REGULATORY INFORMATION REPORT

The fire resistance performance of walls and floors penetrated by electrical cables and metal pipes protected by 3M Firedam Mortar if tested in accordance with AS1530.4-2005 and assessed in accordance with AS4072.1-2005.

Report No:

RIR 23265-01

Report Sponsor:

3M Australia Pty Ltd
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Australia

Testing. Advising. Assuring.

DOCUMENT REVISION STATUS

Date Issued	Issue No	Description
30/06/09	RIR 23265-00	Initial Issue
26/06/13	RIR 23265-01	Revised to include additional wrapping options for service penetrations

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CONTENTS

1 INTRODUCTION

This report contains the minimum information sufficient for regulatory compliance and refers to the Assessment Report EWFA 23265-01.

The referenced report presents an assessment of the fire resistance performance of walls and floors penetrated by electrical cables and metal pipes protected by 3M Firedam Mortar, if tested in accordance with AS1530.4-2005 and assessed in accordance with AS4072.1-2005.

The tested prototypes described in Section 2 of this report, when subject to the proposed variations described in Section 3, are to perform satisfactorily if tested in accordance with the referenced test method described in Section 4. The conclusions of the report are summarised in Section 5.

The validity of this assessment is conditional on compliance with Sections 7, 8 and 9 of this report.

Summaries of the test data on which the referenced assessment is based are provided in Appendix B together with a summary of the critical issues leading to the assessment conclusions including the main points of argument.

2 TESTED PROTOTYPES

The referenced assessment is based on reference to the tests BWA2243201 and BWA2243204 that respectively comprised apertures in a wall and a floor protected by 3M Firedam Mortar penetrated by various electrical cables and metal pipes and tested in accordance with AS1530.4-2005.
The referenced assessment also makes reference to the test EWFA 2800000, which comprised two pipe penetrations and two cable penetrations in a wall and the penetrations were protected by 3M Interam E-5A-4 Endothermic Mat.
Supplementary reference is made to R9700 04NK3973 for mortar apertures in 75mm thick walls.

Refer to Appendix A for a full summary of the referenced test data.

3 VARIATION TO TESTED PROTOTYPES

3.1 FLOORS

The proposed floor construction shall be as tested in BWA 2243204 subject to the following variations;

- Addition of CP25 WB+ Caulk between cables for the cables tested in BWA 2243201
- Increase in floor thickness
- Increase in mortar thickness
- Inclusion of various size copper, steel and brass pipes
- Penetrations shall be wrapped with 3M Interam E-5A-4 Endothermic Mat (Emat) each side of the floor construction.
- The service penetrations shall be located a minimum of 40mm apart

3.2 WALLS

The proposed wall construction shall be as tested in BWA 2243201 subject to the following variations;

- Applicability of an 800mmx 800mm aperture
- Applicability to masonry and concrete walls
- Increase in wall thickness

- Increase in mortar thickness
- Inclusion of various size copper, steel and brass pipes
- Penetrations shall be wrapped with 3M Interam E-5A-4 Endothermic Mat (Emat) each side of the wall construction
- The service penetrations shall be located a minimum of 40mm apart

4 REFERENCED TEST PROCEDURES

This report is prepared with reference to the requirements of AS1530.4-2005 and AS4072.1-2005 for the determination of a FRL.

5 FORMAL ASSESSMENT SUMMARY

On the basis of the discussion presented in the referenced report it is the opinion of this testing authority that if the tested prototype described in Section 2 had been varied in Section 3 it would be likely to achieve the fire resistance as stated below if tested in accordance with the test method referenced in Section 4 and subject to the requirements of section 7.

5.1 FLOOR PENETRATIONS

The performance of 3M Firedam Mortar protecting apertures in normal weight concrete floors is shown in Table 1. The apertures may incorporate PVC insulated cables, metal pipes or, may be empty; refer to Tables 1, 2 and 3 and Figures 1 to 3.

Table 1 – Performance of 3m Firedam Mortar for Floors

<table>
<tr><th>Penetration Seal</th><th>Minimum Mortar Depth</th><th>Penetrating Service</th><th>Min Floor Slab Depth</th><th>FRL</th></tr>
<tr><td rowspan="8">3M Firedam Mortar

Maximum aperture 800mm x 800mm</td><td rowspan="8">75mm</td><td>PVC Insulated Cables as per AS1530.4-2005 D1 and D2 cables</td><td rowspan="8">120mm</td><td>-/90/-</td></tr>
<tr><td>PVC Insulated Cables as per AS1530.4-2005 D1 and D2 cables wrapped with 500mm long Emat each side.</td><td>-/90/90</td></tr>
<tr><td>Copper, Brass and Ferrous pipes in accordance with Table 3</td><td>-/90/-</td></tr>
<tr><td>Copper, Brass and Ferrous pipes in accordance with Table 3 wrapped with 600mm long Emat each side</td><td>-/90/90</td></tr>
<tr><td>Copper and Ferrous pipes<table><tr><td>Max. Diameter</td><td>Min, Wall Thick.</td></tr><tr><td>79mm</td><td>2.29mm</td></tr><tr><td>54mm</td><td>1.79mm</td></tr></table></td><td>-/120/-</td></tr>
<tr><td>Copper and Ferrous pipes in sizes below wrapped with 600mm long Emat each side<table><tr><td>Max. Diameter</td><td>Min, Wall Thick.</td></tr><tr><td>79mm</td><td>2.29mm</td></tr><tr><td>54mm</td><td>1.79mm</td></tr></table></td><td>-/120/120</td></tr>
<tr><td>Blank Penetration Seal</td><td>-/120/120</td></tr>
</table>

<table>
<tr><td rowspan="10"></td><td rowspan="10">120mm</td><td>PVC Insulated Cables as per AS1530.4-2005 D1 and D2 cables</td><td rowspan="10"></td><td>-/120/-</td></tr>
<tr><td>PVC Insulated Cables as per AS1530.4-2005 D1 and D2 cables wrapped with 500mm long Emat each side</td><td>-/120/120</td></tr>
<tr><td>PVC Insulated Cables as per AS1530.4-2005 D1 cables only</td><td>-/180/60</td></tr>
<tr><td>PVC Insulated Cables as per AS1530.4-2005 D1 cables only wrapped with 500mm long Emat each side</td><td>-/180/120</td></tr>
<tr><td>Copper, Brass and Ferrous pipes in accordance with Table 3</td><td>-/90/-</td></tr>
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<tr><td>Blank Penetration Seal</td><td>-/180/180</td></tr>
</table>

Table 2 – Description of Items for floors

Item	Description
1	AS1530.4-2005 Appendix D - D1 Cables
2	AS1530.4-2005 Appendix D – D2 Cables
3-6	Copper, Brass and Ferrous pipes, see table 1
7	Normal Weight concrete floor slab, 120mm minimum thickness
8	3M MPP Pad wrapped around cable bundle for the full mortar depth
9	3M CP25 WB+ Sealant installed within the cable bundles for the depth of the seal at a nominal 1mm dry thickness.
10	3M Firedam Mortar, refer to Table 1 for thickness and maximum aperture size
11	3M Interam E-5A-4 Endothermic Mat (Emat) wrapped with VentureTape® 1577CW and hold in place with 1.0mm Mild steel modelling wire at 50mm from lagging ends and one at the centre as per tested in EWFA 2800000
12	3M Fire Barrier Sealant CP 25WB+ Intumescent

Table 3 – Description Assessed Metal Pipes (AS1530.4-2005 Table 10.11.3.1)

Nominal Size (mm)	Maximum Actual OD (mm)	Minimum Actual Wall Thickness (mm)	Copper	Ferrous	Brass
32	31.75	0.91	✓	✓	✓
40	38.1	0.91	✓	✓	✓
50	50.8	0.91	✓	✓	✓
65	63.5	0.91	✓	✓	✓
80	76.2	1.22	✓	✓	✓
90	88.9	1.22	✓	✓	✓
100	101.6	1.22	✓	✓	✓
125	127	1.42	✓	✓	✗
150	152.4	1.63	✓	✓	✗

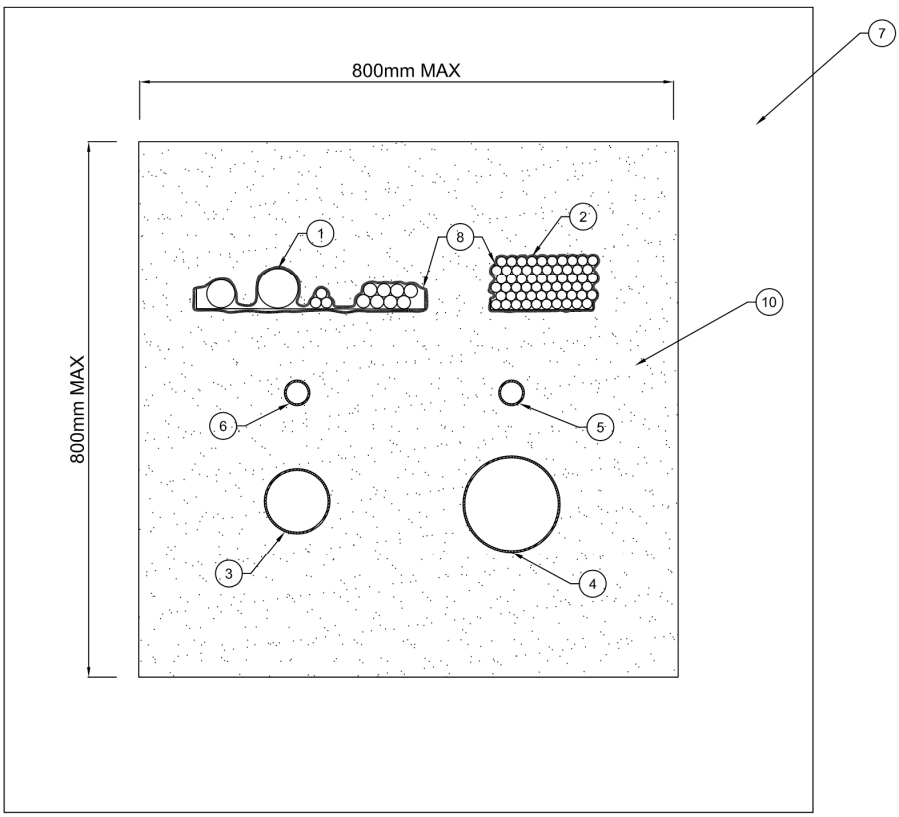

Figure 1– Typical Arrangement of Apertures filled with 3M Firedam Mortar in Floors

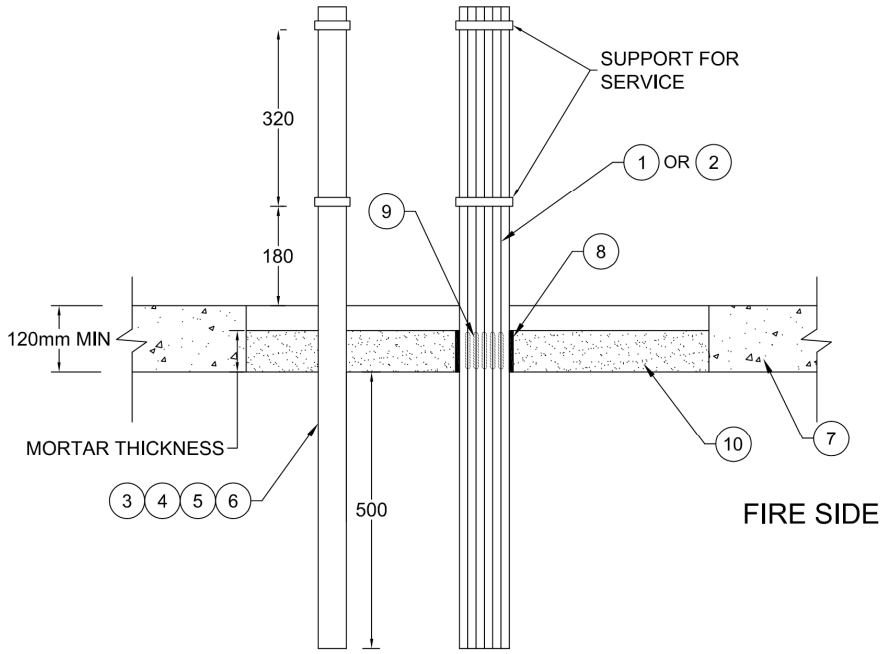

Figure 2- Typical Details for Cables and Metal Pipes penetrating 3M Firedam Mortar in floors

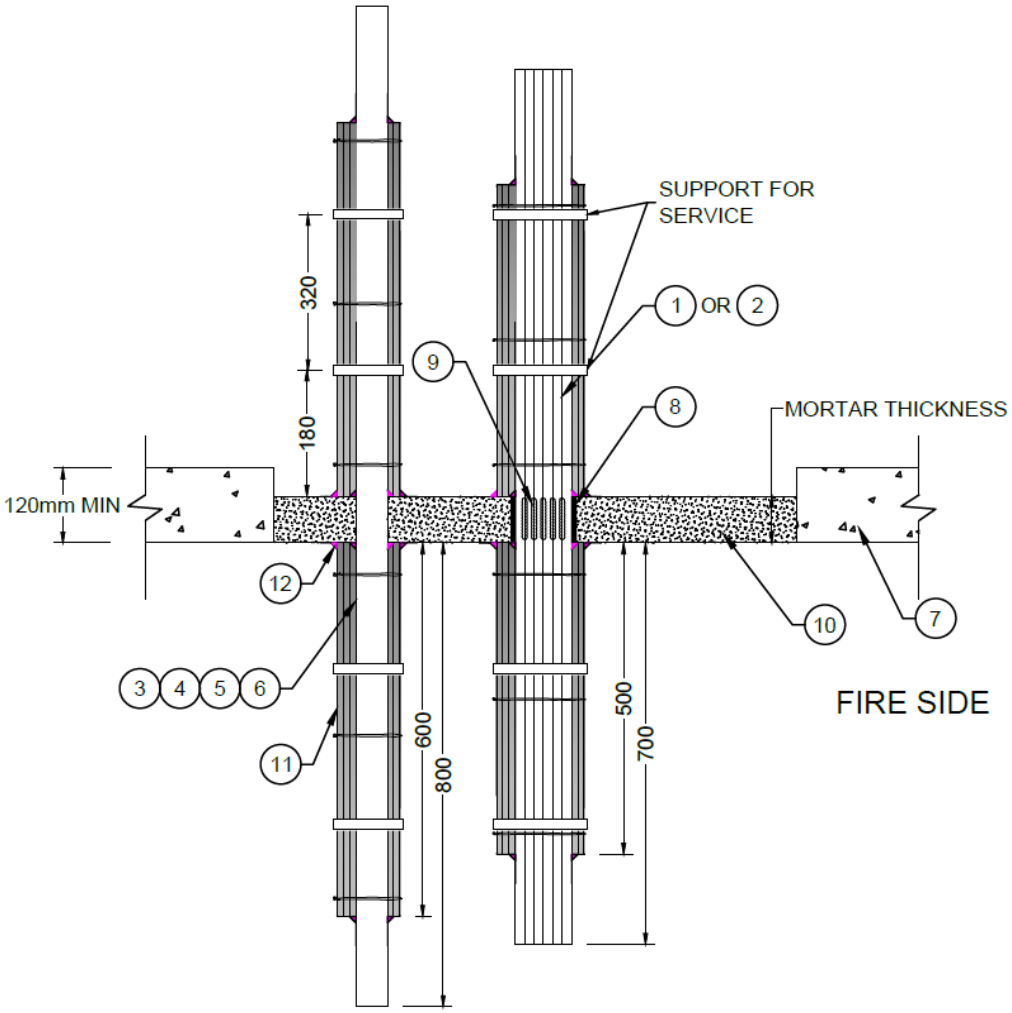

Figure 3– Typical Details for Cables and Metal Pipes wrapped with Emat in floors

5.2 WALL PENETRATIONS

The performance of 3M Firedam Mortar protecting apertures in solid or hollow masonry and normal weight concrete walls is shown in Table 4. The apertures may incorporate PVC insulated cables, metal pipes or may be empty. Refer to Table 3, 4 and 5 and Figure 4 - 6.

Table 4 – Performance of 3m Firedam Mortar in Walls

Penetration Seal	Minimum Mortar Thickness	Penetrating Service	Minimum Wall Thickness	FRL
3M Firedam Mortar Maximum aperture 800mm x 800mm	75mm	PVC Insulated Cables as per AS1530.4-2005 D1 and D2 cables	120mm	-/90/-
		PVC Insulated Cables as per AS1530.4-2005 D1 and D2 cables wrapped with 500mm long Emat each side		-/90/90
		Copper, Brass and Ferrous pipes in accordance with Table 3		-/90/-
		Copper, Brass and Ferrous pipes in accordance with Table 3 wrapped with 600mm long Emat each side		-/90/90
		Copper and Ferrous pipes Max. Diameter: Min, Wall Thick. 79mm: 2.29mm 54mm: 1.79mm		-/120/-
		Copper and Ferrous pipes in sizes below and wrapped with 600mm long Emat each side Max. Diameter: Min, Wall Thick. 79mm: 2.29mm 54mm: 1.79mm		-/120/120
		Blank Penetration Seal		-/120/120
	120mm	PVC Insulated Cables as per AS1530.4-2005 D1 and D2 cables	120mm	-/120/-
		PVC Insulated Cables as per AS1530.4-2005 D1 and D2 cables wrapped with 500mm long Emat each side		-/120/120
		PVC Insulated Cables as per AS1530.4-2005 D1 cables only		-/180/60
		PVC Insulated Cables as per AS1530.4-2005 D1 cables only wrapped with 500mm long Emat each side		-/180/120
		Copper, Brass and Ferrous pipes in accordance with Table 3		-/90/-
		Copper, Brass and Ferrous pipes in accordance with Table 3 wrapped with 600mm long Emat each side		-/90/90
		Copper and Ferrous pipes Max. Diameter: Min, Wall Thick. 79mm: 2.29mm 54mm: 1.79mm		-/120/-
		Copper and Ferrous pipes in sizes		-/120/120

Penetration Seal	Minimum Mortar Thickness	Penetrating Service	Minimum Wall Thickness	FRL
		below and wrapped with 600mm long Emat each side Max. Diameter: Min, Wall Thick. 79mm: 2.29mm 54mm: 1.79mm		
		Blank Penetration Seal		-/180/180

Table 5 – Description of Items for Walls

Item	Description
1	AS1530.4-2005 Appendix D - D1 Cables
2	AS1530.4-2005 Appendix D – D2 Cables
3-6	Copper, Brass and Ferrous pipes, see Table 4
8	3M MPP Pad wrapped around cables bundle for the full mortar depth
9	3M CP25 WB+ Sealant installed within the cable bundles for the depth of the seal at a nominal 1mm dry thickness.
10	3M Firedam Mortar, refer to Table 4 for thickness and maximum aperture size
11	Hebel, Solid or hollow core masonry or normal weight concrete wall
12	3M Interam E-5A-4 Endothermic Mat (Emat) wrapped with VentureTape® 1577CW as per tested in EWFA 2800000
13	3M Fire Barrier Sealant CP 25WB+ Intumescent

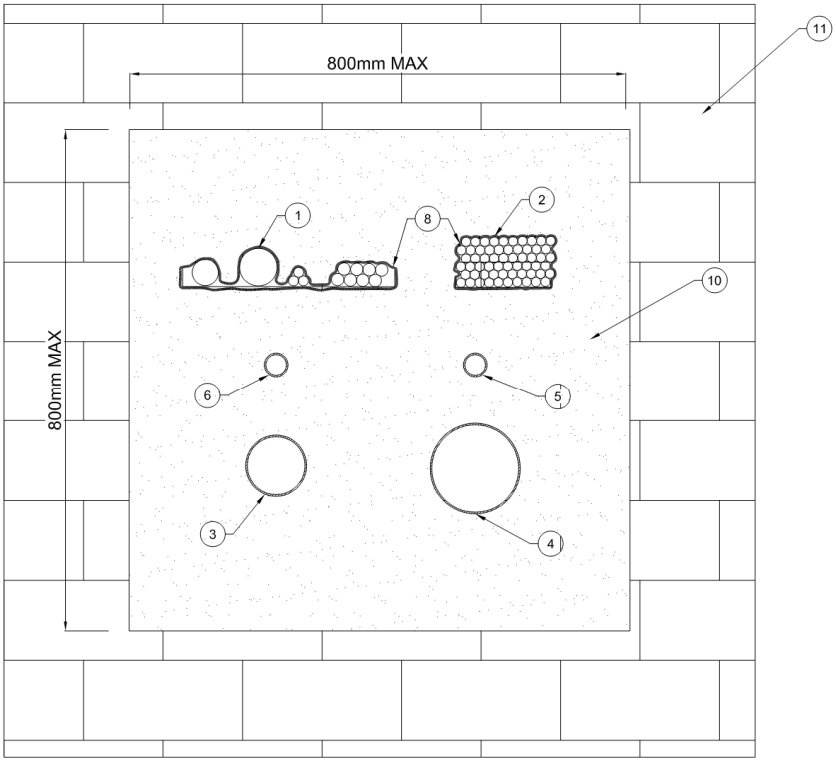

Figure 4– Typical Arrangement of Apertures filled with 3M Firedam Mortar in Walls

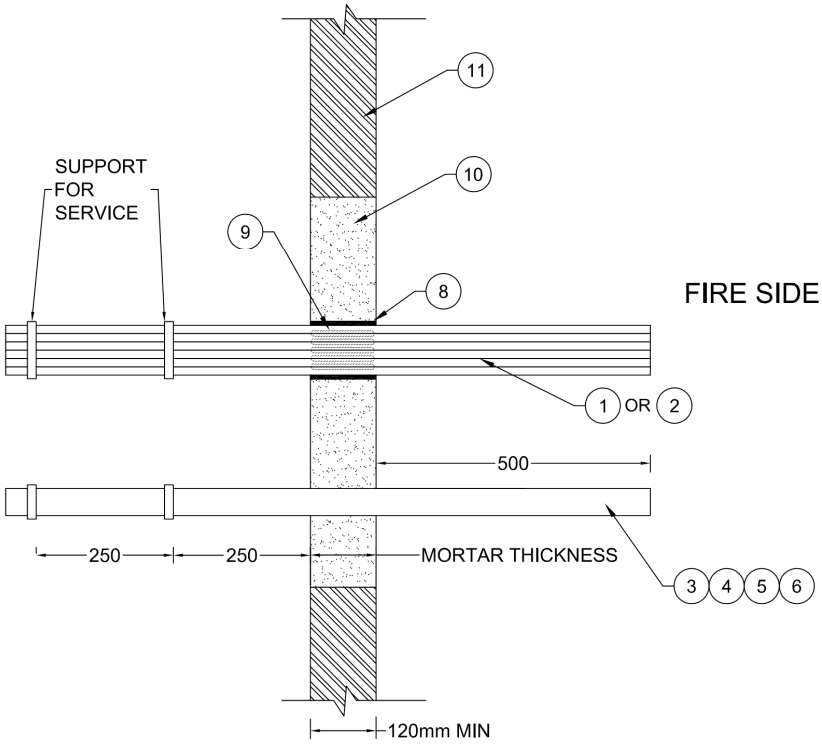

Figure 5– Typical Details for Cables and Metal Pipes penetrating 3M Firedam Mortar in Walls

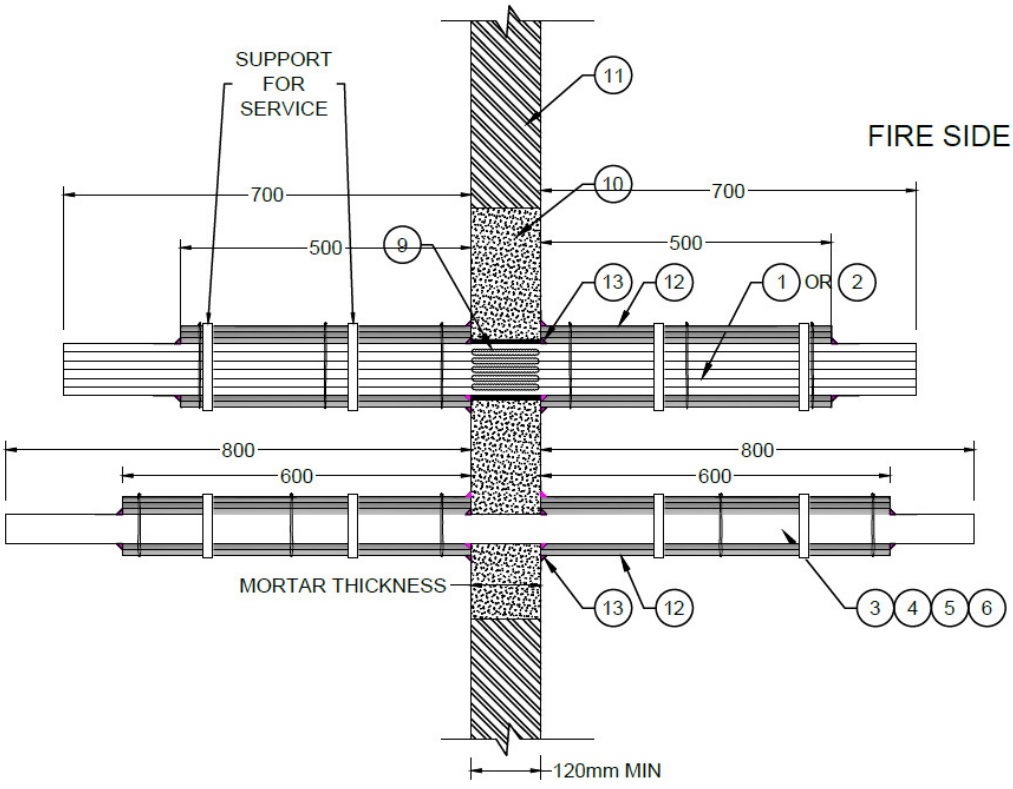

Figure 6– Typical Details for Cables and Metal Pipes wrapped with Emat in Walls

6 DIRECT FIELD OF APPLICATION

The results of this assessment are applicable to cables and metal pipes penetrating walls and exposed to fire from either side or to cables and metal pipes penetrating floors exposed to fire from below.

The results of the assessment are based on actual test data and the scope is necessarily limited to the specifications indicated Section 3 and discussed in the Appendices of the referenced report.

AS1530.4-2005, Clause 10.11.4
It can be confirmed that the tested cables described in BWA Report Nos. 2243200 and 2243202 are consistent with the specifications in AS1530.4-2005, Appendix D for Group A and B cable configurations.

AS1530.4-2005, Clause 10.11.4 extends the application of test data from Group A and B cable configurations directly to support all PVC-insulated and sheathed power and communications cables with copper conductors. Should the extended scope of application in Clause 10.11.4 be adopted, it is recommended that the seal dimensions and specifications of the supporting walls and floors shall be consistent with those described in this assessment.

AS1530.4-2005, Clause 10.11.3.1
It can be confirmed that the tested pipes described in BWA Report Nos. 2243204 are consistent with the specifications in AS1530.4-2005, Appendix E metal pipe configurations that have insulation waived.

AS1530.4-2005, Clause 10.11.3.1 extends the application of test data from the Appendix E configurations directly to support copper, brass (101mm max) and ferrous pipes shown in AS1530.4-2005 Table 10.11.3.1. Should the extended scope of application in Clause 10.11.3.1 be adopted, it is recommended that the seal dimensions and specifications of the supporting walls and floors shall be consistent with those described in this assessment.

7 REQUIREMENTS

This report details the methods of construction, test conditions and assessed results that would have been expected had the specific elements of construction described herein been tested in accordance with AS 1530.4-2005.

All service penetrations shall be considered as being non- loadbearing and if used in trafficable areas appropriate signage to prevent access to non-loadbearing service installations should be provided where necessary. Refer to AS4072.1-2005 Section 2.1.

The supporting wall of floor construction shall be capable of providing effective support of the proposed construction for the required fire resistance period (FRL).

Any further variations with respect to size, constructional details, loads, stresses, edge or end conditions, other than those identified in this report, may invalidate the conclusions drawn in this report.

8 VALIDITY

The referenced assessment report does not provide an endorsement by Exova Warringtonfire Aus Pty Ltd of the actual products supplied.

The conclusions of the referenced assessment may be used to directly assess fire hazard, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all conditions.

Because of the nature of fire testing, and the consequent difficulty in quantifying the uncertainty of measurement, it is not possible to provide a stated degree of accuracy. The inherent variability in test procedures, materials and methods of construction, and installation may lead to variations in performance between elements of similar construction.

The referenced assessment can therefore only relate only to the actual prototype test specimens, testing conditions, and methodology described in the supporting data, and does not imply any performance abilities of constructions of subsequent manufacture.

The referenced assessment is based on information and experience available at the time of preparation. The published procedures for the conduct of tests and the assessment of test results are the subject of constant review and improvement and it is recommended that this report be reviewed on or, before, the stated expiry date.

The information contained in this report shall not be used for the assessment of variations other than those stated in the conclusions above. The assessment is valid provided no modifications are made to the systems detailed in this report. All details of construction should be consistent with the requirements stated in the relevant test reports and all referenced documents.

9 AUTHORITY

9.1 APPLICANT UNDERTAKINGS AND CONDITIONS OF USE

By using this report as evidence of compliance or performance the applicant(s) confirms that:

to their knowledge the component or element of structure, which is the subject of this assessment, has not been subjected to a fire test to the Standard against which this assessment is being made, and

they agree to withdraw this assessment from circulation should the component or element of structure be the subject of a fire test by a test authority in accordance with the Standard against which this assessment is being made and the results are not in agreement with this assessment, and

they are not aware of any information that could adversely affect the conclusions of this assessment and if they subsequently become aware of any such information, agree to ask the assessing authority to withdraw the assessment.

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9.3 AUTHORISATION ON BEHALF OF EXOVA WARRINGTONFIRE AUS PTY LTD

Prepared by:

K. G. Nicholls

Reviewed by:

S. Hu

9.4 DATE OF ISSUE

26th June 2013

9.5 EXPIRY DATE

30th June 2014

ASSESSMENT REVIEW

Review of assessment report BWA 23265-01 and Regulatory Information Report RIR 23265-01

The fire resistance performance of walls and floors penetrated by electrical cables and metal pipes protected by 3M Firedam Mortar if tested in accordance with AS1530.4-2005 and assessed in accordance with AS4072.1-2005

EWFA Report No:

33778700.1

Report Sponsor:

3M Australia Pty Ltd
25-27 Bridge Street
Pymble, NSW 2073
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DOCUMENT REVISION STATUS

Date Issued	Issue No	Description
05/02/2015	33778700	Initial Issue
15/08/2016	33778700.1	Revised the assessment report version

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1 INTRODUCTION

The referenced assessment BWA 23265-01 and Regulatory Information Report (RIR) RIR 23265-01, both dated 26th June 2013. They provide an assessment of the fire resistance performance of walls and floors penetrated by electrical cables and metal pipes protected by 3M Firedam Mortar if tested in accordance with AS1530.4-2005 and assessed in accordance with AS4072.1-2005.

2 CONFIRMATION OF SPECIFICATION

The sponsor of referenced assessment BWA 23265-01 and reflected regulatory information report RIR 23265-01 and the sponsor of referenced test reports BWA 2243201, BWA 2243204, R9700/04NK3973 and EWFA 2800000.1 is 3M Australia Pty Ltd.

3M Australia Pty Ltd has stated in writing that there have been no changes to the design and material specifications of the protection systems or component since the issue of the original formal assessment BWA 23265-01 and reflected regulatory information report RIR 23265-01 which reference the test reports BWA 2243201, BWA 2243204, R9700/04NK3973 and EWFA 2800000.1.

3 FORMAL OPINION SUMMARY

Since the issue of assessment report BWA 23265-01 and regulatory information report RIR 23265-01, there have been no changes to the testing experience that could affect the opinion expressed.

The procedures adopted for the original assessment have been re-examined and are similar to those currently in use.

The specification used for the original assessment has been re-examined and found to be satisfactory.

Therefore, with respect to the fire resistance performance of walls and floors penetrated by electrical cables and metal pipes protected by 3M Firedam Mortar if tested in accordance with AS1530.4-2005 and assessed in accordance with AS4072.1-2005, referenced in assessment report BWA 23265-01 and reflected regulatory information report RIR 23265-01, it is confirmed that the assessed performance is considered valid subject to the requirements in Section 4.

4 VALIDITY

This assessment review does not provide an endorsement by Exova Warringtonfire Aus Pty Ltd of the actual products assessed.

This review is based on information and experience available at the time of preparation. The published procedures for the conduct of tests and the assessment of test results are the subject of constant review and improvement and it is recommended that this report be reviewed on or before the stated expiry date.

This review remains valid until the expiry date stated in Section 5.5 subject to compliance with the applicant undertakings and conditions in the original assessment and this review.

5 AUTHORITY

5.1 APPLICANT UNDERTAKINGS AND CONDITIONS OF USE

By using this report as evidence of compliance or performance the applicant(s) confirms that:

- to their knowledge the component or element of structure, which is the subject of this assessment, has not been subjected to a fire test to the Standard against which this assessment is being made, and
- they agree to withdraw this assessment from circulation should the component or element of structure be the subject of a fire test by a test authority in accordance with the Standard against which this assessment is being made and the results are not in agreement with this assessment, and
- they are not aware of any information that could adversely affect the conclusions of this assessment and if they subsequently become aware of any such information, agree to ask the assessing authority to withdraw the assessment.

5.2 GENERAL CONDITIONS OF USE

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5.3 AUTHORISATION ON BEHALF OF EXOVA WARRINGTONFIRE AUS PTY LTD

Prepared by:

S. Hu

Reviewed by:

D. Nicholson

5.4 DATE OF ISSUE

15/08/2016

5.5 EXPIRY DATE

31/08/2021