

Fire and sound are important considerations in multi-residential construction. Fire-resisting construction is critical for protecting against extreme events and loss of life while sound insulation tends to influence the choice of construction system because of its daily impact on the building occupants' quality of life.

This Data Sheet will address some specific issues associated with the design and construction of timber fire separating walls in Class 1a Buildings and highlight some of the common installation deficiencies found on building sites, during building audits and also following investigations after fire events.



### SEPARATING WALL REQUIREMENTS

Separating walls are used to provide fire-resistance and sound insulation between attached Class 1a buildings. Specific requirements pertaining to this include:

- Must have walls with a Fire Resistance Level (FRL) of not less than 60/60/60.
- Must commence at the footings or ground slab and extend up according to one of the following scenarios:
  - For a non-combustible roof covering the wall must extend to the underside of the roof. The wall must not be crossed by timber members (or other combustible building elements) other than roof battens (maximum 75 x 50 mm) or sarking. Voids between the top of wall and underside of roofing (i.e. between battens) must be filled with mineral wool or other suitable fire-resisting material.
  - For a combustible roof the wall must extend 450 mm above the roof.
- Must address potential spread of fire that can potentially occur where the end of a separating wall intersects with a masonry veneer wall and the cavity of the latter walls acts as passage for fire. Here, the cavity must be no greater than 50 mm wide and packed at the wall intersection with fire-resistant mineral wool or other suitable fire-resisting material. The packing must be detailed to meet weatherproofing

- Eaves, verandahs and similar spaces that are open to the roof space and are common to more than one Class 1a dwelling must be separated by a non-combustible vertical lining.
- For electrical cables, wires, switches, outlets, sockets or the like penetrating a separating wall, the wall at the penetration must achieve a Fire Resistance Level of 60/60/60 and must be tested in accordance with AS 4072.1 and AS1530.4 or alternatively, comply with the 'deemed to satisfy detail' given in the NCC - Building Code of Australia.
- Other conditions also apply including the spacing between certain penetrations; the accuracy of installation; the treatment of residual gaps between the wall and electrical fittings/cables; the treatment of cavity spaces behind electrical fittings with fire-resisting materials.

### FRL OF SEPARATING WALLS

For Class 1a Buildings, fire separating walls must have a minimum FRL 60/60/60.

Each of the manufacturers of FRL rated sheet wall systems (plasterboard or fibre cement) have very specific installation procedures that must be followed including sheeting, sheet layouts, jointing tapes and compounds, fasteners and fastener spacing and fire and sound rated sealants to perimeters etc.

Refer to the Queensland Building Construction Commission (QBCC) for specific requirements regarding licensing, installation and certification requirements for Fire Separating Walls.

**Mixing and matching from one manufacturers system to another is not permitted. Each individual system will have been specifically tested and certified**

## SEPARATING WALLS FROM GROUND/SLAB TO ROOF

Separating walls must extend from the ground or a concrete slab up to the underside of a non-combustible roof (metal sheeting or tiles). Refer Figure 1.

Specific construction and detailing requirements apply where floors or ceilings intersect with the separating wall and these must be followed to ensure the fire rating integrity of the wall is maintained and is continuous for the full height of the wall.

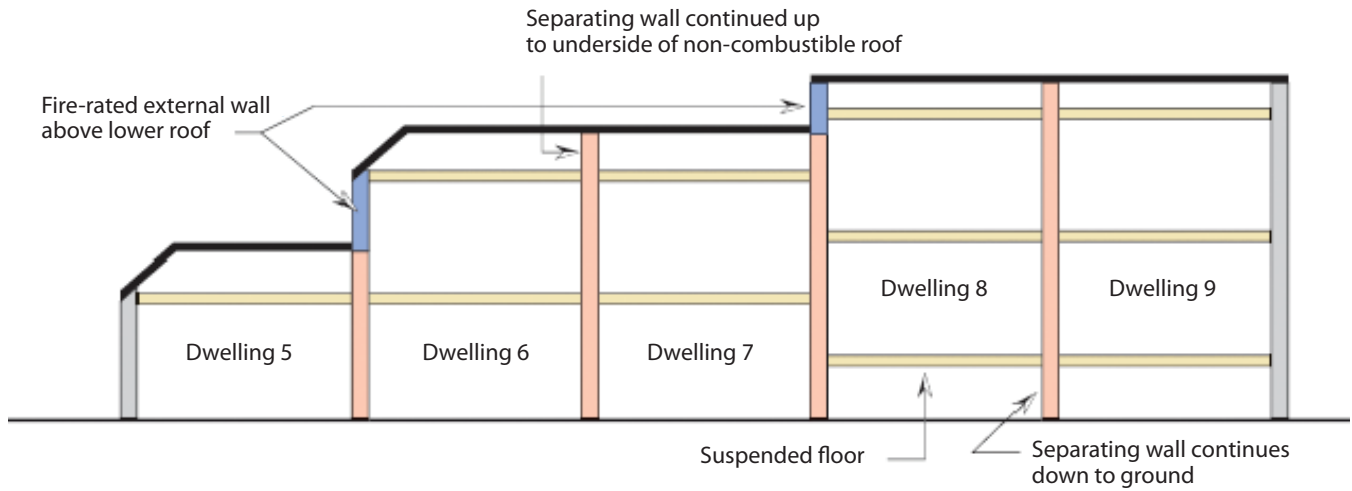


Figure 1. FRL separating walls from the ground to the underside of a non-combustible roof.

## SEPARATING WALLS THROUGH HIP/VALLEY/DUTCH GABLE ROOFS ETC.

Running fire separating walls up through roof sections that contain hips, valleys, Dutch gables and similar result in greater challenges to ensure the integrity of the wall is maintained. To be able to maintain the fire separating integrity of the wall typically requires the roofs to be 'broken' either side of the separating wall and where necessary supported by the fire separating wall. This in turn will render the fire separating wall as loadbearing. Loadbearing fire separating walls are a special case and manufacturers of fire separating wall systems should be consulted to ensure the system proposed to be used will be adequate.

## MEMBERS CROSSING FIRE SEPARATING WALLS

Combustible building elements other than timber roof battens of maximum size 50 x 75 must not cross the separating wall and any voids between battens and roofing must be filled with mineral wool or other suitable fire rated material. See Photograph 1.



Photograph 1. Fire damaged unit. Note: gaps between battens filled with mineral wool to prevent fire spread across separating wall.

## JUNCTIONS OF SEPARATING WALLS WITH EXTERNAL WALLS

Where fire separating walls join external walls, the fire separation must be continuous across any cavities that occur in the external wall i.e. brick cavities or cavities formed by battening out for external cladding. Figure 2 shows one method of achieving this with an alternative shown in Photograph 2.

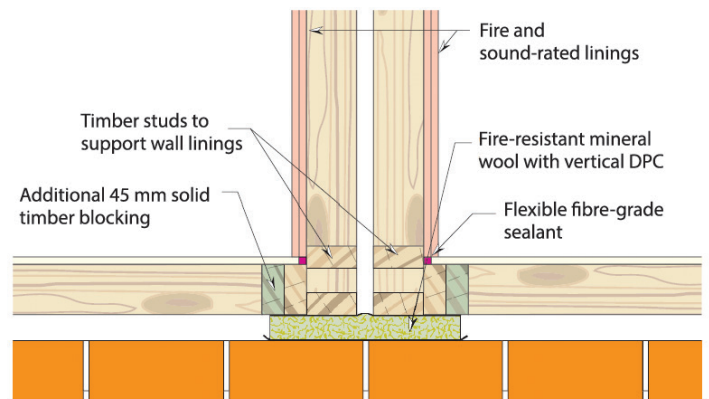


Figure 2. Detail of junction between fire separating wall and external B/V wall.



Photograph 2. Fire rated plasterboard extends beyond outside of external wall frame and into cavity. End of separating wall to be fitted with fire resistant mineral wool and DPC.

### VERANDAHS, EAVES, DUTCH GABLES AND SIMILAR

Fire separating walls extend into eaves, verandah and other roof cavity spaces that may be present. Again, the only combustible members that can cross the separating wall in these spaces are roof battens up to 75 x 50 mm. All holes and voids between battens, under metal battens and behind fascias etc, must be filled with fire resistant mineral wool or other approved fire rated product.



Photograph 3. Separating wall extends out through Dutch Gable, however the framing members that cross the end of the Dutch Gable will not comply with the fire separating wall requirements.



Photograph 4. Separating wall extends out through Dutch Gable. To comply, the vertical batten on the end of the wall will require fire resistant mineral wool to be packed into the end cavity either side of the batten.



Photograph 5. All spaces are required to be filled with fire resistant mineral wool or other fire rated material including under all top hat battens, behind fascias and to the end of the separating wall.

### 'SHAFT LINER' FIRE SEPARATING WALLS

As with all fire separating walls, 'shaft liner' walls must be installed strictly in accordance with manufacturers tested and compliant system. These requirements and common issues found include:

- Use of other manufacturer's boards (Wall System must be installed strictly in compliance with the tested system).
- Failure to provide mastic under the bottom plate.
- Mineral fibre not installed as specified.
- Use of steel clips rather than aluminium (steel clips don't melt as the aluminium clips are meant to).
- Truss tails crossing over the top of the fire separating wall.
- Gas/water pipes – inappropriate penetration through Shaftwall.

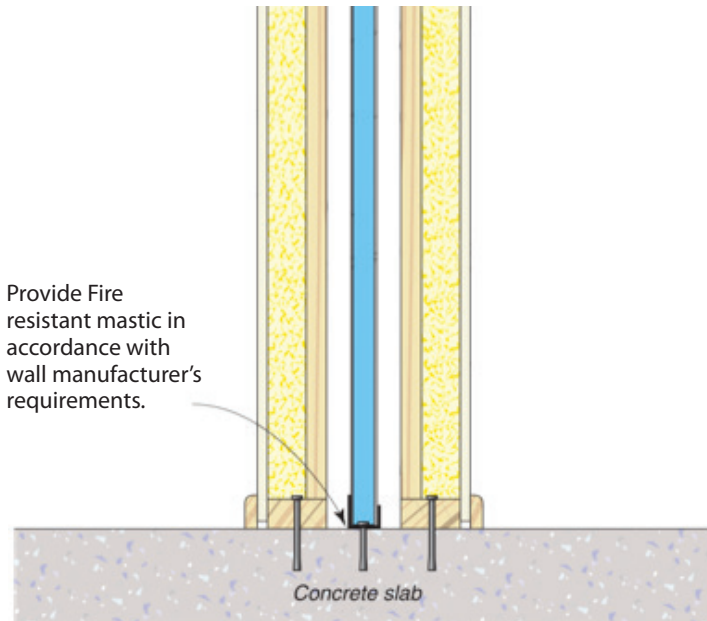


Figure 3. Typical 25 mm plasterboard 'shaft liner fire' separating wall.

### EXTERNAL FIRE RATED WALLS

External walls of Class 1a buildings that are within 900 mm of side or rear allotment boundaries or within 1800 mm of the external walls of an adjacent building are required to have an FRL 60/60/60.

Where fire separating walls meet external fire rated walls, the integrity of both walls at the junction must be maintained. Min 90mm thick masonry veneer external walls are deemed to satisfy the FRL 60/60/60 requirements. The detail shown in Figure 2 above will therefore satisfy the requirements for both the fire separating wall and the fire rated external wall.

Junctions where fire rated 'lightweight' external walls meet separating walls may require special attention to detail.

### PENETRATIONS FOR PLUMBING AND WIRING

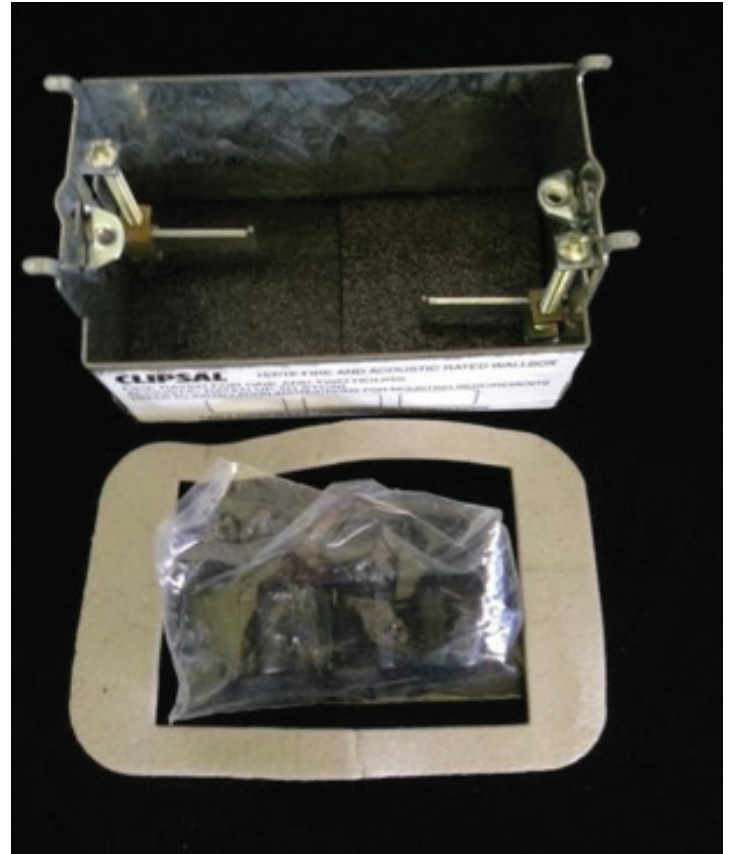
The installation of plumbing or electrical services in separating walls have the potential to reduce the fire and sound performance. Where possible, these services should not be located within separating walls, i.e. place them in neighbouring internal walls or false walls over the separating wall.

Where services within separating walls cannot be avoided, the integrity of the wall must be maintained for both sound and fire resistance.

Two options are available, either using the Deemed to Satisfy Provisions in the BCA Clause 3.7.1.8 and 3.8.6.4, or using a system that has been tested for the fire resistance (AS 4072.1 and AS 1530.4) and acoustic performance required.

### POWERPOINTS/OUTLETS

Installation of power points in separating walls should be avoided. If it is necessary to install outlets in separating walls, they should comply with 'deemed to satisfy' requirements of the NCC- BCA and not be located back to back. Alternatively, the outlet box/s must be a fire and sound rated tested and certified system.



Photograph 6. Typical fire rated electrical outlet box.

### BATHROOMS AND LAUNDRIES

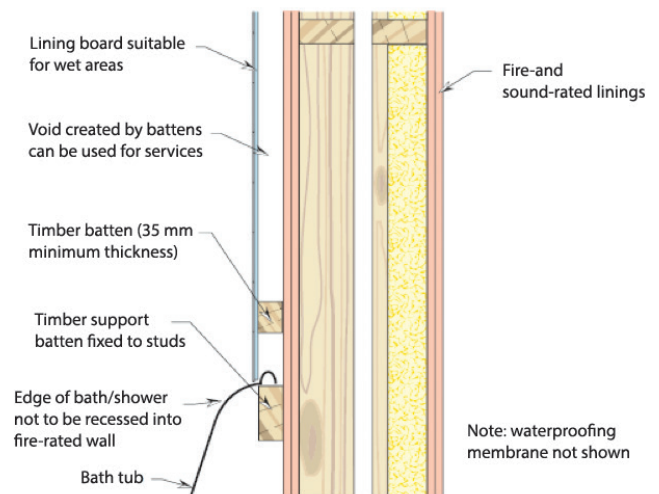


Figure 4. Batten out false wall for services. (Side Elevation)

## ACKNOWLEDGEMENTS

Thanks to the Queensland Building and Construction Commission for their contribution to this document.

## FURTHER INFORMATION

- [www.boral.com.au/brochures/ordering/default.asp?site=Boral&product=Plasterboard&company=Plasterboard&category=73&c\\_name=Fire%20Rated%20Systems&scr=1&](http://www.boral.com.au/brochures/ordering/default.asp?site=Boral&product=Plasterboard&company=Plasterboard&category=73&c_name=Fire%20Rated%20Systems&scr=1&)
- [www.gyprock.com.au/Documents/GYPROCK-513-Party\\_Wall-201205.pdf](http://www.gyprock.com.au/Documents/GYPROCK-513-Party_Wall-201205.pdf)
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- [www.woodsolutions.com.au](http://www.woodsolutions.com.au)

## SAFE WORKING

Working with timber produces dust particles. Protection of the eyes, nose and mouth when sanding, sawing and planing is highly recommended. Refer to tool manufacturers for safe working recommendations for particular items of equipment.

## DISPOSAL OF OFFCUTS AND WASTE

For any treated timber, do not burn offcuts or sawdust. Preservative treated offcuts and sawdust should be disposed of by approved local authority methods.



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