

PB215
June 2005



FireCLAD®



Introduction

Industrial Building Designers and their designs need no longer be limited when considering fire-resistant materials and their components. The Boral Plasterboard FireCLAD® System, developed in conjunction with BlueScope Steel is a cost and time efficient method of providing the required fire rating to external walls of new and existing steel framed construction as an alternative to precast concrete or masonry. The Boral Plasterboard FireCLAD® System provides fire resistant industrial exterior walls, where they are necessary, due to the nearness of neighbouring properties or proximity of one building to another.

Apart from any necessary internal fire resistance, the Building Code of Australia (BCA) requires one and two-storey storage buildings, car parks, laboratories, factories and workshops to have fire resistant external walls where the building is within three (3) metres of a property boundary or another building. These external walls must have 60 minutes fire resistance to external fire attack. Where the distance from the boundary or adjoining building is less than 1.5 metres, the fire resistance level required is increased to 90 minutes. The Boral Plasterboard FireCLAD® System may also be used in other building types where fire resistance of up to 120 minutes is required.

The FireCLAD® System utilises Boral Plasterboard FireSTOP™, attached to the building frame underneath the Colorbond® steel cladding, to produce fire resistance levels of 60, 90 and 120 minutes from outside fire attack. The FireCLAD® System has been assessed and certified in accordance with the BCA, and independent costing research indicates the system offers substantial construction cost savings when compared with load bearing and non-load bearing precast concrete.

Benefits

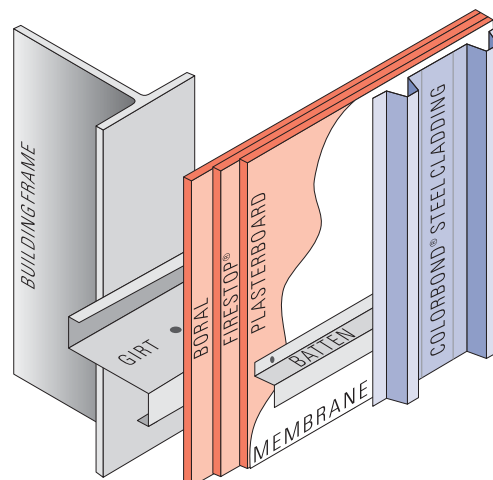
The FireCLAD® System affords the flexibility of using steel structural and cladding components in a very cost effective and attractive system as an alternative to, or in combination with, concrete or masonry construction. FireCLAD® has been used successfully by several pre-engineered industrial building companies.

Good news to both large and small steel framed building fabricators, the FireCLAD® System is also easy to assemble. Pre-assembly and tilt up crane erection, complete with frame and cladding, enables easy FireCLAD® System installation where proximity to adjoining buildings prevents conventional construction methods.

The FireCLAD® System is also ideal for refurbishments and building upgrades. Existing buildings that are adjacent to new construction may be required to have upgraded fire resistance.

This can be achieved using the FireCLAD® System without having to replace the existing steel frame. Remove the cladding, apply the FireSTOP™ Plasterboard and other components, and then replace the cladding for a low cost, fire resistant external wall. The system can also be constructed above a dado height concrete wall whilst still retaining the fire rating. This means that money is only spent on expensive walling where required, not over the whole area, thus minimising building costs.

System Details



FireCLAD® System

The Boral Plasterboard FireCLAD® System comprises a conventional hot or cold rolled steel frame, multiple layers of Boral Plasterboard FireSTOP™ or Wet Area FireSTOP™, membrane, battens, and Colorbond® cladding.

For all heights, the weight of the FireCLAD® System should be supported by the steel frame or reacted through to the floor slab using girt bridging or sag rods. However, for wall heights up to 10 metres high, the weight of the FireCLAD® System may be reacted directly onto the floor slab with the fitting of galvanised mild steel skirting at the base of the wall.

Fire rated details are also available where the FireCLAD® System is penetrated by pipes, cables, ducts and windows, for various treatments at gutters and base of walls, and where control joints or transitions to non fire-rated areas are required.

Note:

- FireCLAD® is registered to Boral Ltd.
- Tyvek® and Homewrap™ are registered to DuPont™.
- Colorbond® and Galvaspan® are registered trademarks of BlueScope® Steel.

Colorbond®

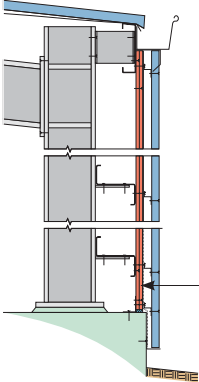
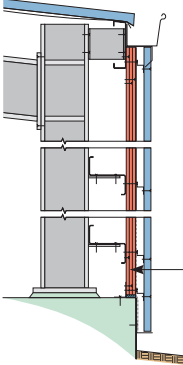
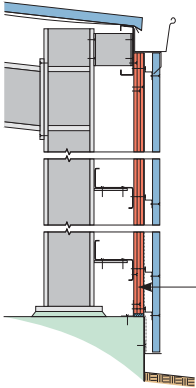
Design

The FireCLAD® System provides external fire ratings of FRL 60/60/60, FRL 90/90/90 and FRL 120/120/120 as follows:

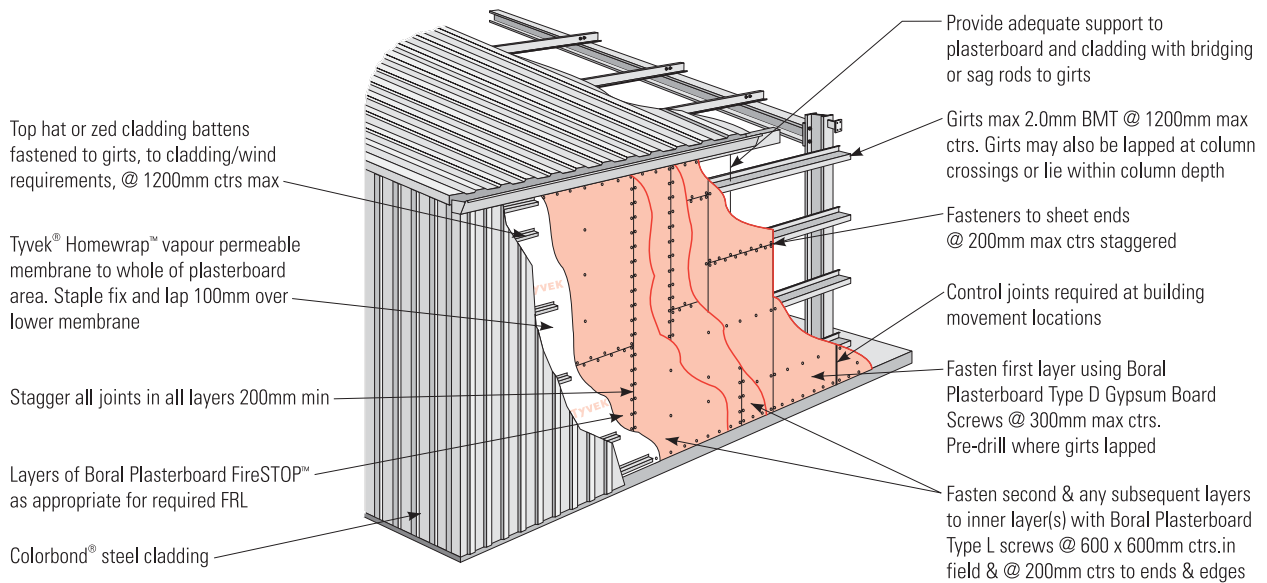
- FRL 60/60/60 - Two layers of 16mm Boral Plasterboard FireSTOP™ or Wet Area FireSTOP™
- FRL 90/90/90 - Three layers of 13mm Boral Plasterboard FireSTOP™ or Wet Area FireSTOP™
- FRL 120/120/120 - Three layers of 16mm Boral Plasterboard FireSTOP™ or Wet Area FireSTOP™

Note:

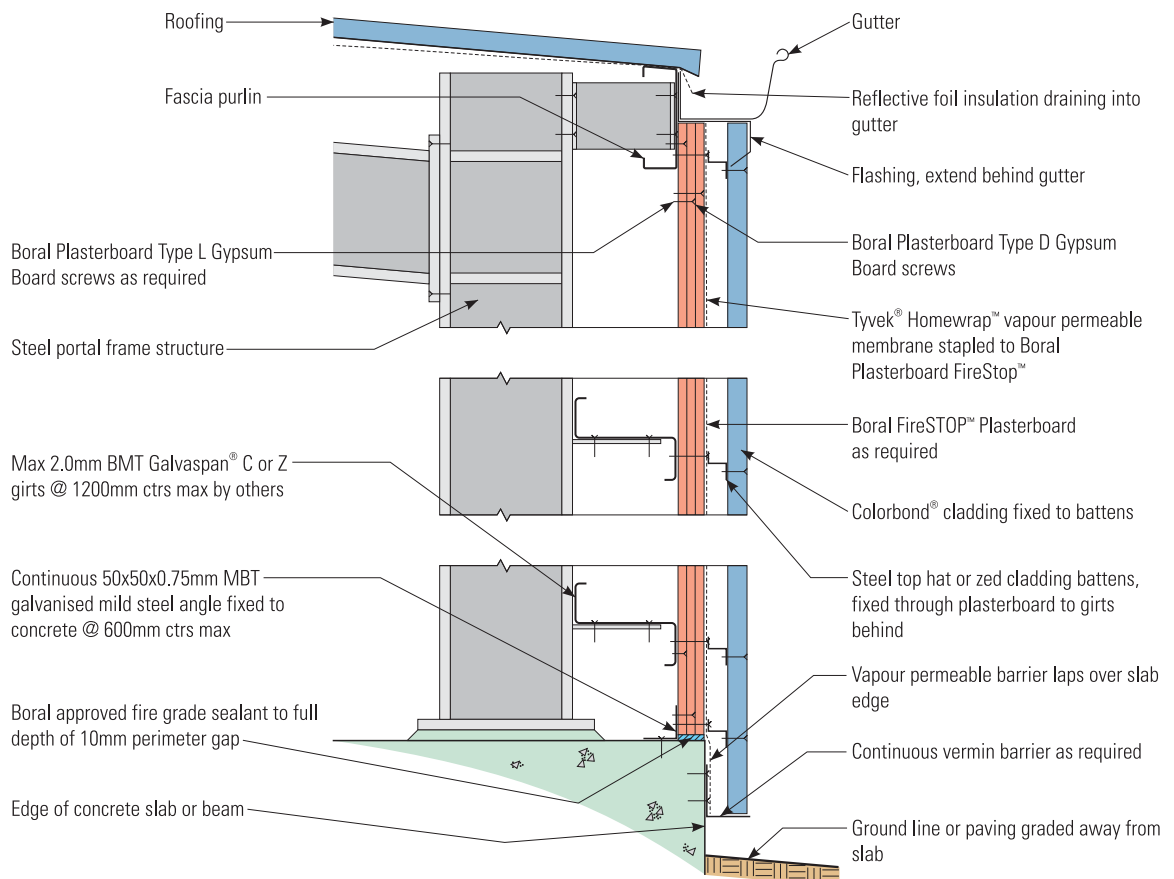
If in-service conditions of the building are likely to increase plasterboard moisture levels, the use of Boral Plasterboard Wet Area FireSTOP™ is advisable.

System	Fire-Rating	Description and Physical Data
FireCLAD® 60 (EW1)	1 Hour FRL60/60/60 Fire-Resistance from outside direction only. CSIRO Opinion FCO-1555 FCO-1890	 <p>Boral FireCLAD® Exterior Wall System 2 layers 16mm Boral Plasterboard FireSTOP™ or Wet Area FireSTOP™ fixed to girts max. 2.0mm BMT.</p> <p>Plasterboard Mass 26 kg/m²</p> <p>2 x 16mm Boral Plasterboard FireSTOP™ or Wet Area FireSTOP™</p>
FireCLAD® 90 (EW2)	1½ Hour FRL90/90/90 Fire-Resistance from outside direction only. CSIRO Opinion FCO-1555 FCO-1890	 <p>Boral FireCLAD® Exterior Wall System 3 layers 13mm Boral Plasterboard FireSTOP™ or Wet Area FireSTOP™ fixed to girts max. 2.0mm BMT.</p> <p>Plasterboard Mass 32 kg/m²</p> <p>3 x 13mm Boral Plasterboard FireSTOP™ or Wet Area FireSTOP™</p>
FireCLAD® 120 (EW3)	2 Hour FRL120/120/120 Fire-Resistance from outside direction only. CSIRO Opinion FCO-1890	 <p>Boral FireCLAD® Exterior Wall System 3 layers 16mm Boral Plasterboard FireSTOP™ or Wet Area FireSTOP™ fixed to girts max. 2.0mm BMT.</p> <p>Plasterboard Mass 39 kg/m²</p> <p>3 x 16mm Boral Plasterboard FireSTOP™ or Wet Area FireSTOP™</p>

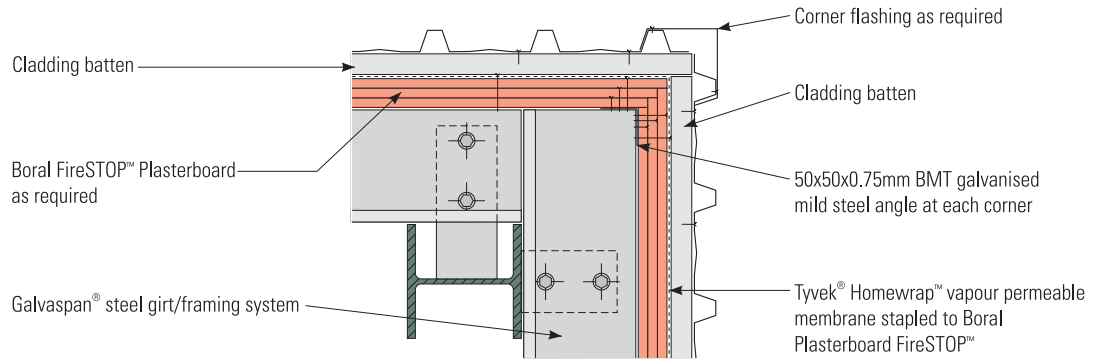
Details



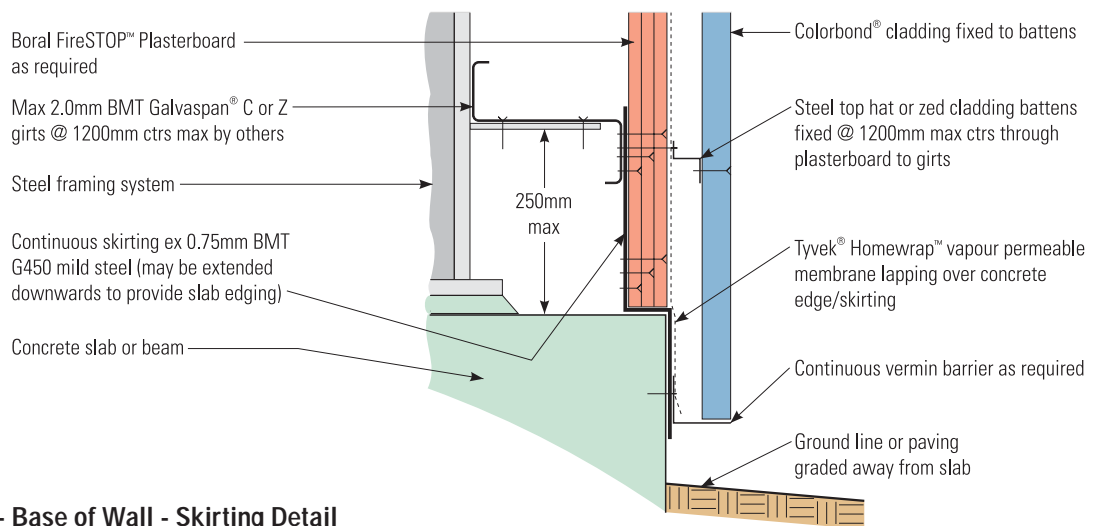
FireCLAD® System - Perspective View



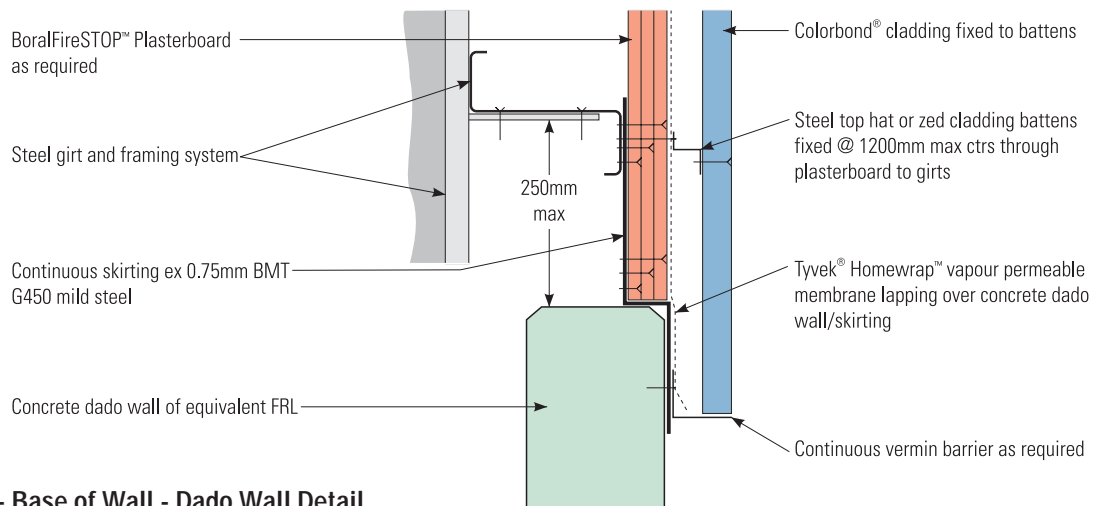
FireCLAD® System - Typical Vertical Section



FireCLAD® System - Corner Detail



FireCLAD® System - Base of Wall - Skirting Detail



FireCLAD® System - Base of Wall - Dado Wall Detail

Construction Details

The FireCLAD® System may be pre-constructed for tilt-up erection by crane/s or applied to suitable wall framing as follows:

1. Girts/framing members should be fixed across or between building column members to provide flat grounds (max. 1200mm centres) for fixing the plasterboard.
2. Angles should be fixed at corners and control joints with Wafer Head Screws at each crossing, crippling where necessary.
3. Fix skirting if required, to girts/framing members at base of wall with wafer head screws at 1200mm max. centres.
4. First layer plasterboard sheets should be cut, fitted with no gaps wider than 1mm between sheet ends or edges and fastened vertically to girts/building framing members with Type D plasterboard screws at 300mm centres along the girt and 200mm centres at sheet ends (10-16mm from sheet edge).
5. Subsequent layers should be fixed with Type L laminating screws at 600 x 600 mm centres in the field and 200mm centres at sheet ends and edges. *Alternatively, the second layer may be screwed through the first layer into the girts, providing a cleaner internal finish. Any third layer is then screw laminated to the previous layers as previously described.*
6. Stagger all joints between layers a minimum of 200mm.
7. Caulk perimeter and any control joints with an approved fire grade sealant.
8. The FireCLAD® System membrane should be stapled vertically or horizontally in a continuous run over the whole face of the plasterboard to ensure any water is shed outside of the floor slab.
9. Provide additional support to any plasterboard adjacent to penetrations to allow for movement and/or expansion as required. Seal according to Boral Plasterboard details.
10. Screw fix cladding battens through membrane and plasterboard to girts/framing members at centres as required by the building design engineer. Screw fix steel cladding as per cladding manufacturer's specifications and suitably flash. Fix rainwater guttering and downpipes as normal.

Note:

Plasterboard, Membrane and the specified screw fasteners are available through Boral Plasterboard outlets.

Fastener Selection

The following table shows the correct selection of screws for the construction of Boral Plasterboard FireCLAD® systems.

Screws - Plasterboard to Girts

Number of Layers Plasterboard x Thickness	Steel Frame Type D Screws
1 x 13mm	6 - 18 x 25mm
1 x 16mm	6 - 18 x 30mm
2 x 13mm	6 - 18 x 40mm
2 x 16mm	6 - 18 x 45mm

Screws - Plasterboard to Plasterboard

Number of Layers of Plasterboard x Thickness		Type L Screws for Fixing Plasterboard A to B
Plasterboard A	Plasterboard B	
1 x 13mm	Min 13mm	10 - 8 x 32mm
1 x 16mm	Min 16mm	10 - 8 x 38mm

Screw Identification is given as
(min gauge) - (threads/inch±1) x (min length)

Construction Details - Upgrade

(Where girts are at greater than 1200mm centres)

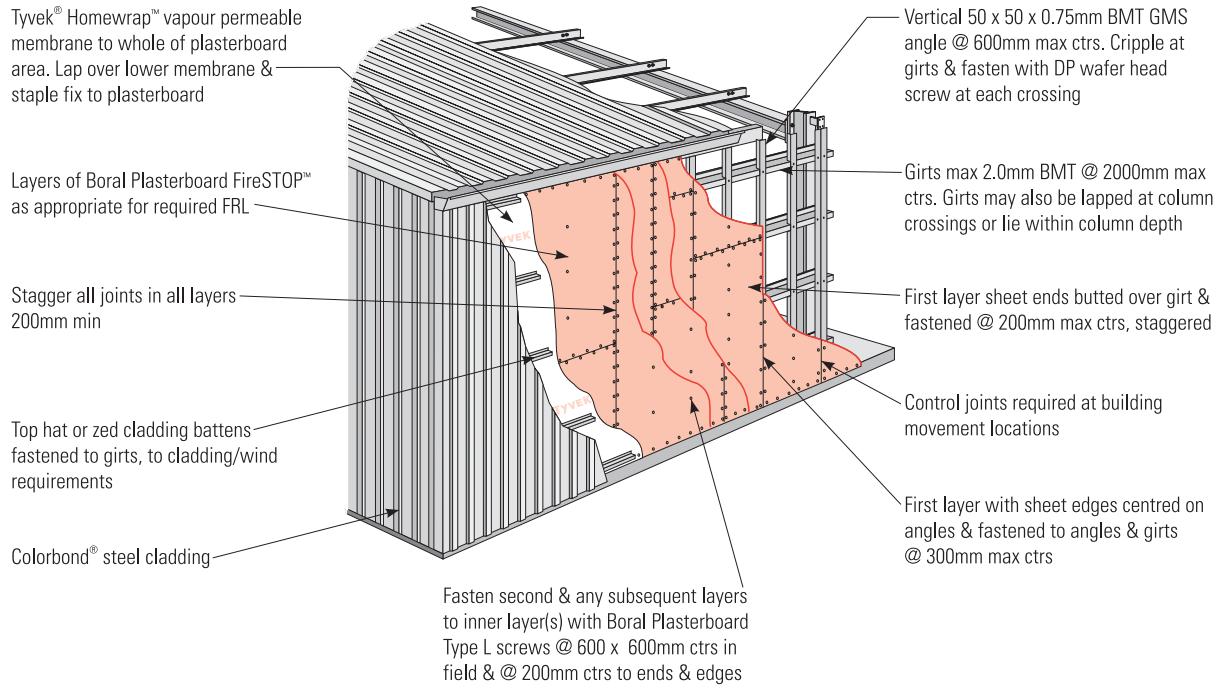
Where required, existing buildings may have their fire resistance levels upgraded by applying the FireCLAD® System as follows:

- 1u. Girts/framing members should lie across or between building column members to provide flat grounds (max.2000mm centres) for fixing the plasterboard.
- 2u. 50x50x0.75mm BMT GMS angle to be placed vertically @ 600mm centres over girts/framing members. Cripple at girt crossings and fasten with one 10x16 DP wafer head screw.
- 3u. If plasterboard is not supported by concrete, fit shelf angle to slab edge to provide support.
- 4u. Fix corner angles, control joints and skirting as required to previous details.
- 5u. First layer plasterboard sheets should be cut and fitted with no gaps wider than 1mm between sheet ends or edges and fastened vertically to girts/building framing members with Type D plasterboard screws at 300mm centres along the angles and girts and 200mm centres at sheet ends (10-16mm from sheet edge).
- 6u. Subsequent layers, membrane, battens and cladding should be fixed as in points "5" to "10" opposite except that the alternate screw method in "5" should not be used.

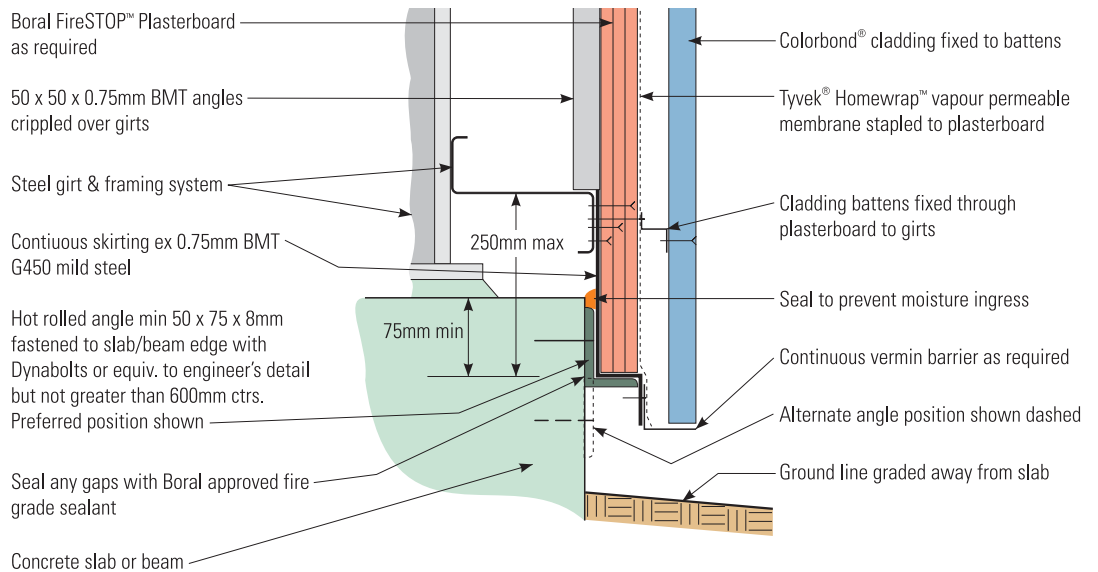
Finishing

Plasterboard in the FireCLAD® System is overlaid and therefore plasterboard joints do not need to be taped or set. If a finish is sought on the internal plasterboard wall face, the first plasterboard layer only may be fixed with its face to the girt/framing system and finished conventionally. Additional layers of plasterboard may also be fixed to the inner face of the framing without downgrading the fire resistance of the system. The plasterboard may then be finished to provide a smooth internal lining.

Details - Upgrade



FireClad® System - Perspective View - Upgrade



FireClad® System - Base of Wall - Upgrade

Technical Enquiries

TecASSIST
add a valuable member to your team
1800 811 222

Through TecASSIST Boral Plasterboard is demonstrating its commitment to providing excellent technical service and support to design, building and construction professionals Australia wide.

A free-call architectural support line, TecASSIST is available to provide sound advice on all matters relating to drywall plasterboard construction.

Combining years of professional experience with the latest design information and technology, the TecASSIST team has the skills to help you.

Boral Plasterboard TecASSIST phone line is open to receive calls from 8:30am to 4:30pm Monday to Friday, Melbourne time (Victorian public holidays excepted).

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www.boral.com.au

Guarantee

Products manufactured and supplied by Boral Australian Gypsum Limited (BAGL) A.C.N. 004 231 976 (trading as Boral Plasterboard) are guaranteed to be of consistent quality and free from any defects.

Boral Plasterboard may limit its liability under this guarantee to, at its option, the replacement or payment of the cost of replacing OR supplying equivalent or payment of the cost of supplying equivalent OR the repair or payment of the cost of repairing products found to be defective.

Health and Safety

For information regarding the safe use of Boral Plasterboard products and accessories please refer to instructions on the product packaging or contact your local Boral Plasterboard Sales Office or TecASSIST for a current copy of the Material Safety Data Sheet.

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The technical information contained in this manual was correct at the time of printing. Building Systems and details are, however, subject to change. To ensure the information you are using is current, Boral recommends you review the latest building information available on the Boral website, contact TecASSIST or your nearest Boral Plasterboard Sales Office.

