



www.cmit.csiro.au

GEC:gec

EIFS Australasia Pty Ltd
2/423 Bradman Road
ACACIA RIDGE QLD 4110

Attention: Mr Doug Kedacic

LIKELY FIRE PERFORMANCE OF ECOSEPARATE WALL SYSTEM

Assessment Number FCO-2359

Your fax of 1 July

INTRODUCTION

We have examined the information referenced by you. The information included

- our test report numbered FSV 0977 on the fire-resistance test numbered FS 3560/2462 on a lined prefabricated wall system tested on 12 March 2003;
- test data from our pilot-scale test numbered FS 3442/2256 on a single skinned Quik'n Tuff wall system rendered on the exposed face;
- test data from our test numbered FS 3685/2695 for a full-scale fire-resistance test conducted on a timber-framed wall system tested on 27 August 2004
- your drawings numbered QTSW-001 Rev C Detail SW-2.1 dated 14 September 2004, QTSW-001 Rev C Detail SW-2.2 dated 14 September 2004, QTSW-001 Rev C Detail SW-2.3 dated 14 September; QTSW-001 Rev C Detail SW-2.4 dated 14 September 2004, QTSW-001 Rev C Detail SW-3.1 dated 14 September 2004 and QTSW-001 Rev C Detail SW-3.2 ;and
- the fax from Mr Doug Kedacic detailing the proposed system dated 1 July 2004.

We have retained this information

ANALYSIS

On 12 March 2003 this Division conducted a full-scale fire-resistance test on a plasterboard-lined prefabricated wall system comprising a double steel-stud wall system separated by a 90-mm wide cavity and lined on both sides with plasterboard. Both steel stud frames were insulated with rebated QT panels made from a blend of polystyrene bead materials and modified concrete, and stacked on top of each other in between the metal stud sections.

The wall incorporated a perimeter frame made from two 35-mm x 35-mm x 0.75 mm L-sections made from galvanised steel that were put together to form a track and channel. This was used for the top and bottom of the wall frame. The frame included J-section studs formed from 51-mm x 30-mm x 0.55-mm C-Section backed with a 35-mm x 35-mm x 0.75-mm

L-section. The studs were spaced at 450-mm centres. Parallel walls fabricated from two of these steel frames separated by a 90-mm wide cavity formed the wall system.

During the construction of the metal frames, rebated QT insulation panels, made from a blend of polystyrene bead materials and modified concrete were stacked on top of each other between the metal studs.

The panels were 450-mm long x 900-mm high x 50-mm thick and included two imbedded metal noggings. Each panel was then screw-fixed to the metal studs through each of its metal noggings. Both of the wall frames were insulated with the QT panels in the same manner, and were separated from each other by a 90-mm wide cavity. The external faces of the wall cavity wall system were lined with 13-mm Fyrchek Plasterboard, screw fixed to the studs at approximately 400-mm centres with the sheets lined horizontally. All the plasterboard joints formed in both external faces of the wall were then set using perforated paper tape and plaster. Any gaps along the perimeter were sealed using fire-caulk sealant and finished flush with the face. The wall system, as tested achieved a performance that equated to a fire-resistance level of -/120/120.

Subsequent to this, on 27 August 2004 this Division conducted a full-scale fire-resistance test on a wall system comprising a 90 x 35 m timber studs at approximately 495-mm centres. On the unexposed face the frame was lined with 10-mm thick standard grade plasterboard. On the fire exposed face Insulco 599 foil was fixed to the studs by means of 25 x 45 mm timber battens over which was sheeted 50-mm thick QT EcoSeries Wall Panels fixed to the battens with 75 x 3.75 mm Class 3 flat head nails that incorporated a QT Button disc as a washer under the head. The external face of the wall panel was finished off with a 5-8 mm reinforced polymer-modified cement render.

The system caused the cotton pad to ignite at 112 minutes and failed due to sustained flaming at 113 minutes. The average temperature on the unexposed face of the wall at the 115 minute termination time was 215°C. The temperature on the unexposed face of the QT EcoSeries Wall Panels was 97°C at 60 minutes and 441°C at 90 minutes. The average temperature at the same location exceeded 250°C, a temperature at which timber may begin to char, at 78 minutes.

The proposed EcoSEPARATE wall system is to be used between walk up style units. The wall is constructed from conpolcrete (420 kg/m³) with 50 mm x 50 mm x 0.75 mm galvanised angles cast along the lengths. The panels are block stacked vertically on end to form a separating wall. This wall is then held on both sides by very light gauge aluminium brackets and aluminium top hat sections.

The objective is that during a fire the aluminium sections will release the fire side framing resulting in a wall system that is almost identical, except for the render, to the system as tested on 27 August 2004. This system, in the absence of the render finish but still incorporating the 10-mm thick standard grade plasterboard would likely achieve 90 minutes by itself even if the delay provided by the exposed framing and plasterboard is ignored.

The system within the ceiling void does not include the additional plasterboard and based on the thermal data collected during the full-scale test would achieve 90 minutes for integrity and 60 minutes for insulation.

OPINION/CONCLUSION

Based on the factors detailed above it is the opinion of the Division that the system as detailed in the attached drawings would be 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 AS 1720.4) 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 10-mm thick standard grade plasterboard.
- (b) -/90/90 for non-loadbearing walls provided that the panels within the ceiling space are sheeted on both faces with 10-mm thick standard grade plasterboard;
or
- (c) 60/60/60 for loadbearing walls, no plasterboard is required in the ceiling space;
or
- (d) -/60/60 for non-loadbearing walls, no plasterboard is required in the ceiling space.

if tested in accordance with AS 1530.4-1997

TERM OF VALIDITY

This assessment report will lapse on 30 September 2009. Should you wish us to re-examine this assessment with a view to the possible extension of its term of validity, would you please apply to us three to four months before the date of expiry. This Division reserves the right at any time to amend or withdraw this report in the light of new knowledge.

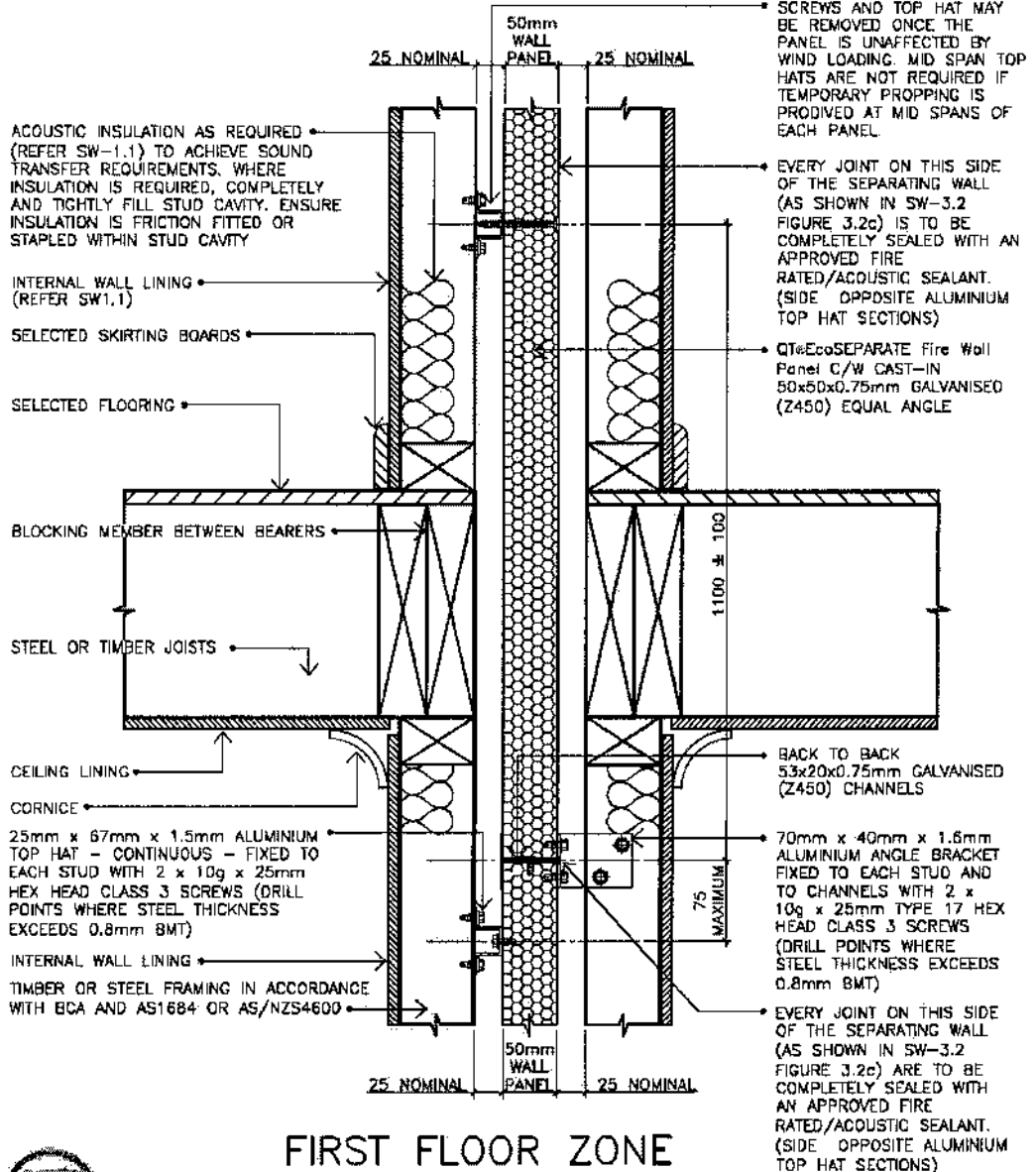
Yours faithfully,



Garry E Collins
Manager, Fire Testing and Assessments.
13 September 2004



**Interior
Wall System**

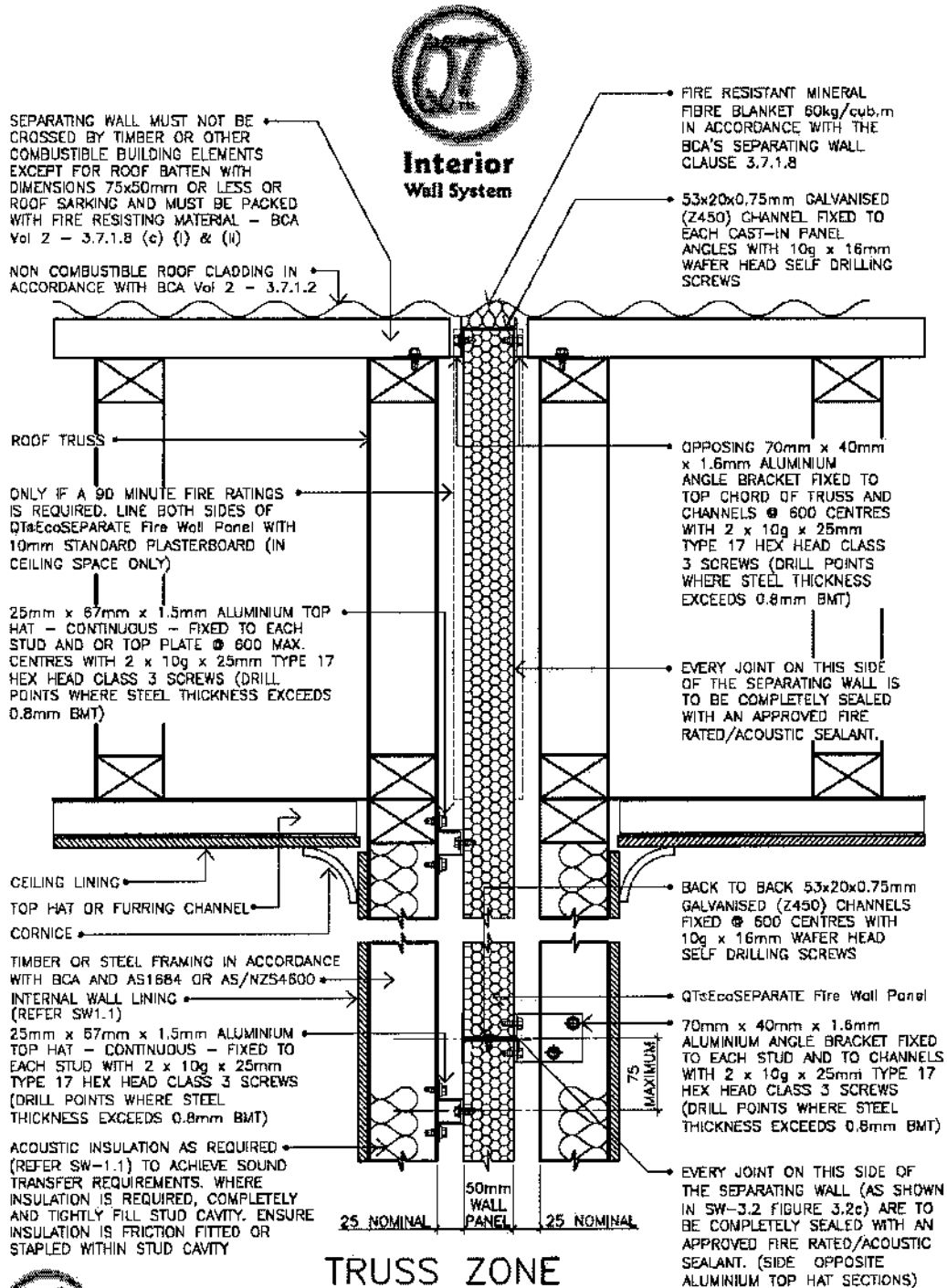


FIRST FLOOR ZONE

SCALE: A4=1:5



REF No.	QTSW-001
REV:	C
DATE:	14/09/04
DETAIL No.	SW-2.2



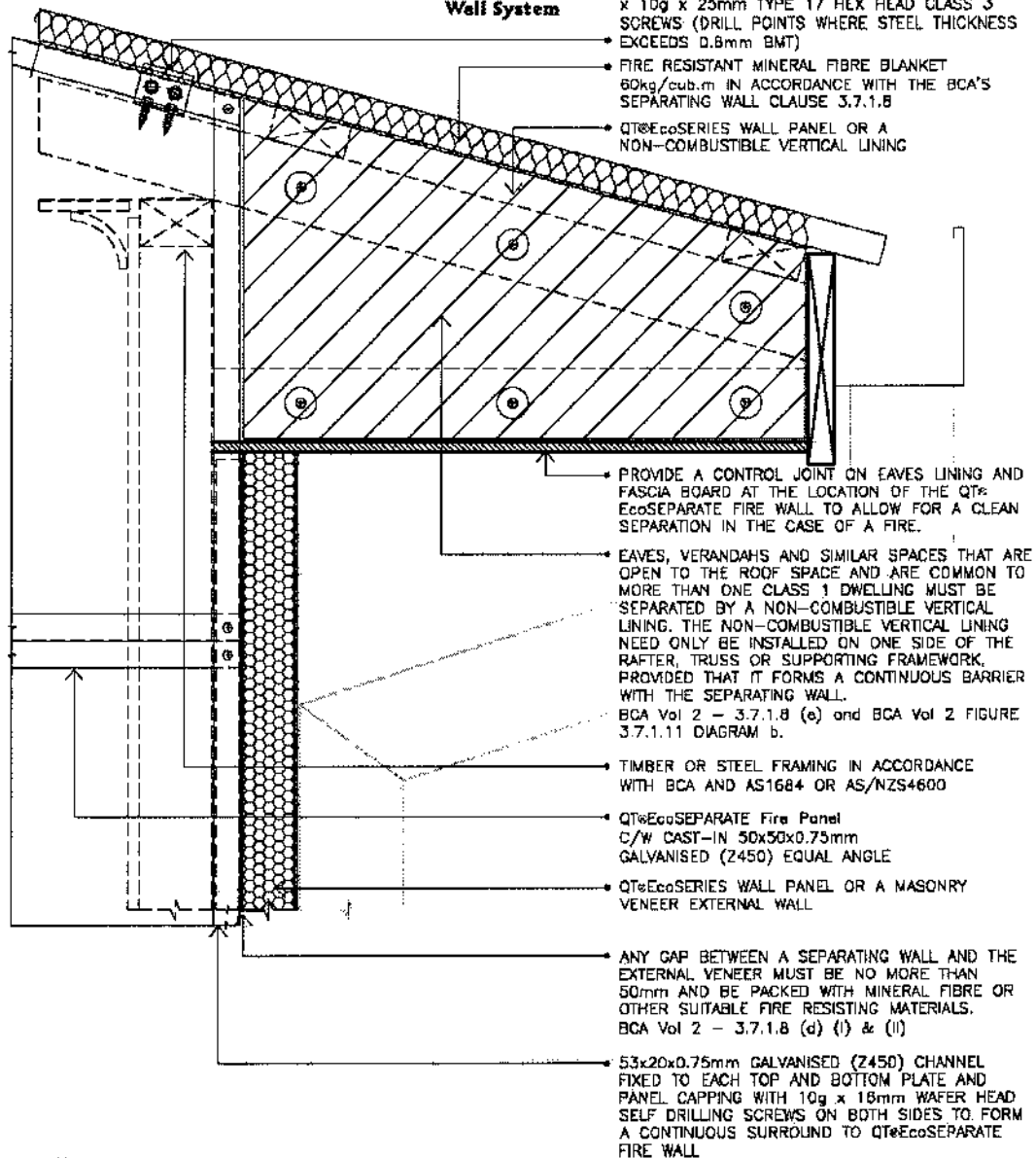
SCALE: A4=1:5



REF No.	QTSW-001
REV:	C
DATE:	14/09/04
DETAIL No.	SW-2.3



**Interior
Well System**



- OPPOSING 70mm x 40mm x 1.6mm ALUMINIUM ANGLE BRACKETS FIXED TO TOP CHORD OF TRUSS AND CHANNELS @ 600 CENTRES WITH 2 x 10g x 25mm TYPE 17 HEX HEAD CLASS 3 SCREWS (DRILL POINTS WHERE STEEL 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 A 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 VERTICAL 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 (a) and BCA Vol 2 FIGURE 3.7.1.11 DIAGRAM b.
- TIMBER OR STEEL FRAMING IN ACCORDANCE WITH BCA AND AS1684 OR AS/NZS4600
- QT EcoSEPARATE Fire Panel C/W CAST-IN 50x50x0.75mm GALVANISED (Z450) EQUAL ANGLE
- QT EcoSERIES WALL PANEL OR A MASONRY VENEER EXTERNAL WALL
- ANY GAP BETWEEN A SEPARATING WALL AND THE EXTERNAL VENEER MUST BE NO MORE THAN 50mm AND BE PACKED WITH MINERAL FIBRE OR OTHER SUITABLE FIRE RESISTING MATERIALS. BCA Vol 2 - 3.7.1.8 (d) (i) & (ii)
- 53x20x0.75mm GALVANISED (Z450) CHANNEL FIXED TO EACH TOP AND BOTTOM PLATE AND PANEL CAPPING WITH 10g x 18mm WAFER HEAD SELF DRILLING SCREWS ON BOTH SIDES TO FORM A CONTINUOUS SURROUND TO QT EcoSEPARATE FIRE WALL



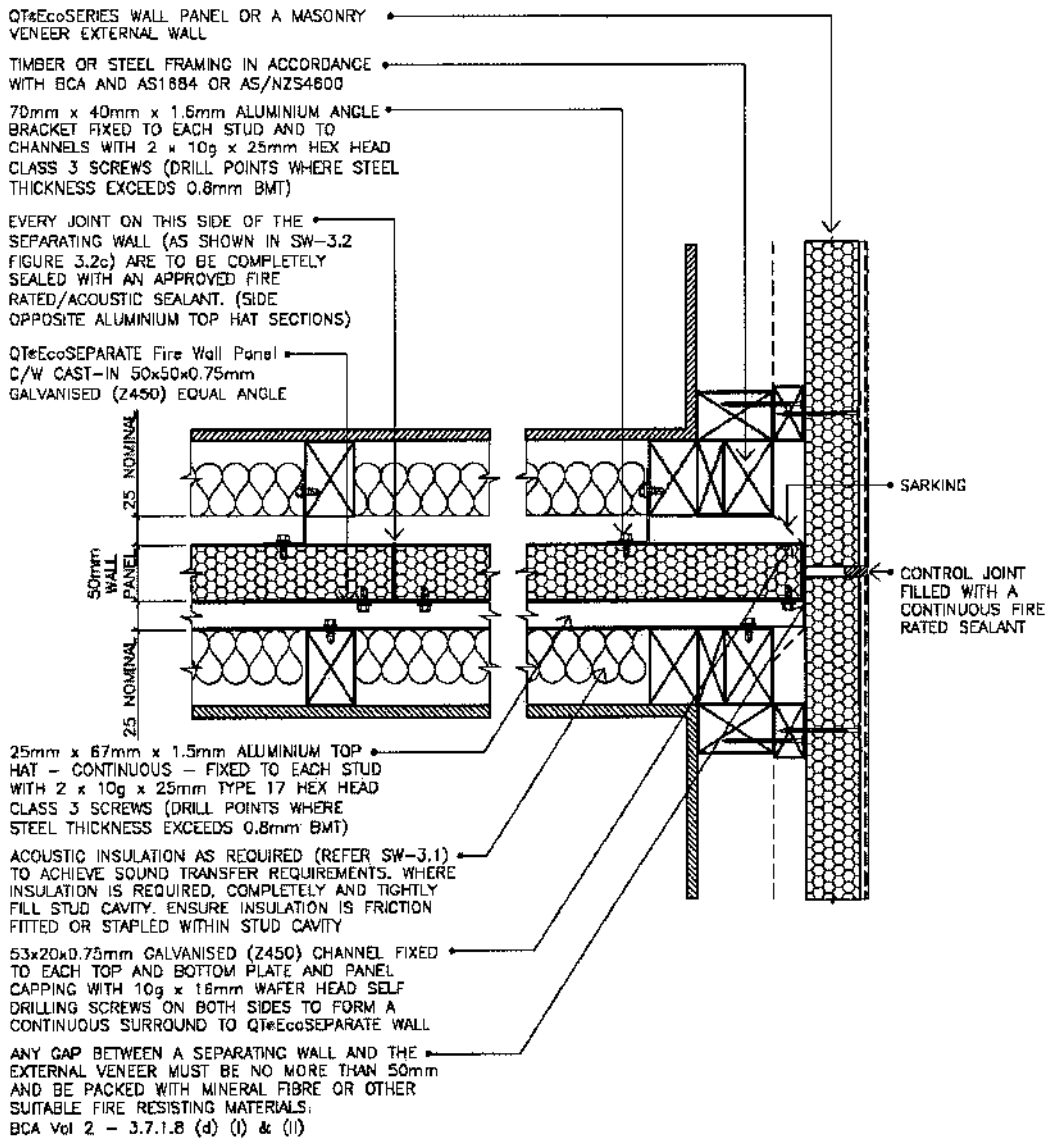
EAVES ZONE

SCALE: A4=1:5

REF No.	QTSW-001
REV:	C
DATE:	14/09/04
DETAIL No.	SW-2.4



**Interior
Wall System**



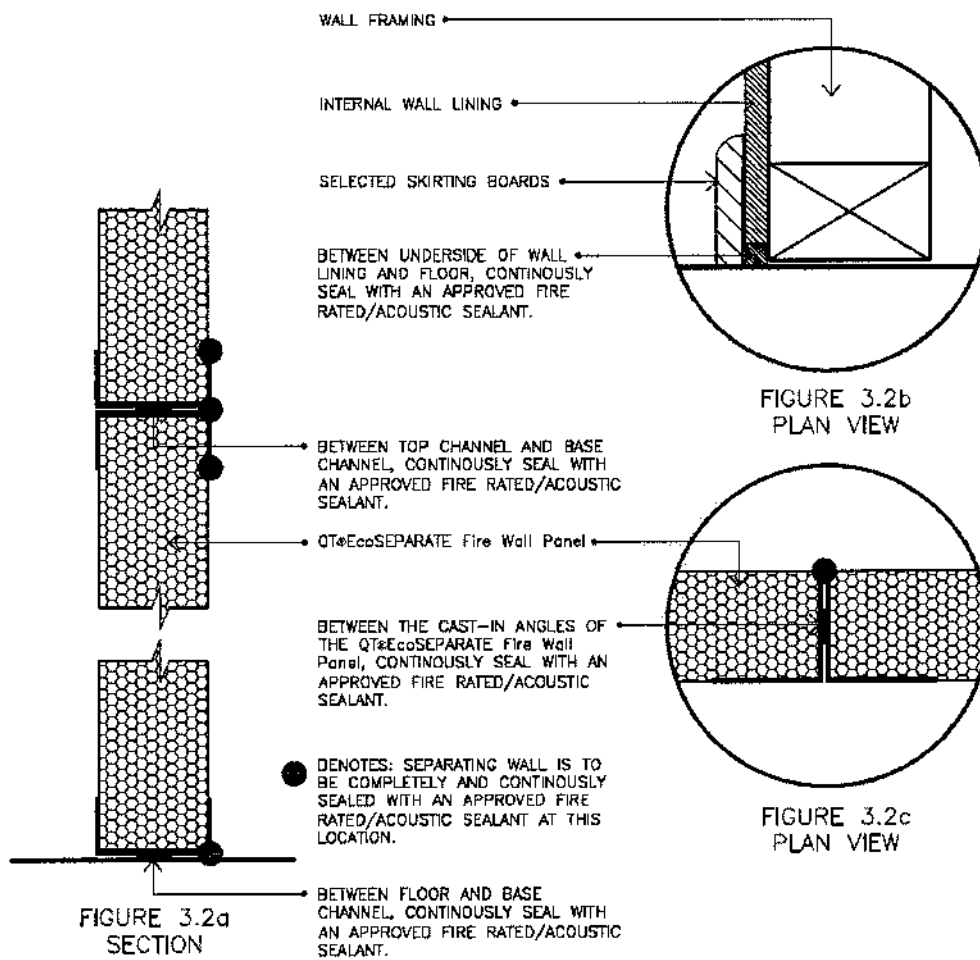
**JUNCTION TO EXTERNAL WALL
(PLAN VIEW)**

SCALE: A4=1:5

REF No.	QTSW-001
REV:	C
DATE:	14/09/04
DETAIL No.	SW-3.1



**Interior
Wall System**



**FIRE RATED/ACOUSTIC
SEALANT LOCATION DETAILS**



REF No.	QTSW-001
REV:	C
DATE:	14/09/04
DETAIL No.	SW-3.2