INFRASTRUCTURE TECHNOLOGIES
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Likely fire performance of your modified Speedwall panel wall systems

Assessment Report

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Client: Speedpanel (Vic) Pty Ltd

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This assessment report will lapse on 30 November 2020. Should you wish us to re-examine this report 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 assessment in the light of new knowledge.

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Executive summary

This report provides the assessment of this Division on the likely performance of your modified Speedwall panel wall systems if tested in accordance with AS 1530.4-1997.

The proposed systems are similar to the wall system reported in CSIRO Sponsored Investigation numbered FSV 0562 except that the system is constructed with applied sheeting to one side as detailed in the drawings in Appendix B.

It is the opinion of this Division that the system as reported in CSIRO Sponsored Investigation report numbered FSV 0562 constructed with applied sheeting to one side as detailed in the drawings (Appendix B) would be capable of achieving the tabulated fire-resistance levels (FRL) if tested in accordance with AS 1530.4-1997.

Sheeting	**Installation**	**Fire Direction**	**FRL**
13-mm or 16-mm Fireshield	Screw fixed directly to the wall panel	Either direction	-/180/120
13-mm or 16-mm Fireshield	Screw fixed using 28-mm furring channels	Either direction	-/180/120
9-mm Villaboard	Screw fixed directly to the wall panel	Panel side only	-/180/120
16-mm + 16-mm Fireshield	Screw fixed directly to the wall panel	Either direction	-/180/180
16-mm + 16-mm Fireshield	Screw fixed using 28-mm furring channels	Either direction	-/180/180
13-mm + 13-mm Fireshield	Screw fixed directly to the wall panel	Panel Side Only	-/180/180

Likely fire performance of your modified Speedwall panel wall systems

1 Introduction

This report provides the assessment of this Division on the likely performance of your modified Speedwall panel wall systems if tested in accordance with AS 1530.4-1997.

2 Supporting Data

- CSIRO Sponsored Investigation numbered FSV 0562; and
- CSIRO Letter of Assessment numbered FCO-1597

Refer to Appendix A for more information.

3 Proposal

The proposed systems are similar to the wall system reported in CSIRO Sponsored Investigation numbered FSV 0562 except that the system is constructed with applied sheeting to one side as detailed in the drawings in Appendix B.

(a) one layer of 6-mm thick Villaboard screw fixed directly to the wall panel;
(b) one layer of 9-mm thick Villaboard screw fixed directly to the wall panel;
(c) one layer of 16-mm thick Fireshield screw fixed directly to the wall panel;
(d) one layer of 13-mm or 16-mm thick Fireshield screw fixed using 28-mm furring channels;
(e) two layers of 16-mm thick Fireshield screw fixed directly to the wall panel;
(f) two layers of 13-mm thick Fireshield screw fixed directly to the wall pane; or
(g) two layers of 16-mm thick Fireshield screw fixed using 28-mm furring channels;

4 Analysis

In relation to the test conducted on 26 March 1998 and reported on in CSIRO Sponsored Investigation numbered FSV 0562, in order to assess the contribution of the panel wall on its own, thermocouples were included which were directly attached to the panel, under the plasterboard. These thermocouples exceeded the insulation failure at 103 minutes at which time the maximum temperature recorded on that face recorded a temperature rise of 180K above the initial temperature.

Based on previous experience of the performance characteristics of standard plasterboard and on the slightly elevated temperature on the thermocouple, due to it not being open to the air, we could reasonably estimate that the unlined single wall would achieve 90 minutes for insulation.

Assessment report numbered FCO-1597 confirmed this information and concluded that the system constructed without any plasterboard lining would be capable of achieving FRLs of -/180/90 if tested in accordance with AS 1530.4-1997.

Test information from Lafarge Plasterboard demonstrates that the addition of a single layer of 13-mm thick Fireshield to one side of a fire rated wall system is sufficient to provide an additional 30 minutes of insulation performance. The use of 16-mm thick Fireshield would marginally enhance this performance such that the additional 30 minutes could also be justified due to the additional material.

Similar test information provided by James Hardie Pty Ltd verifies that an additional 30 minutes of insulation can be attained by the application of 6-mm thick Villaboard to both faces of an existing fire rated wall system. The requirement for the attachment of the board to both faces is primarily because of the possible reaction of the reinforced cement sheet to the thermal shock. It is principally the unexposed sheet that provides the additional insulation but the quantitative value of this additional insulation is not exact and a conservative approach will require the use of the 9-mm thick Villaboard.

5 Conclusion

It is the opinion of this Division that the system as reported in CSIRO Sponsored Investigation report numbered FSV 0562 constructed with applied sheeting to one side as detailed in the drawings (Appendix B) would be capable of achieving the tabulated fire-resistance levels (FRL) if tested in accordance with AS 1530.4-1997.

Sheeting	Installation	Fire Direction	FRL
13-mm or 16-mm Fireshield	Screw fixed directly to the wall panel	Either direction	-/180/120
13-mm or 16-mm Fireshield	Screw fixed using 28-mm furring channels	Either direction	-/180/120
9-mm Villaboard	Screw fixed directly to the wall panel	Panel side only	-/180/120
16-mm + 16-mm Fireshield	Screw fixed directly to the wall panel	Either direction	-/180/180
16-mm + 16-mm Fireshield	Screw fixed using 28-mm furring channels	Either direction	-/180/180
13-mm + 13-mm Fireshield	Screw fixed directly to the wall panel	Panel Side Only	-/180/180

6 Term of validity

This assessment report will lapse on 31 November 2020. Should you wish us to re-examine this report 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 assessment in the light of new knowledge.

Appendix A - Supporting Data

A.1 CSIRO Sponsored Investigation report numbered FSV 0562

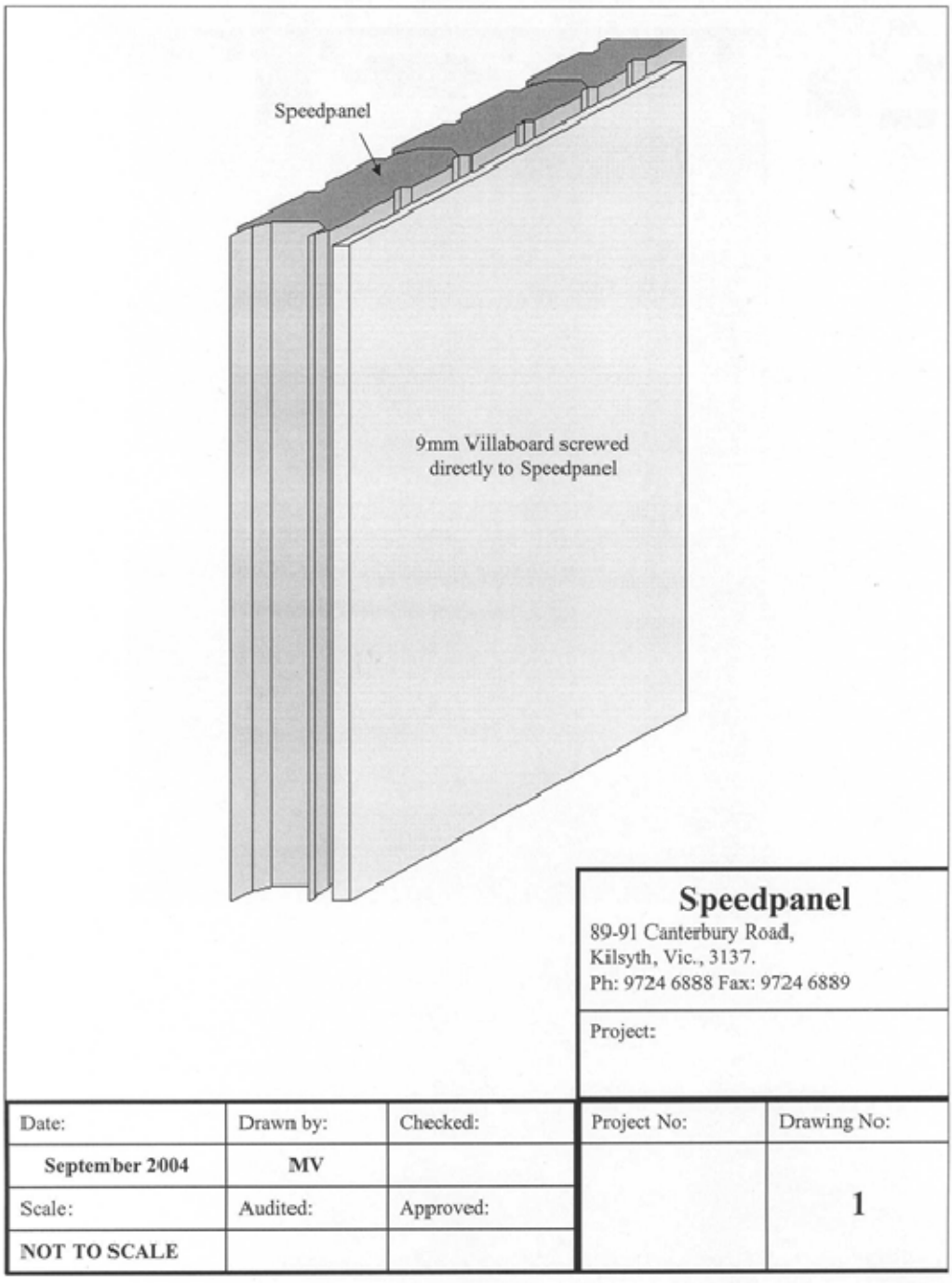
On 26 March 1998 this Division conducted a full-scale fire-resistance test on your wall system comprising a lightweight concrete core within a metal skin clad with plasterboard. One half of the wall was clad with 10-mm thick standard grade plasterboard and this achieved fire-resistance levels (FRL) of -/120/120. The other half of the wall was clad with 13-mm thick fire-grade plasterboard on both faces and achieved FRLs of -/180/180.

A.2 CSIRO Letter of Assessment numbered FCO-1597

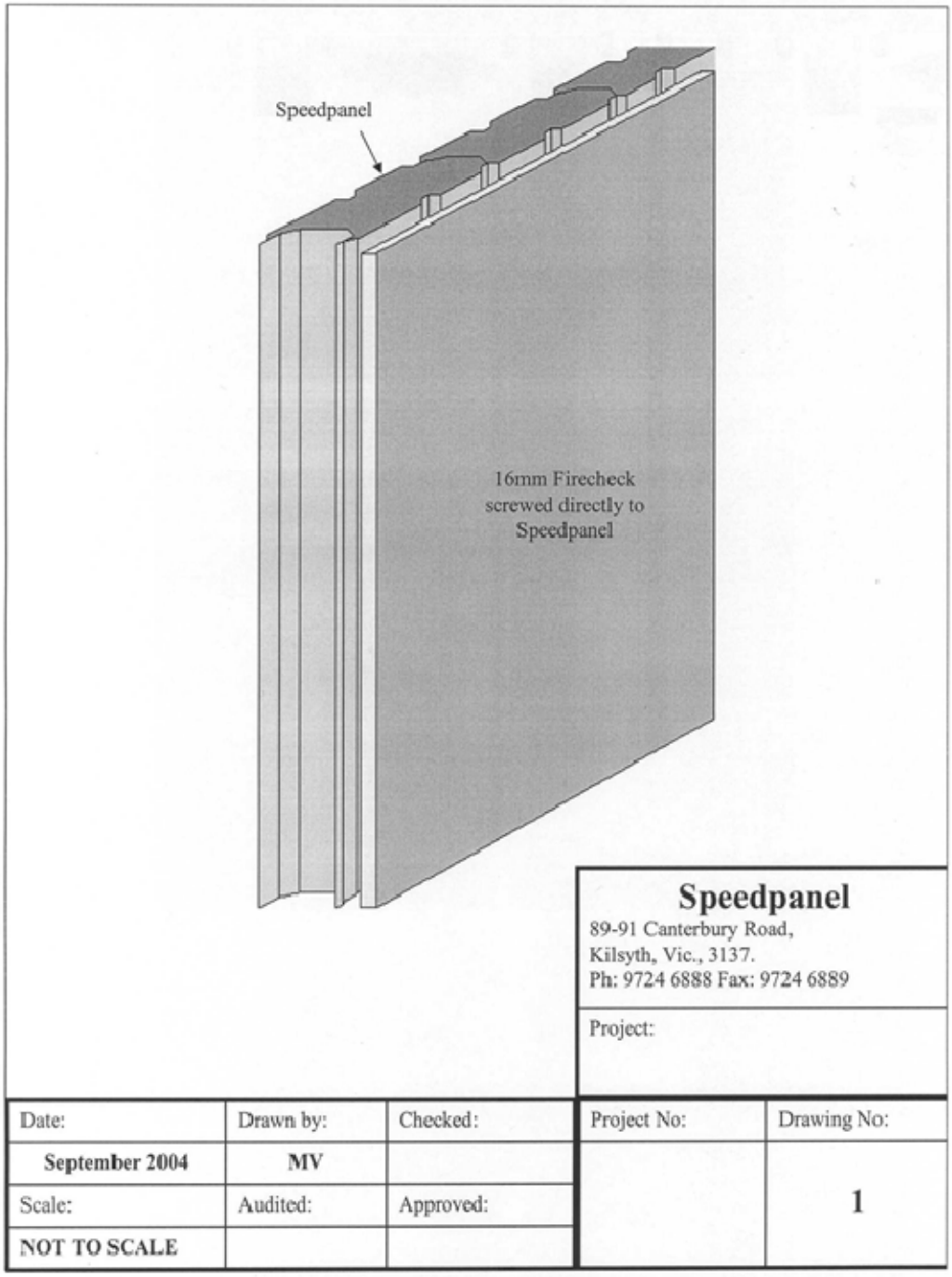
This Division expressed the opinion that the unlined (bare) Speedwall panel wall system would be capable of achieving fire-resistance levels (FRL) of -/180/90 if tested in accordance with AS 1530.4-1997 without plasterboard attached to the Speedwall panels. This was based on temperatures recorded on the unexposed face of the bare Speedwall panels under the plasterboard lining.

Appendix B - Drawings

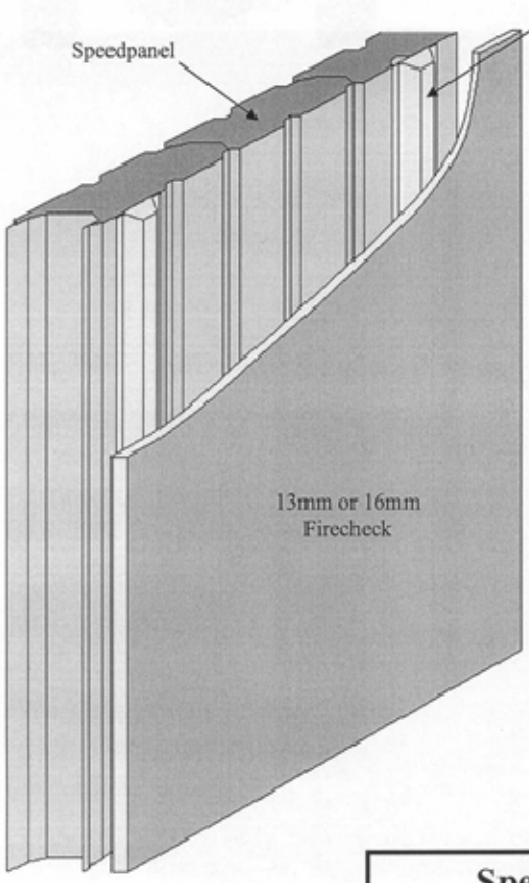
A.1 9-mm Villaboard screwed directly to Speedpanel



A.2 16-mm Firechek screwed directly to Speedpanel



A.3 13-mm or 16-mm Firechek



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Project:

Date:	Drawn by:	Checked:	Project No:	Drawing No:
September 2004	MV			1
Scale:	Audited:	Approved:		
NOT TO SCALE				

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.
FSV 0562	CSIRO Sponsored Investigation report for full-scale fire-resistance test on a wall system on 26 March 1998.
FCO-1597	CSIRO Letter of Assessment on Speedwall panel wall system constructed without plasterboard lining.

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