



EcoSEPARATE

Separating Fire Wall Panel



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Australian
Made

Benefits of QT[®] EcoSEPARATE

**Super Quick
Install**

Cost Effective

**Fire Rated
90/90/90**

**Less Material
on Site**

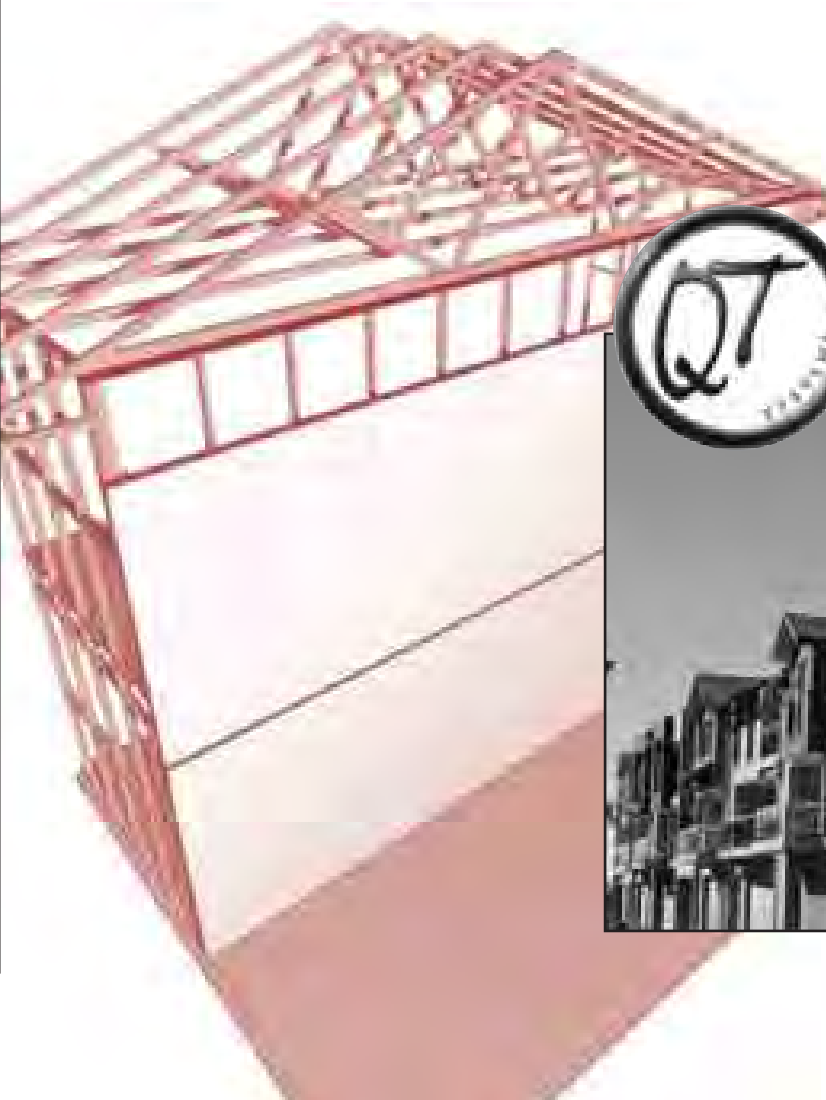
**Environmentally
Responsible**



Introduction

This technical manual covers the QT[®]EcoSEPARATE Fire Wall System, a lightweight masonry separating firewall system with prefixed steel channels. The QT[®]EcoSEPARATE Fire Wall System is based on QT[®]EcoSEPARATE Fire Wall Panels which offer a fire rating, excellent sound abatement and ease of construction. The QT[®]EcoSEPARATE Fire Wall System has been designed to be held on both sides with aluminium supports off steel or timber load bearing wall framing. The aluminium supports have been designed to diminish and weaken on the side of fire, and with the clips on the other side of the fire wall unaffected, the fire wall maintains its structural integrity. QT[®]EcoSEPARATE Fire Wall Panels are manufactured from a material called 'Conpolcrete[®]' which consists of a blend of cement and recycled polystyrene.

As separating walls perform a critical role in preventing the spread of fire between buildings, it is essential that all instructions and details within this technical manual are followed. The CSIRO approved system must be followed exactly as shown within this technical manual, as any variation from what is stipulated will mean the system cannot be approved. **Patent Pending.**



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1 Design Consideration

1.1 Material Properties

QT®EcoSEPARATE Fire Wall Panel

Dimensions: 2230 x 900 x 50mm (2m²)

Weight: 40kg/panel or 20kg/m²

Conpolcrete Density 380kg/m³

Thermal Performance 0.07 W/mk

1.2 Acoustic Performance

In January 2000 the BCA adopted amendment No. 6 which changed how sound transmission was measured. Sound Transmission Class (STC) was replaced with a weighted sound reduction index (Rw). This change brought Australia's acoustic provisions in line with international regulations. The weighted sound reduction index (Rw) can be determined under AS/NZS1276.1 or ISO 717.1.

The Rw has two calculated correction factors that are applied to laboratory tested walls, C and Ctr. The C correction factor accounts for high frequency noise such as music, radio, TV and talking. The Ctr correction factor accounts for the lower frequency noises such as the bass from amplified music and the drone of road and rail traffic. These correction factors when applied to the Rw indicate the drop in acoustic performance of the wall. For Example, Rw (C; Ctr) = 56 (-3;-8) giving Rw +C = 56-3 = 53 decibels where the high frequency noises are a problem and Rw + Ctr = 56-8=48 decibels where low frequency noises are a problem.

In May 2004, the BCA (in all states except QLD, WA and NT) adopted Rw + Ctr for determining the acoustics performance required for separating walls between Class 1, 2 and 3 buildings thereby increasing the required acoustic performance of separating walls. Also brought in by the BCA in May 2004 are additional provisions for impact sound resistance and discontinuous construction. This means that a wall system that is used as a separating wall must have a minimum of 20mm between two separate leaves (Defined by the BCA). The builder must apply a continuous bead of fire and acoustically rated sealant to all panel butt joints and edges, also around all pipes or ducts and electrical outlets, in order to prevent any potential sound leakage. *(Refer Detailed Drawings for specific locations for sealing when using the QT®EcoSEPARATE Fire Wall System).*

BCA Sound Insulation Requirements:

The QT®EcoSEPARATE Fire Wall System meets the provisions of the acceptable construction practices for the sound insulation requirements of separating walls between Class 1 buildings – BCA Vol 2 Clause 3.8.6.2 *(Refer Table SW1.1a & SW1.1b).*

The QT®EcoSEPARATE Fire Wall System has been independently laboratory tested and assessed by a registered acoustic engineer.

1.3 Fire Performance

The QT®EcoSEPARATE Fire Wall System is a truly 'fire rated' separating wall that will achieve up to 90 minutes fire protection and will exceed the BCA requirement of 60 minutes fire protection by itself. Apply a continuous bead of fire and acoustically rated sealant to all panel butt joints and edges, in order to achieve the required fire rating. To prevent flames from passing into adjacent buildings, a continuous fire resistant mineral fibre blanket is required where the QT®EcoSEPARATE Fire Wall Panels meet the roof and/or exterior wall linings, where gaps are minimal, use a continuous bead of fire rated sealant. *(Refer Detailed Drawings).*

Early Fire Hazard Indices:

The QT®EcoSEPARATE Fire Wall Panels are made from Conpolcrete®, which has characteristics of:

Ignitability Index = 0

Spread of Flame Index = 0

Heat Evolved Index = 0

Smoke Developed Index = 0-1

Uncoated Conpolcrete® when tested to AS/NZ 3837 and in accordance with BCA Specification Section C1.10a is classed as a Group 1 material.

BCA Fire Requirements:

The QT®EcoSEPARATE Fire Wall System meets the provisions of the acceptable construction practices for fire separation of a wall between Class 1 buildings and between Class 1 and Class 10a buildings – BCA Vol 2 Clause 3.7.1.8.

CSIRO Opinion FCO-2359 states that the QT®EcoSEPARATE Fire Wall System, when used with either timber or steel framing, is capable of achieving fire resistance levels (FRL) of:

- (a) 90/90/90 for loadbearing walls provided that:
 - a. for timber framed systems the loadbearing elements are designed such that the residual section (the original section minus the effective depth of char as determined in AS1720.4) after 12 minutes of charring is capable of supporting the applied load; and
 - b. the panels within the ceiling space are sheeted on both faces with 10mm thick standard plasterboard.
- (b) -/90/90 for non-load bearing walls provided that the panels within the ceiling space are sheeted on both faces with 10mm thick standard plasterboard.
- (c) 60/60/60 for loadbearing walls, no plasterboard is required
- (d) -/60/60 for non-loadbearing walls, no plasterboard is required

If tested in accordance with AS1530.4-1997.

Figure SW1.1a

FRL	Performance	Wall Description
CLASS 1 - SEPARATING WALLS TO BE NOT LESS THAN 60/60/60 BCA 3.7.1.8	FRL 90/90/90 Rw = 45 QLD, WA, NT ONLY (Refer Figure SW 1.1b)	
	FRL 90/90/90 Rw = 50 QLD, WA, NT ONLY (Refer Figure SW 1.1b)	
	FRL 90/90/90 Rw+Ctr = 50 NSW, VIC, SA, TAS, ACT ONLY (Refer Figure SW 1.1b)	

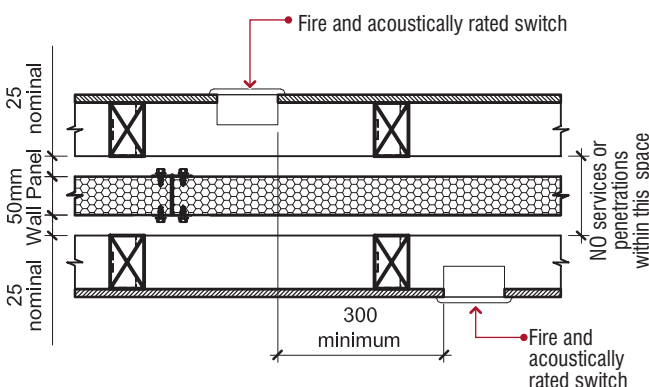
Discontinuous Construction means a wall having a minimum 20mm cavity between two separating leaves for impact sound insulation. (BCA Table 3.8.6.1)

Figure SW1.1b

Acoustic Requirements for a Separating Wall							
Separating Wall Locations	Rw			Rw + Ctr			
	QLD	WA	NT	NSW	VIC	SA	TAS
Between a bathroom, sanitary compartment, laundry or kitchen and a habitable room (other than a Kitchen) in an adjoining class I building (dwelling).	50			50 Discontinuous Construction is Required			
In all other cases to those listed above.	45			50			

The above tables are in accordance with BCA 3.8.6 sound insulation

Figure 1.5



1.4 Services and Penetrations

NO penetrations are permitted through the QT®EcoSEPARATE Fire Wall Panel.

DO NOT run services within the 25mm cavity between the QT®EcoSEPARATE Fire Wall Panel and the stud frame. Services such as wiring and pipes may be installed through and within the studs. All services must be secured to the stud framing and must not enter the cavity. Electrical outlets are permitted in the outer plasterboard walls, but must be fire and acoustically rated and not be installed within 300mm of an opening in the opposite plasterboard face as this is a potential source of sound leakage. (Refer Figure 1.5) Fire and acoustically rated switch boxes are available from HPM, Clipsal and Promat. All penetrations must also be sealed with a continuous bead of fire and acoustically rated sealant.

1.5 Durability

Intermittent weather exposure is not detrimental to the QT®EcoSEPARATE Fire Wall Panel. However if panels become wet, allow them to dry out prior to encapsulating the QT®EcoSEPARATE Fire Wall Panels. Although all the components are galvanised steel or aluminium it is advisable to cover the QT®EcoSEPARATE Fire Walls if long spells of rain are forecast, this will prevent deterioration of the metallic components. The fire resistance of the QT®EcoSEPARATE Fire Walls Panel will not deteriorate should they become wet.

Figure 2.2 - First Floor Zone

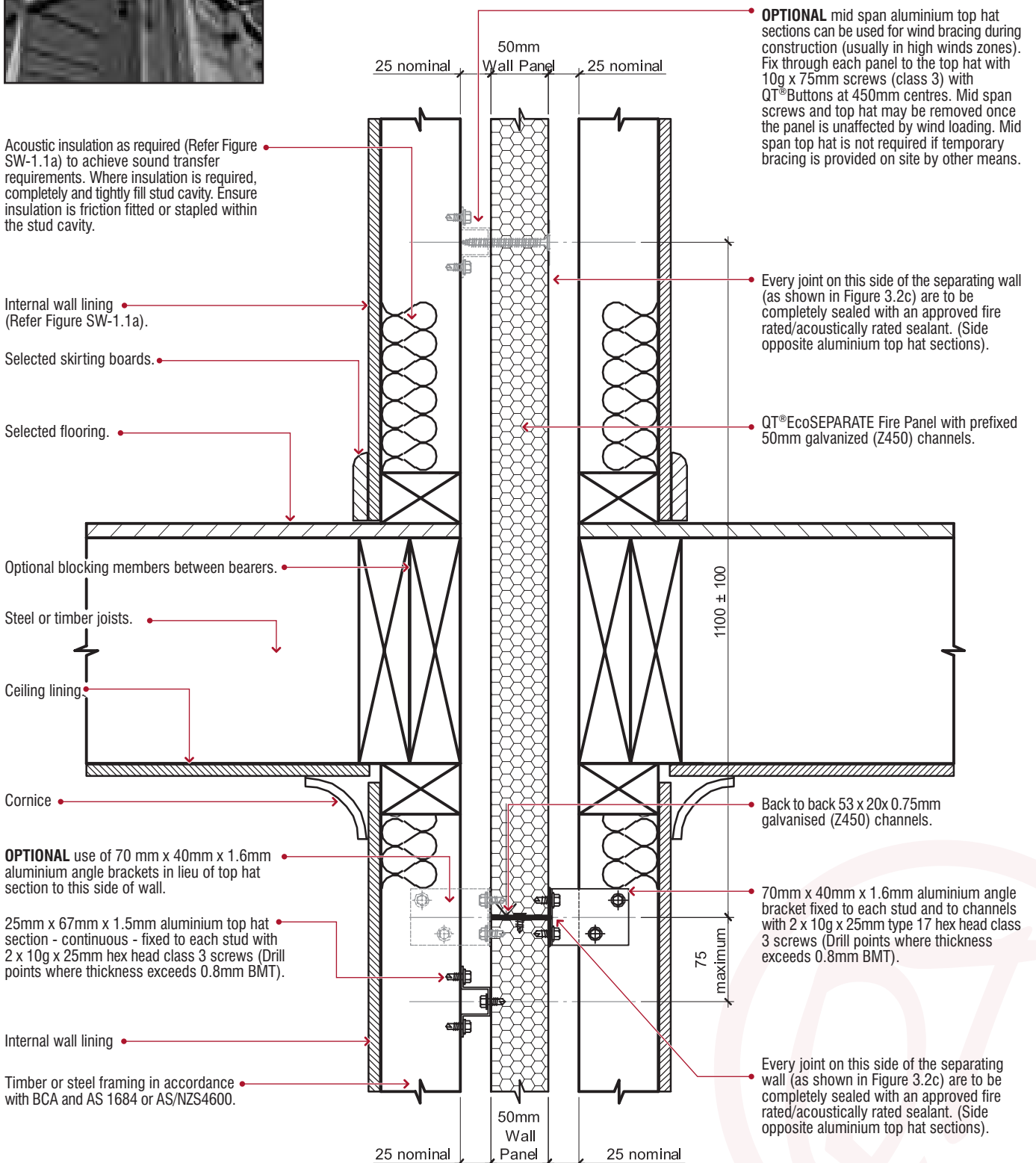
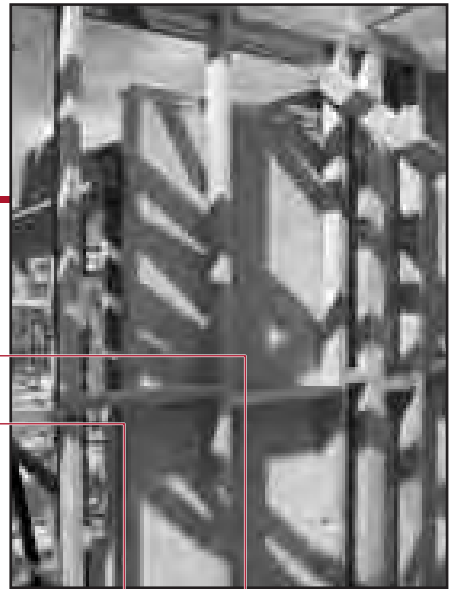


Figure 2.4 - Junction to External Wall (Plan View)



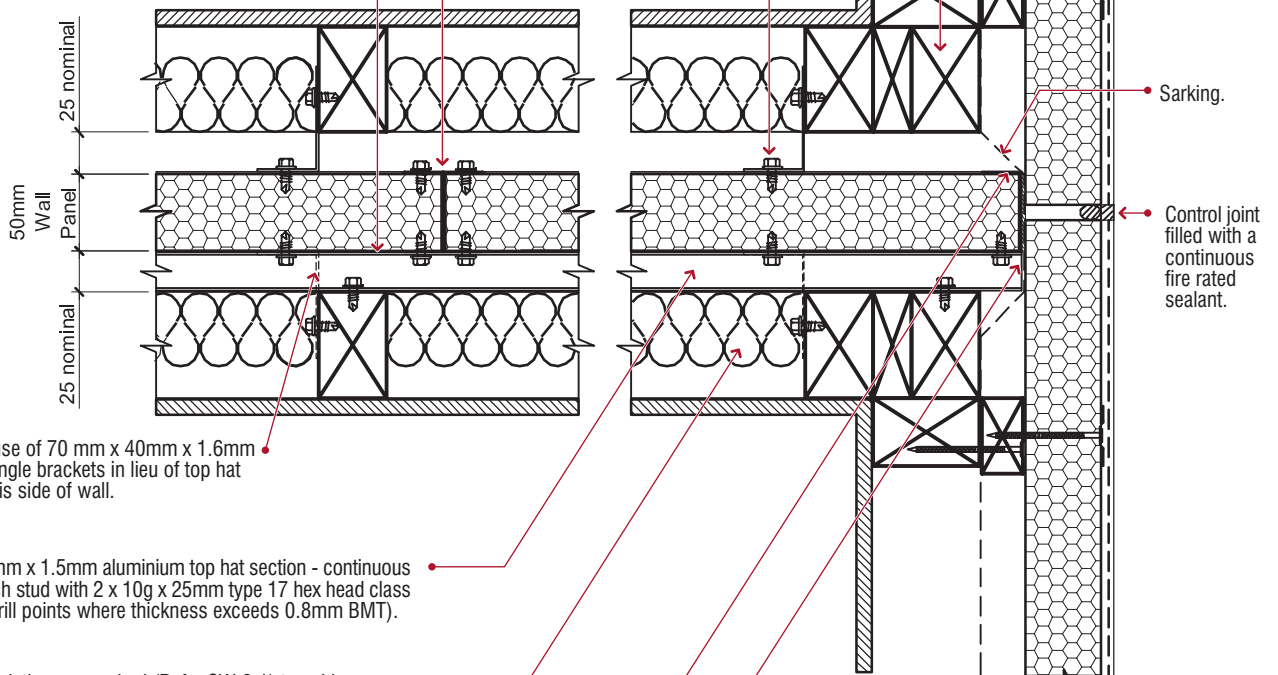
QT®EcoSeries Wall Panel or a masonry veneer external wall.

Timber or steel framing in accordance with BCA and AS 1684 or AS/NZS4600.

70mm x 40mm x 1.6mm aluminium angle bracket fixed to each stud and to channels with 2 x 10g x 25mm type 17 hex head class 3 screws (Drill points where thickness exceeds 0.8mm BMT).

Every joint on this side of the separating wall (as shown in Figure 3.2c) are to be completely sealed with an approved fire rated/acoustically rated sealant. (Side opposite aluminium top hat sections).

QT®EcoSEPARATE Fire Panel with prefixed 50mm galvanized (Z450) channels.



OPTIONAL use of 70 mm x 40mm x 1.6mm aluminium angle brackets in lieu of top hat section to this side of wall.

25mm x 67mm x 1.5mm aluminium top hat section - continuous - fixed to each stud with 2 x 10g x 25mm type 17 hex head class 3 screws (Drill points where thickness exceeds 0.8mm BMT).

Acoustic insulation as required (Refer SW-3.1) to achieve sound transfer requirements. Where insulation is required, completely and tightly fill stud cavity. Ensure insulation is friction fitted or stapled within the stud cavity.

53 x 20 x 0.75mm galvanised (Z450) channel fixed to each top and bottom plate and panel capping with 10g x 16mm wafer head self drilling screws on both sides to form a continuous surround to QT®EcoSEPARATE Wall.

Any gap between a separating wall and external wall must be no more than 50mm and be packed with mineral fibre or other suitable fire resisting material. BCA Vol 2 - 3.7.1.8 (d) (I) & (II). Any gap up to but not exceeding 20mm may be filled with an approved fire rated/acoustically rated sealant.

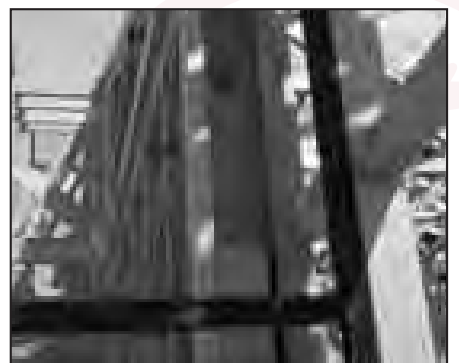
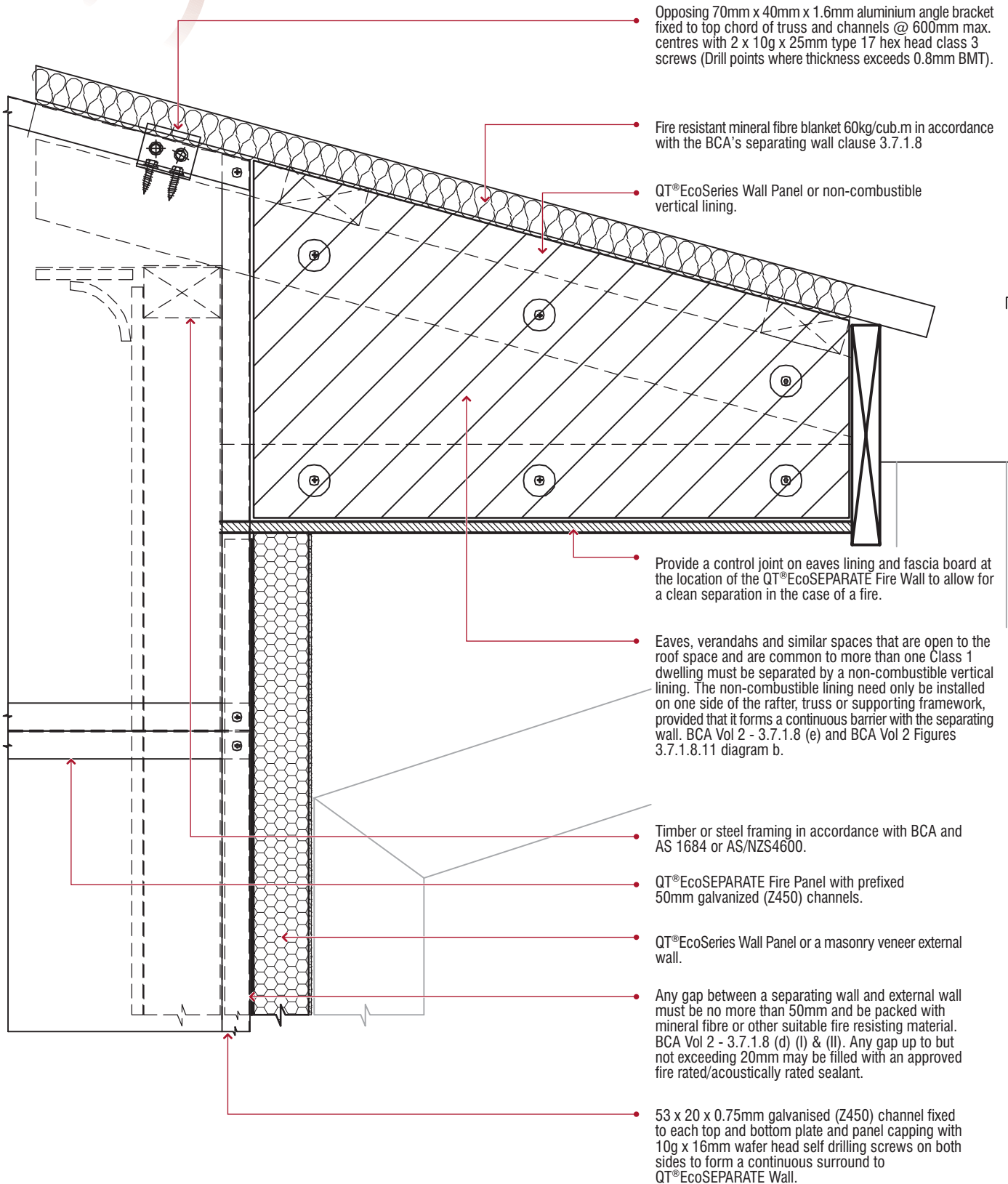




Figure 2.5 - Eaves Zone



Opposing 70mm x 40mm x 1.6mm aluminium angle bracket fixed to top chord of truss and channels @ 600mm max. centres with 2 x 10g x 25mm type 17 hex head class 3 screws (Drill points where thickness exceeds 0.8mm BMT).

Fire resistant mineral fibre blanket 60kg/cub.m in accordance with the BCA's separating wall clause 3.7.1.8

QT®EcoSeries Wall Panel or non-combustible vertical lining.

Provide a control joint on eaves lining and fascia board at the location of the QT®EcoSEPARATE Fire Wall to allow for a clean separation in the case of a fire.

Eaves, verandahs and similar spaces that are open to the roof space and are common to more than one Class 1 dwelling must be separated by a non-combustible vertical lining. The non-combustible lining need only be installed on one side of the rafter, truss or supporting framework, provided that it forms a continuous barrier with the separating wall. BCA Vol 2 - 3.7.1.8 (e) and BCA Vol 2 Figures 3.7.1.8.11 diagram b.

Timber or steel framing in accordance with BCA and AS 1684 or AS/NZS4600.

QT®EcoSEPARATE Fire Panel with prefixed 50mm galvanized (Z450) channels.

QT®EcoSeries Wall Panel or a masonry veneer external wall.

Any gap between a separating wall and external wall must be no more than 50mm and be packed with mineral fibre or other suitable fire resisting material. BCA Vol 2 - 3.7.1.8 (d) (I) & (II). Any gap up to but not exceeding 20mm may be filled with an approved fire rated/acoustically rated sealant.

53 x 20 x 0.75mm galvanised (Z450) channel fixed to each top and bottom plate and panel capping with 10g x 16mm wafer head self drilling screws on both sides to form a continuous surround to QT®EcoSEPARATE Wall.

Installation

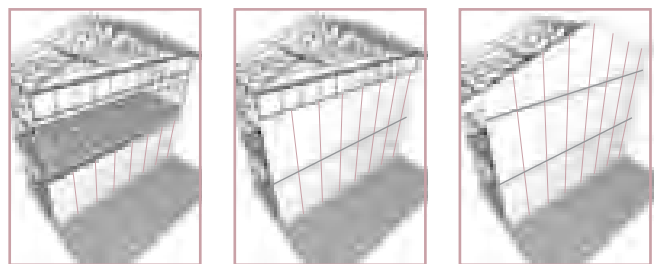
3.1 Procedure

Note: Prior to any firewalls being constructed it is essential that the builder consults the project certifier to ensure that the certifier is aware of the firewall construction procedures and the certifier deems the installer competent.

1. Install 25mm deep aluminium top hat section to wall framing at specified height and fix as per detailed drawings.
2. Apply a continuous bead of fire and acoustic rated sealant (use approved sealants only) on the slab where the wall will be located (Refer Figure 3.2a).
3. Place a 53x20x0.75mm galvanised (Z450 grade) bottom channel on top of the fire and acoustic rated sealant with its centreline 50mm from the wall framing and fix with power actuated masonry fixings @ 600 centres. (Refer Figure 2.1). Should surface drainage of the concrete slab be required, provide breaks in the bottom channel. Fill any drainage breaks with a fire and acoustic rated sealant prior to encapsulating the QT[®]EcoSEPARATE Fire Wall Panel.
4. Insert first panel into the bottom plate. Panels are installed vertically in the QT[®]EcoSEPARATE Fire Wall System. Apply a continuous bead of fire and acoustic rated sealant between each panel butt joint (Refer Figure 3.2c). Ensure it is in the correct position with respect to the external linings. There is to be no more than 50mm (in accordance with the BCA) but preferably the external lining and the outside face of the wall should be as close as possible. If this gap is larger than 20mm it should be filled with a fire resistant mineral fibre fire blanket but if the gap is less than 20mm an approved fire and acoustic rated sealant can be used. (Refer Figure 2.4).
5. Once this wall is located in the correct position it needs to be fixed to the top hat from the top hat side of the panel as per the detailed drawings and also fixed to the bottom plate through the prefixed galvanised channels.
6. The panels are then installed. Always fix the wall panels from the top hat side of the wall.
7. After this wall is complete and fixed off, another 53x20x0.75mm galvanised (Z450 grade) channel is put on top of the fixed walls. This channel is to be fixed to the panels via the prefixed galvanised channels as per the detail (Refer Figure 2.2).
8. A bead of fire and acoustic rated sealant is put on top of the top channel and then another channel is then put on top of this channel, creating another bottom track. This channel is also to be fixed to the below top plate @ 600 centres using screws as per detail. (Refer Figure 2.2).
9. The above steps are then repeated for the following levels of wall panels, keeping the panels in line with the panels on the lower levels. By keeping the prefixed channels in line it helps transfer loads down to the slab.
10. On the top level, where panels will need to be cut to form the roof angle, the panels need to be cut approximately 5mm below the height of the roof batten and above the line of the roof truss. (Refer Figure 2.3).



11. After these upper levels of panels are fixed to the top hat section, which runs along the line of the top plate of the stud wall, an encompassing steel channel must continuously run around the perimeter of the wall. It needs to be adhered to the panel with a fire and acoustic rated sealant and mechanically fixed wherever possible (all channels) as per the detail. (Refer Figure 2.4).
12. Once the wall is fixed completely, the open side of the wall needs to have a fire and acoustic rated sealant applied to every joint on the entire side of the wall. (Refer Figure 3.2c).
13. Once the joints have been sealed and the adjacent wall framing has been installed, the 70x40x1.6mm aluminium angle brackets need to be installed onto each stud (either 450 or 600 centres) connecting both the top and bottom horizontal channels of the QT[®]EcoSEPARATE Fire Wall Panel as per the details. (Refer Figure 2.2).
14. For the connection from the trusses to the wall, 70x40x1.6mm aluminium brackets are installed @ 600 centres directly opposing each other. These brackets are laid on top of the truss and slid up to the wall and fixed as per the details. (Refer Figure 2.3).
15. The roof battens must be stopped on either side of the QT[®]EcoSEPARATE Fire Wall Panel as per the detail.
16. Finally on top of the finished wall, install a fire resistant mineral fibre blanket. (Refer Figure 2.3).
17. Plasterboard shall be installed as per the acoustic requirement and in accordance with manufacturer's specifications. Where plasterboard joints or edges are not stopped with plaster, apply a continuous bead of fire rated and acoustic grade sealant. (Refer Figure 3.2b).



Have you got a fire wall on a boundary?

Have you looked at using QT[®]EcoSeries Exterior Wall Panels? 90/90/90 Fire Wall without bricklaying.



QT[®]EcoSeries
Exterior Wall System

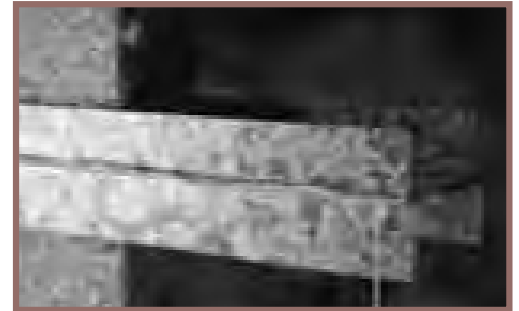


Figure 3.2 - Fire/Acoustically Rated Sealant Location Details

Figure 3.2a - Section

Figure 3.2b - (Plan View)

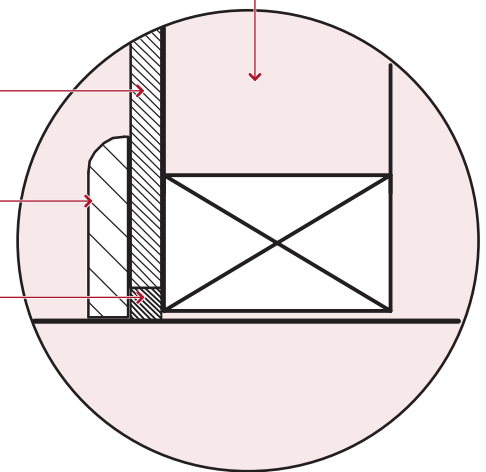
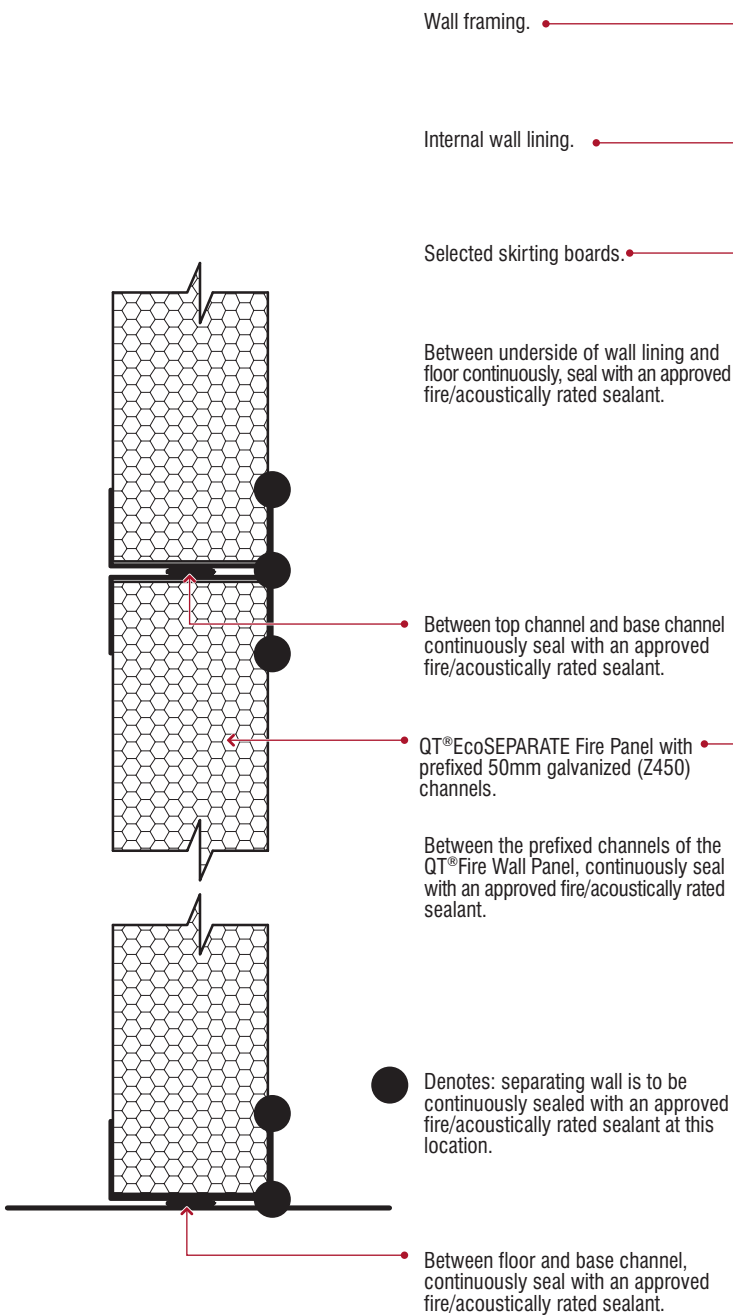
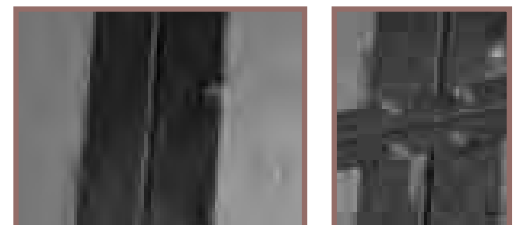
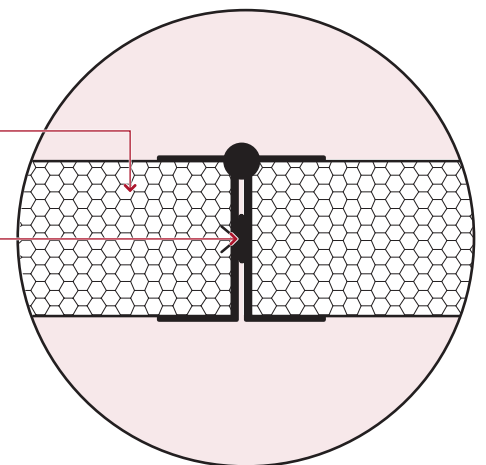


Figure 3.2c - (Plan View)





4 Product Information

4.1 Limitations

Limitations of the QT®EcoSEPARATE Fire Wall System.

- QT®EcoSEPARATE Fire Wall Panels are not designed to provide bracing for the building. The internal linings or other specifically designed systems must provide external wall bracing.
- QT®EcoSEPARATE Fire Wall Panels are not suitable to be used for chimneys and flues.
- QT®EcoSEPARATE Fire Wall Panels must not come in contact with the ground for extended periods of time. The panel must not to be used for retaining walls.
- This Technical Manual is limited to residential construction, for other applications contact your QT Distributor.
- Post construction the QT®EcoSEPARATE Fire Wall system must remain dry in order to maximise the serviceable life of the panel and components.
- Designers must check that the details in this Technical Manual meet their own specific design requirements. For use outside the scope of this Technical Manual, specific design may be necessary. The Architect, Designer, Engineer, Specifier and Builder, are responsible for specific design and should ensure compliance with the BCA.

4.2 Storage and Handling

Care should be exercised in handling the QT®EcoSEPARATE Fire Wall Panels to avoid any damage to the edges, ends and faces. Panels must be stacked flat, off the ground and supported on a level platform. Plastic shrink-wrap applied to pallets of panels for transportation from factory, must be removed at the destination (i.e. distributors warehouse or direct to site) to allow panel to continue drying and equalise with local humidity. The panels must be kept dry at all times by storing under cover, or providing weatherproof covers to the stack. Panels must be dry prior to fixing. Intermittent weather exposure is not detrimental to the panel. However, if the QT®EcoSEPARATE Fire Wall Panels becomes wet, allow thorough drying before fixing. Drying shrinkage may occur if the QT®EcoSEPARATE Wall Panels are not allowed to dry sufficiently.

Panels must always be carried on edge. When carrying panels gloves should always be worn to protect from cuts from the cast-in angles. Any minor damage to the panels should be repaired with cement based jointing compounds. Fixings and other accessories must be stored so that they are kept clean, dry and undamaged. All components must be used within the designated shelf life. Any damage to clips, top hats or channel may affect the integrity or performance of the wall system, and should not be used. Panel may be cut with an electric circular saw with a 60 pt tungsten tip blade, diamond blade or handsaw, however extreme care is required when cutting through the prefixed steel channels. When power tools are used for cutting, appropriate safety measures as set out under the heading of Health and Safety must be observed. All materials that are susceptible to deterioration due to plastics migration or alkalinity of cement base products must be protected (check with product manufacturer).

4.3 Product Support

Installers are registered trades people, equipped to install the panel and its complementary accessories. These installers, acting as independent contractors, should be industry licensed trades people such as carpenters or dry wall installers who are familiar with the QT®EcoSEPARATE Fire Wall System and components. The authorized agent or appointed licensee shall supply all QT®EcoSEPARATE Fire Wall System components directly to the contracting or sub-contracting party. We recommend you seek advice from the manufacturer or suppliers, regarding the correct installation and maintenance requirements associated with their products. Failure to comply with the specification requirements of the manufacturer will render any manufacturers warranty void.

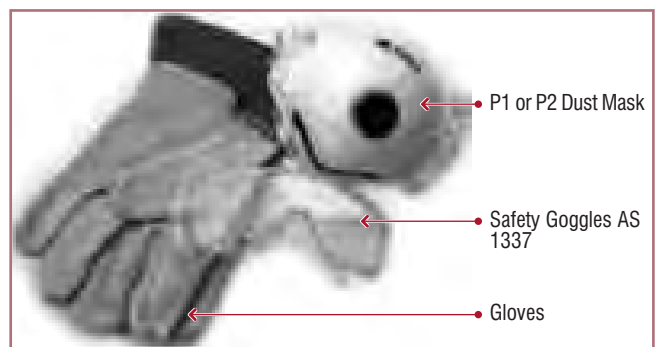
QT Systems Pty Ltd regularly updates its literature to keep up with any system and/or product developments, and changing trends in design, it therefore reserves the right to revise and change its technical information without notice.

To ensure the latest information, contact your local distributors of QT Products or QT Systems Pty Ltd direct on **1800 233 001** or Email: mail@qt-sys.com.au or refer to the Website: www.qt-sys.com.au

4.4 General Warranty

New Product 15 year Warranty.

Australasia Warranty Limited only warrants the purchase of new QT® products manufactured from Conpolcrete® by a licensed manufacturer. This warranty cover limits any cost or liability arising from the supply of defective Conpolcrete® products, excluding third party manufactured accessories and components. Liability is limited to replacement and or repair of any defect solely attributable to defective Conpolcrete® manufactured products that do not meet the manufacturer's standards. No liability is assumed or implied for project supervision or defects caused by improper installation of the system.



4.5 Health and Safety

As with all cement based composite products, they contain crystalline silica. Breathing in fine silica dust is hazardous and may result in bronchitis, silicosis (lung fibrosis) and lung cancer. Do not breathe dust, always contain dust during clean up and disposal i.e. place dust in a sealed bag. Safe working practice is to avoid contact with skin, eyes and lungs, e.g. full-length clothing including boots, P1 or P2 dust mask, and safety goggles to AS 1337. (Wash worn clothing regularly, each day). We recommend that you always seek advice for recommended handling, health and safety requirements for products or components by other suppliers and manufacturers. Consult your local Work Place Health and Safety Officer for specific advice. Also see Material Safety Data Sheets for specific products.



4.6 Quality Policy

QT Systems Pty Ltd is dedicated to the delivering quality building systems for internal and external use on residential and commercial projects. QT Systems Pty Ltd is committed to ensuring that its Conpolcrete® building products provide the highest standards and consistency by meeting the requirements of customers and regulatory authorities. This objective is met through the implementation of a Quality System, based upon the requirements of an internationally recognised quality standard: AS/NZS ISO 9001:2000. Continued testing and independent scrutiny will ensure QT Systems Pty Ltd continues to offer an eco-friendly alternative construction material that consistently provides outstanding performance.

8.9 Disclaimer

QT Systems Pty Ltd provides the information in this manual in good faith and to the best of its knowledge the information is correct and covers most situations where its products may be used. However, it is acknowledged that not every possible application of QT® products could be covered within this manual therefore specific design and detailing, must be undertaken by the designer. The Specifier, Architect, Designer and Engineer for the project are responsible to ensure that the information and details in this manual are suitable for any intended application or specific design.

4.7 Components & Accessories

QT®EcoSEPARATE Fire Wall Panel
- 900mm(w) x 50mm(d) x 2230(L)

Bottom / Top Plate & Perimeter Channel
- U-channel 53mm x 20mm x 0.75mm BMT Galvanised (Z450)

Screws

- Aluminium Clip and Top Hat Fixing Screws 10g x 25mm Hex Head, Class 3, Type 17 screw (with neoprene washer).
- Channel Fixing Screws 10g x 16mm Wafer Head, Self Drilling Screws.
- Power Actuated Fasteners or screw-in or sleeved anchors.

Aluminium Top Hats
- 67mm(w) x 25mm(d) x 1.5mm thick

Aluminium Stand-Off Brackets
- Unequal Angle 70mm x 40mm x 1.6mm thick

Sealants and Adhesives
- Fire and Acoustically Rated Sealants

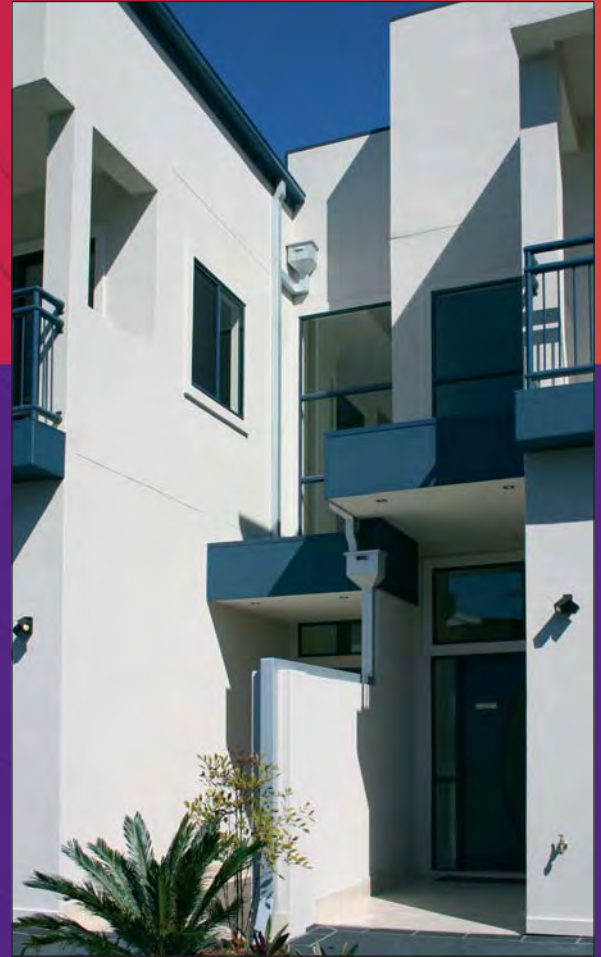
Acoustic Batts
- Minimum 10.8kg/m3 Glasswool Batts

Fire Rated Batts
- Fire Resistant Mineral Fibre

- Blankets 60kg/m3 Rockwool Batt



Patent Pending



Some of the reasons to use QT®EcoSEPARATE

Quieter

Reduced noise transfer.

Fire Resistance

Safe and peace of mind.

Fast to Erect

Reduced construction time.

Economical

Value for Money.

Environmentally Responsible

Manufactured with recycled polystyrene.

Less Energy

Cold cast, low embodied energy.

Efficient

Carpentry install, no wet trades.

Less Material

No extra material required in roof space or behind floor framing to achieve 60 minutes fire performance.

Lightweight

Easy to handle, less manpower.



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Distributor

