



Our ref: FCO-2359/CO4021

Machdev Pty Ltd
U2/ 423 Bradman Street
ACACIA RIDGE QLD 4110

Attention: Mr Wayne Borg
Director

LIKELY FIRE PERFORMANCE OF ECOSEPARATE WALL SYSTEM
Assessment Number FCO-2359
Your email dated 5 July.

INTRODUCTION

We have re-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.

THIS ASSESSMENT SUPERSEDES ASSESSMENT NUMBERED FCO-2359 DATED 13 SEPTEMBER 2004.

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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

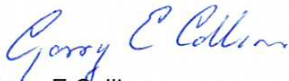
- (a) 90/90/90 for loadbearing walls provided that
 - a. for timber framed systems the loadbearing elements are designed such that the residual section (the original section minus the effective depth of char as determined in AS 1720.4) after 12 minutes of charring is capable of supporting the applied 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 opinion will lapse on 31 August 2016. Should you wish us to re-examine this opinion 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 opinion in the light of new knowledge.

Yours faithfully,



Garry E Collins
Manager, Fire Testing and Assessment

19 August 2011