Likely fire performance of your modified wall systems

Assessment Report

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		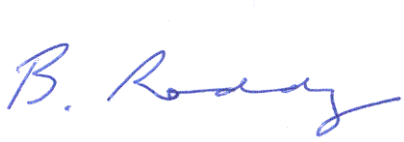
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Executive summary

This report provides the re-assessment of this Division on the likely performance of your modified wall system if it was tested in accordance with AS 1530.4-1997.

It is the opinion of the Division that the wall system as reported in FSV 0562 and constructed as a double leaf wall with a 50 mm cavity and no plasterboard lining would be capable of achieving fire-resistance levels (FRL) of -/240/240 if tested in accordance with AS 1530.4-1997, in terms of compliance with NCC 2016.

Note: At the time the report numbered FSV 0562 was issued, the system was allocated a fire-resistance level (FRL) of 240/120/120 (side A) and FRL 240/180/180 (side B).

In terms of current building regulations in Australia, the FRL for the Speedwall panel wall system clad on each face with 10 mm standard plasterboard is -/120/120, and for the Speedwall panel wall system clad on each face with 13 mm fire rated plasterboard is -/180/180.

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1 Introduction

This report provides the re-assessment of this Division on the likely performance of your modified wall system if it was tested in accordance with AS 1530.4-1997.

2 Supporting Data

- CSIRO Sponsored Investigation report numbered FSV 0562.
- CSIRO pilot-scale test numbered FS 3212 on modified wall system.

Refer to Appendix A for detailed description.

3 Proposal

You propose to construct the system with a 50-mm cavity and no plasterboard lining.

4 Analysis

Because of the limited size of the pilot-scale specimen, the deflection and structural performance cannot be assessed. However, certain aspects of the performance of the joints, which relate to the insulation and integrity criteria, can be examined in light of the observed performance of the full-scale tested specimen.

The thermal data from pilot-scale test on the double-leaf wall system has shown that the average temperature on the unexposed face of the wall has not risen above 100°C at the end of 240 minute test. The integrity of the double leaf wall system should improve due the absence of the plasterboard, which flamed in the original test, and the structural adequacy would also improve by slower heat transfer through the profile of the wall which would in turn reduce its deflection.

5 Conclusion

It is the opinion of the Division that the wall system as reported in FSV 0562 and constructed as a double leaf wall with a 50 mm cavity and no plasterboard lining would be capable of achieving fire-resistance levels (FRL) of -/240/240 if tested in accordance with AS 1530.4-1997, in terms of compliance with NCC 2016.

6 Term of validity

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Appendix A Supporting Data

CSIRO Sponsored Investigation report numbered FSV 0562

On 26 March 1998 this Division conducted a full-scale fire-resistance test on a non-loadbearing panel wall, clad on both sides with a 10-mm standard grade plasterboard on one vertical half and 13-mm fire rated plasterboard on the other.

The specimen comprised a single leaf panel wall constructed of Speedwall modular segments, fitted together (tongue and groove) vertically, and clad on each side with one layer of plasterboard. The wall specimen measured 3000 mm high x 3000 mm wide x 77 mm thick with individual wall segments being 3000 mm long x 250 mm wide x 77 mm thick. The panels comprised an inner core of lightweight concrete.

A perimeter frame comprising C-channels was mechanically fixed into the specimen containing frame with the wall panels were then fitted into the perimeter frame and fixed together using TEC screws. The wall as retained using angles on one vertical and one horizontal sides on each face.

The panel wall on **side A,** was clad on both sides with 10 mm thick standard grade plasterboard which was attached vertically to the wall using daubs of stud adhesive and TEC screws. The panel wall on **side B,** was clad on both sides with 13 mm thick fire rated plasterboard which was attached vertically to the wall using daubs of stud adhesive and TEC screws

The lining sheets were butt jointed and all exposed joints were taped and set on each face with bedding compound and finished with jointing cement.

Test observations reveal that a maximum temperature rise failure occurred on side A after 134 minutes with integrity being lost on side A after 150 minute due to sustained flaming of the plasterboard at the top corner of the specimen. A further maximum temperature rise failure was noted for side B after 184 minutes with integrity being lost after 221 minutes due to sustained flaming of the plasterboard at the top corner of the specimen. The test was terminated after 240 minutes.

At the time the report was issued the system was allocated an FRL of 240/120/120 (side A) and FRL 240/180/180 (side B).

CSIRO Pilot-scale test numbered FS 3212

On 17 September 1999, CSIRO conducted a pilot-scale test on a proposed modified wall system, a system comprising two leaves of the unlined tested wall with a 50 mm wide cavity separating the leaves. This system registered no failure for the full 240 minute duration of the test.

References

The following informative documents are referred to in this Report:

AS 1530.4-1997	Methods for fire tests on building materials, components and structures Part 4: Fire-resistance tests of elements of building construction.
NCC 2016	National Construction Code 2016 Volume One, Building Code of Australia, Class 2 to Class 9 Buildings
FSV 0562	CSIRO Sponsored Investigation report for full-scale fire-resistance test on a wall system on 26 March 1998.
FS 3212	CSIRO pilot-scale fire test conducted on 17 September 1999.

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