are adequate for boards less than 100mm wide, sections narrower than this may rotate around the single fixing and, in this case, it is again advisable to reduce batten centres to 400mm maximum spacing to resist this movement.

Cladding



Battens fixed to structural insulated panel

Horizontal boards fixed to vertical battens will not restrict either drainage or the vertical circulation of air in the cavity, providing that horizontal battens are omitted at the top and bottom of the cladding. If horizontal battens at the top and bottom of the cladding are necessary to provide support for fixings for other components, they should be smaller than the vertical battens in order to not to block the ventilation path. If horizontal fire resistant cavity barriers are fitted, consider how ventilation will be provided.

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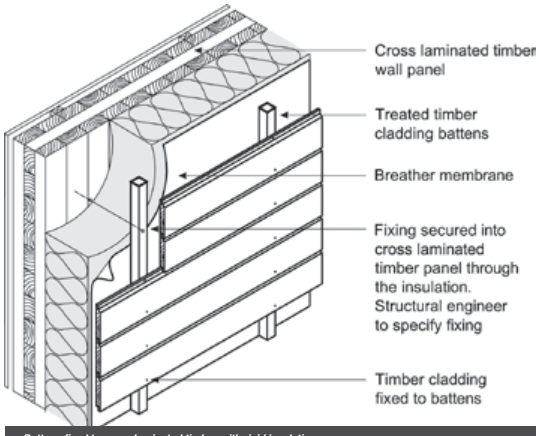
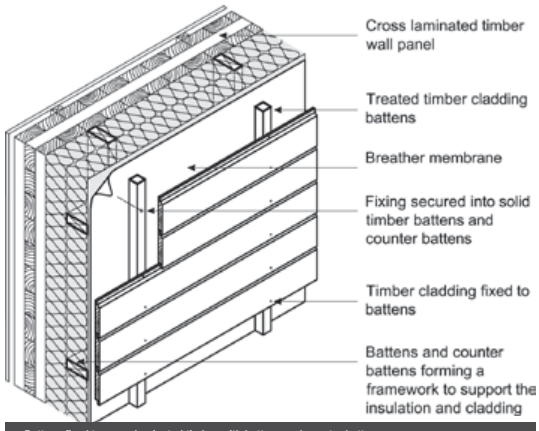
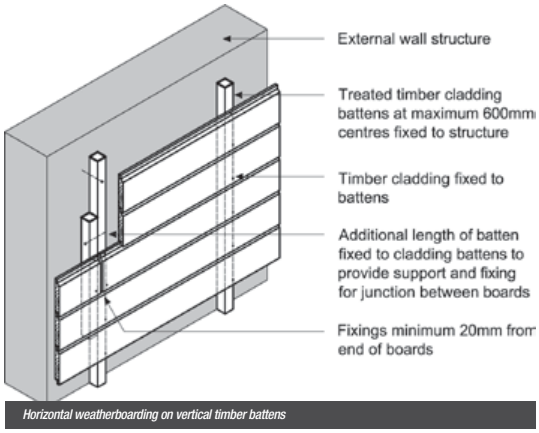


Battens fixed to cross-laminated timber with rigid insulation



Battens fixed to cross-laminated timber with battens and counter battens.



Horizontal weatherboarding on vertical timber battens

Tight jointed, vertical boards fixed to horizontal battens these battens will prevent drainage and vertical circulation of air within the cavity, and so it is necessary to introduce vertical counter battens behind the horizontal battens.

Although a 12mm minimum gap would theoretically be adequate between the horizontal battens and the inner wall, counter battens should be increased in thickness to avoid the risk of the wood splitting when the battens are fixed through to timber studwork or masonry behind.

If the horizontal battens are only to be fixed to the counter battens, rather than fixed through to timber studs behind, the counter battens must be of sufficient thickness to take the required fixings.

As the horizontal battens are unsupported other than by studs or counter battens, they should also be stiff enough not to flex unduly when the boards are nailed to them.

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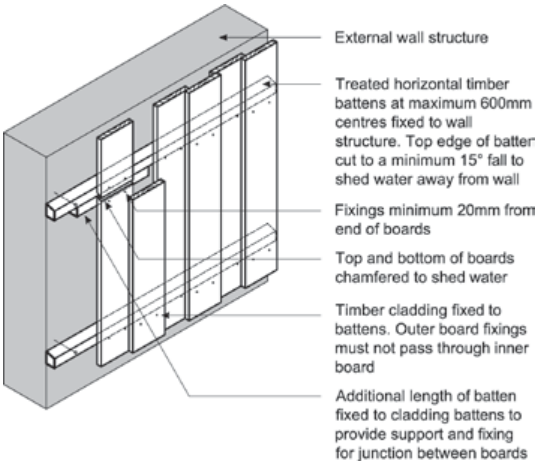

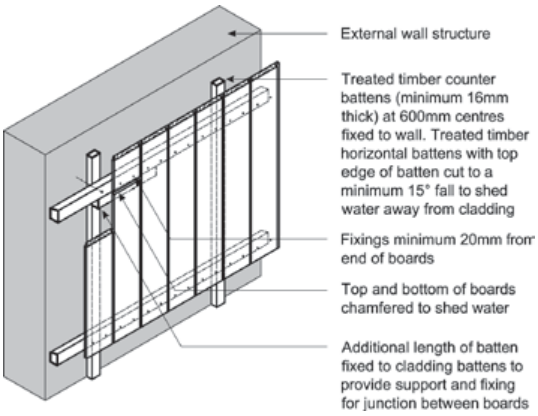

Vertical tongued and grooved boarding on horizontal battens and counter battens

If a board-on-board or an open-jointed type of vertical cladding is used, it is not necessary to provide counter battens as there will be sufficient ventilation and drainage behind the outer boards or through the open joints.

In this case it is preferable that horizontal battens be chamfered on the top edge to shed any water outwards. When vertical counter battens are used, the horizontal battens should be chamfered to slope inwards and drain any water into the cavity behind the horizontal battens.