Regulatory Information Report

RIRF24079

Fire resistance test for penetrations through the horizontal separating element

Client:	Agnitek Pty Ltd
Test method:	AS1530.4-2014
Report Date:	27/08/2024
Test number:	PF24079

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Table of Contents

1.1 Document revision schedule

Revision #	Date	Description
1	15/08/2024	Issued to Client
2	27/08/2024	Section 2 amended

1.2 Signatories

Report	Name	Signature	Date
Prepared by:	Alexey Kokorin		27/08/2024
Authorised by:	Andrew Bain (Authorized signatory)		27/08/2024

ACCREDITED
IANZ
TESTING LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

2. Report Summary

Nine service penetrations were tested horizontally through a single layer of 13mm Fire rated plasterboard fixed on a 190mm x 45mm (nominal) timber frame on the exposed side. On the unexposed side of the timber frame, a layer of 17mm structural plywood was installed with no specimens penetrating it.

Specimen #	Service	Actual Integrity (min)	Actual Insulation (min)	FRL*
A	100mm Copper pipe	62	61	-/45/45
B	One TPS cable + one Coax cable + one Data cable (40mm spaced)	63NF	63NF	-/45/45
C	50mm Steel pipe	63NF	63NF	-/45/45
D	32mm Copper pipe	63NF	63NF	-/45/45
E	One Sprinkler Head & Pipe	63NF	63NF	-/45/45
F	Three PE insulated Pair coils + three 25mm uPVC Pipes + three TPS cables	63NF	63NF	-/45/45
G	One PE insulated Pair coil + one 25mm uPVC Pipe + one TPS cable	63NF	63NF	-/45/45
H	One FR insulated Pair coil + one 25mm uPVC Pipe + one TPS cable	63NF	63NF	-/45/45
I	Three FR insulated Pair coils + three 25mm uPVC Pipes + three TPS cables	63NF	63NF	-/45/45

NF – No failure during the test

* The FRL was reduced to the stated performance of the separating element – 45/45/45.

3. General Information

3.1 Testing Scope

Applicable Standards:

AS 1530.4-2014 Section 10: Service penetrations and control joints

AS 4072.1-2005 (r. 2016) Components for the protection of openings in fire-resistant separating elements. Part 1: Service penetrations and control joints

Resistance to the incipient spread of fire (RISF) is excluded from the scope of the test.

Departures from Testing Method:

No departures from the testing method

Test conditions:

Conditions complied with the Standard

3.2 Contact Details

Accredited Testing Laboratory

Fire TS Lab - Passive Fire Inspection and Test Services Ltd

Accreditation Number - 1335

1/113 Pavilion Drive, Mangere, Auckland, 2022

New Zealand

Contact e-mail: tests@firelab.co.nz

Client/Applicant:

Agnitek Pty Ltd

8 Clare St, Bayswater, VIC, 3153

Australia

Contact e-mail: info@agnitek.com.au

Manufacturer:

Same as Client/Applicant

3.3 Specimen Preparation, Conditioning and Timeline

Specimens conditioning and delivery to Laboratory:

Separating element was built by the Laboratory in line with Client instructions. Installation of fire stopping system was performed by the Laboratory in line with Client instructions. The Laboratory was not involved in sampling of the materials. The Laboratory checked materials during construction of the specimen. All specimens were capped on the fire side only.

Testing date:

16/07/2024

Installation completion date:

26/07/2024

Termination of The Test:

The test was discontinued at 63 minutes.

3.4 Use of the Report

This report shall not be reproduced, except in full.

A regulatory information report was issued in addition to the full test report PF24079. This provides the minimum information required for regulatory compliance.

This report details the methods of construction, test conditions and the results obtained when the specific element of construction described herein was tested following the procedure outlined in AS 1530.4. Any significant variation with respect to size, constructional details, loads, stresses, edge or end conditions, other than that allowed under the field of direct application in the relevant test method, is not covered by this report.

Because of the nature of fire resistance testing and the consequent difficulty in quantifying the uncertainty of measurement of fire resistance, it is not possible to provide a stated degree of accuracy of the result.

The test results relate to the specimens of the product in the form in which they were tested. Differences in the composition or thickness of the product may significantly affect the performance during the test and may therefore invalidate the test results. Care should be taken to ensure that any product, which is supplied or used, is fully represented by the specimens, which were tested.

The specimens were supplied by the sponsor and the Laboratory was not involved in any of selection or sampling procedures.

The results of these fire tests may be used to directly assess fire hazard, but it should be recognized that a single test method will not provide a full assessment of fire hazard under all fire conditions.

4. Specimen Description

4.1 Supporting Construction

Separating element		
1.1	Item	190mm x 45mm (nominal) timber frame with one layer of 13mm FR Plasterboard fixed at exposed side and one layer of 17mm Structural plywood fixed at unexposed side
	Dimensions	Width / Height (W/H): 1200mm × 1200mm

Materials		
1.2	Item / Product Name	Timber Framing
	Dimensions	Width / Height (W/H): 190mm × 45mm (nominal)
	Installation	Used to construct timber frame
1.3	Item / Product Name	Head Nail
	Dimensions	90mm × 3.15mm
	Installation	Used to construct timber framing
1.4	Item / Product Name	41mm Self Tapping Screw
	Dimensions	6g × 41mm
	Installation	Used to fix plasterboard and plywood to timber frame
1.5	Item / Product Name	FR Plasterboard
	Dimensions	Width / Height (W/H): 1200mm × 1200mm
		Thickness (T): 13mm
	Installation	Fixed at exposed side of timber frame
1.6	Item / Product Name	Structural Plywood
	Dimensions	Width / Length (W/L): 1200mm × 1200mm
		Thickness (T): 20mm
	Installation	Fixed at unexposed side of timber frame

4.2 Specimens

Services		
2.1	Item / Product Name	100mm Copper Pipe
	Dimensions	Inner Diameter (ID): 100mm
		Outer Diameter (OD): 105.66mm
		Thickness (T): 2.83mm
2.2	Item / Product Name	32mm Copper Pipe
	Dimensions	Inner Diameter (ID): 32mm
		Outer Diameter (OD): 34.19mm
		Thickness (T): 1.1mm
2.3	Item / Product Name	50mm Steel Pipe
	Dimensions	Inner Diameter (ID): 41.74mm
		Outer Diameter (OD): 48.44mm
		Thickness (T): 3.35mm
2.4	Item / Product Name	2C 2.5mm^2 + E 2.5mm^2 TPS cable
	Dimensions	Width / Thickness (W/T):12mm × 5mm
2.5	Item / Product Name	CAT 5E cable
	Dimensions	Diameter (D): 6mm
2.6	Item / Product Name	Coaxial cable
	Dimensions	Diameter (D): 6mm
2.7	Item / Product Name	Polyethylene insulated Pair Coil Insulated Refrigeration Tube
	Dimensions	Copper Tube OD × Wall Thickness (OD/T): 9.52mm × 0.81mm + 19.05mm × 1.14mm Insulation: 8mm thick
2.8	Item / Product Name	Pair coil FR Rubber Insulated Fire Retardant Pair Coil
	Dimensions	Copper Tube OD × Wall Thickness (OD/T): 9.52mm × 0.81mm + 15.88mm × 1.02mm Insulation: 16mm thick
2.9	Item / Product Name	Sprinkler head and steel pipe
	Dimensions	Pipe Diameter (OD): 20mm, (ID): 15mm

		Sprinkler Head: Base Diameter (BD): 38mm, Top Diameter (TD): 31mm, Height (H): 43mm
2.10	Item / Product Name	25mm uPVC Electrical Conduit
	Dimensions	Inner Diameter (ID): 20mm
		Outer Diameter (OD): 25mm
		Thickness (T): 2.5mm

Sealants		
3.1	Item / Product Name	AGNI-Seal
	Dimensions	600mL Sausage
	Installation	Seal annular spacing between specimens and separating element.

Intumescent		
4.1	Item / Product Name	AGNI-Wrap 50
	Dimensions	Thickness / Width (T/W): 3.5mm × 50mm
	Installation	Installed around services, pass through the 13mm plasterboard.

5. Test Results

5.1 Observations during the test

Time min	Test face	SP#	OBSERVATIONS/REMARKS
15	E	ALL	Sealant in the aperture expanded.
43	U	A	Discoloration of The SE surface around TC1
60	U	A	Surface of SE cracked about 200mm long, surface discoloured quickly.
62	U	A	Crack on SE developed, cotton pad test applied over red glow in pipe for 30 seconds – FAIL
63			**Test Discontinued.**

NOTE: E – Exposed Face (inside furnace)

U – Unexposed Face (outside furnace)

SE – Separating element

5.2 Specimen A

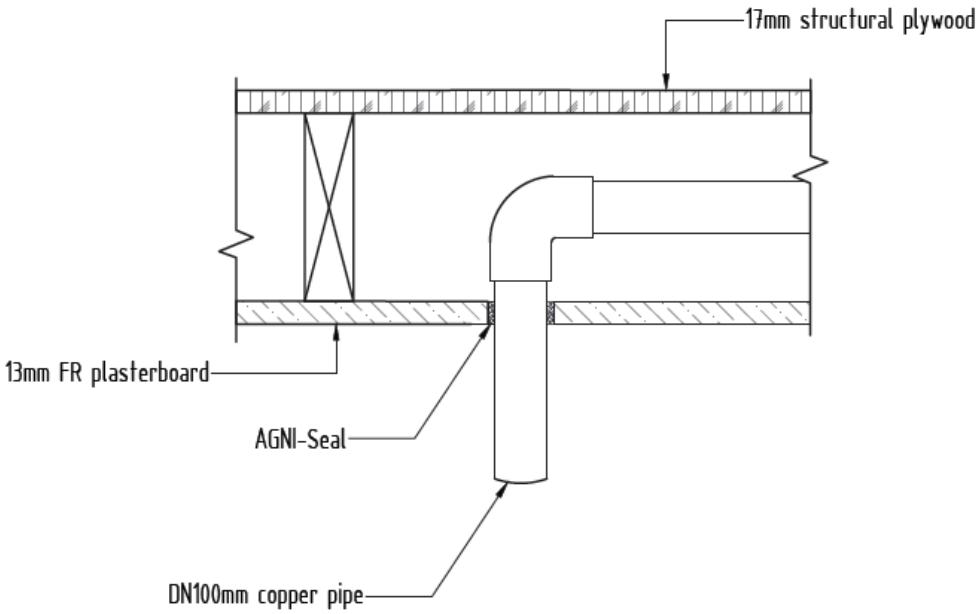

Figure 4 – Specimen A

Service penetration details	
Service	100mm Copper Pipe
Service Support	Service was supported within the separating element cavity
Aperture Diameter	110mm
Annular Spacing	1-5mm

Local Fire-stopping system	
Application	Asymmetrical
System description	**Exposed Side:** AGNI-Seal was installed in the annular gap between the service and plasterboard to the full depth of the plasterboard. **Unexposed Side:** Specimen did not penetrate plywood lining.

Test results	
Structural adequacy	Not applicable
Integrity	Failure at 62 minutes
Insulation	Failure at 61 minutes

5.3 Specimen B

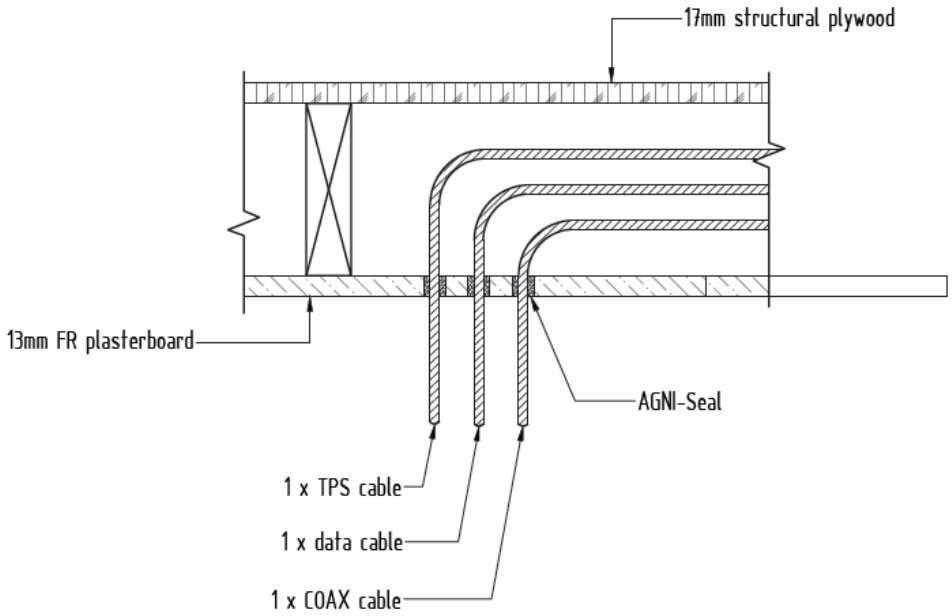

Figure 7 – Specimen B

Service penetration details	
Service	One TPS cable + one Coax cable + one Data cable
Service Support	Service was supported within the separating element cavity
Aperture Diameter	13mm;10mm;10mm
Annular Spacing	Min: 1mm, Max: 4mm
Specimen spacing	Cable were spaced by 40 mm from each other

Local Fire-stopping system	
Application	Asymmetrical
System description	**Exposed Side:** AGNI-Seal was installed in the annular gap between the service and plasterboard to the full depth of the plasterboard. **Unexposed Side:** Specimen did not penetrate plywood lining.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 63 minutes
Insulation	No failure at 63 minutes

5.4 Specimen C

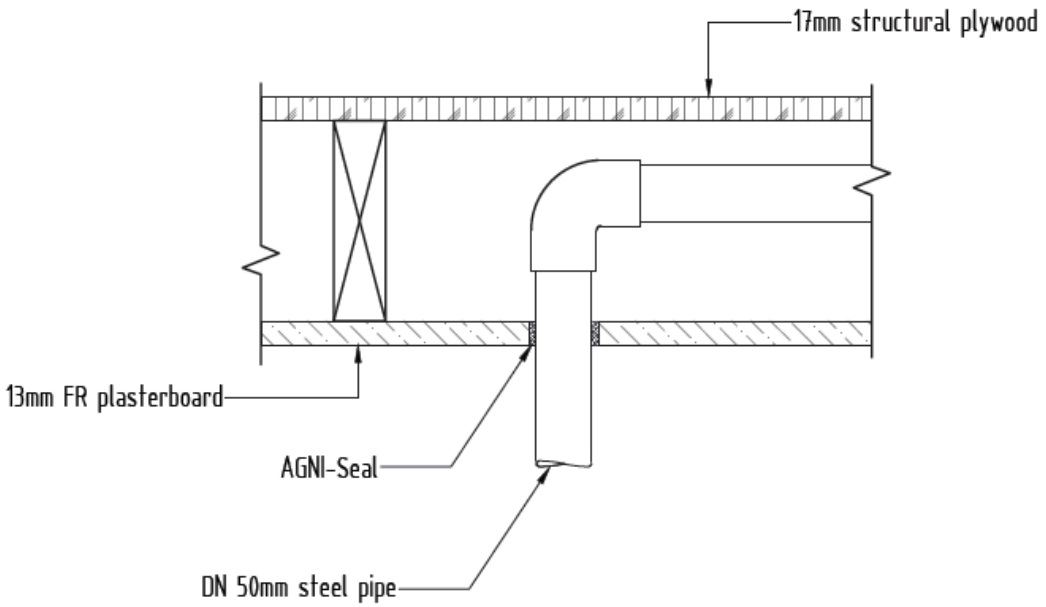

Figure 10 – Specimen C

Service penetration details	
Service	50mm Steel pipe
Service Support	Service was supported within the separating element cavity
Aperture Diameter	60mm
Annular Spacing	2-10mm

Local Fire-stopping system	
Application	Asymmetrical
System description	**Exposed Side:** AGNI-Seal was installed in the annular gap between the service and plasterboard to the full depth of the plasterboard. **Unexposed Side:** Specimen did not penetrate plywood lining.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 63 minutes
Insulation	No failure at 63 minutes

5.5 Specimen D

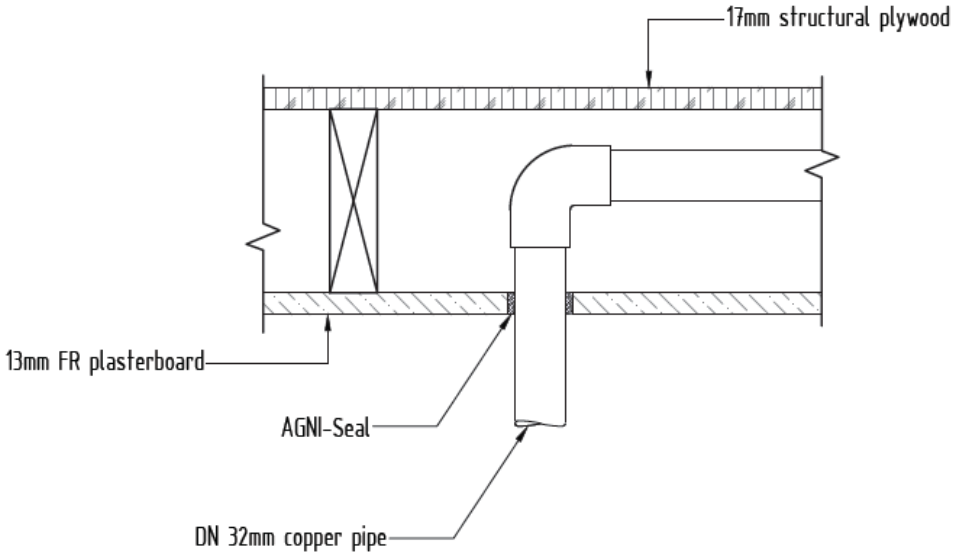

Figure 13 – Specimen D

Service penetration details	
Service	32mm Copper pipe
Service Support	Service was supported within the separating element cavity
Aperture Diameter	44mm
Annular Spacing	2-10mm

Local Fire-stopping system	
Application	Asymmetrical
System description	**Exposed Side:** AGNI-Seal was installed in the annular gap between the service and plasterboard to the full depth of the plasterboard. **Unexposed Side:** Specimen did not penetrate plywood lining.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 63 minutes
Insulation	No failure at 63 minutes

5.6 Specimen E

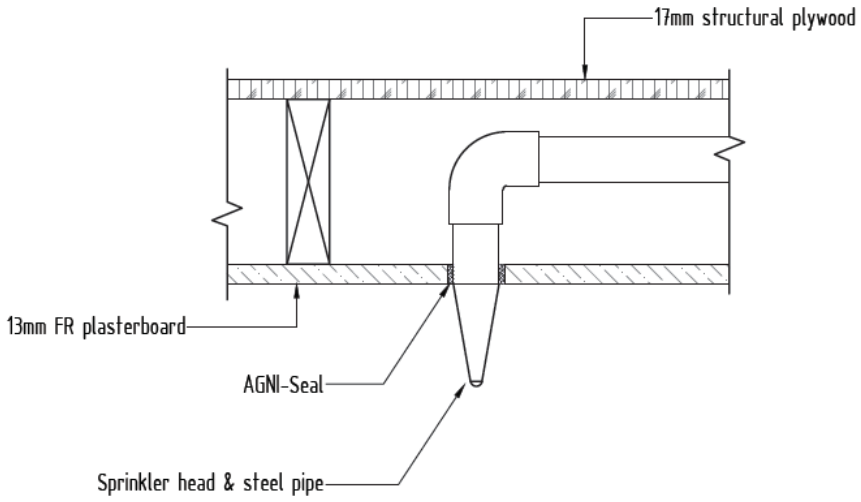

Figure 16 – Specimen E

Service penetration details	
Service	One Sprinkler Head & Pipe
Service Support	Service was supported within the separating element cavity
Aperture Diameter	35mm
Annular Spacing	2-10mm

Local Fire-stopping system	
Application	Asymmetrical
System description	**Exposed Side:** AGNI-Seal was installed in the annular gap between the service and plasterboard to the full depth of the plasterboard. **Unexposed Side:** Specimen did not penetrate plywood lining.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 63 minutes
Insulation	No failure at 63 minutes

Figure 17 – Specimen E thermocouple readings

5.7 Specimen F

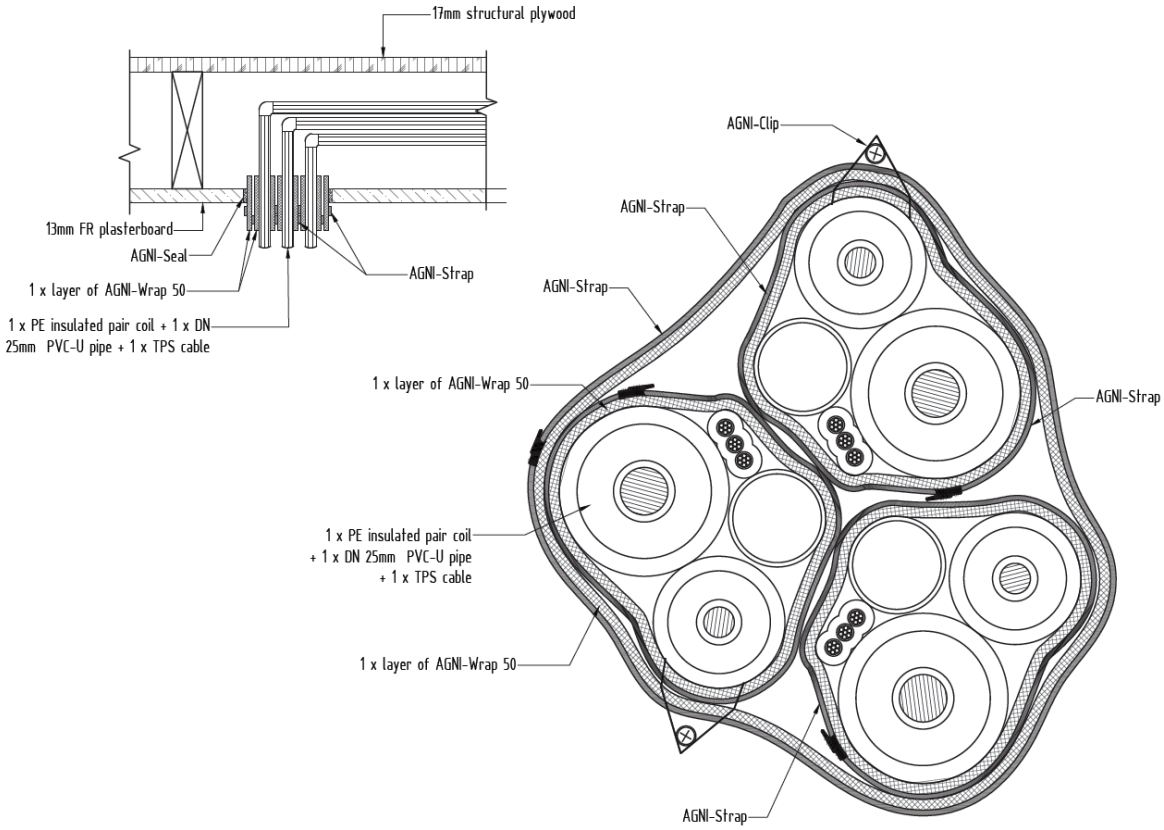

Figure 19 – Specimen F

Service penetration details	
Service	Three PE insulated Pair coil + three 25mm uPVC Pipe + three TPS cable
Service Support	Service was supported within the separating element cavity
Aperture Diameter	Min 98mm, Max 144mm
Annular Spacing	Min: 7mm, Max: 20mm

Local Fire-stopping system	
Application	Asymmetrical
System description	**Exposed Side:** One Pail Coil, one uPVC pipe, and one TPS cable were wrapped once with AGNI-Wrap 50 and secured with one AGNI-Strap to form separate A/C bundles. These bundles were then wrapped together with one revolution of

	AGNI-Wrap 50 and secured with stainless steel tie. The AGNI-Wrap 50 was positioned 25mm within the aperture and 25mm from the unexposed face. AGNI-Seal was used to fill the gap between the AGNI-Wrap and the plasterboard, aligning flush with both sides of the plasterboard. Two AGNI-Clips were installed from underneath to secure the installation. **Unexposed Side:** Specimen did not penetrate plywood lining.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 63 minutes
Insulation	No failure at 63 minutes

5.8 Specimen G

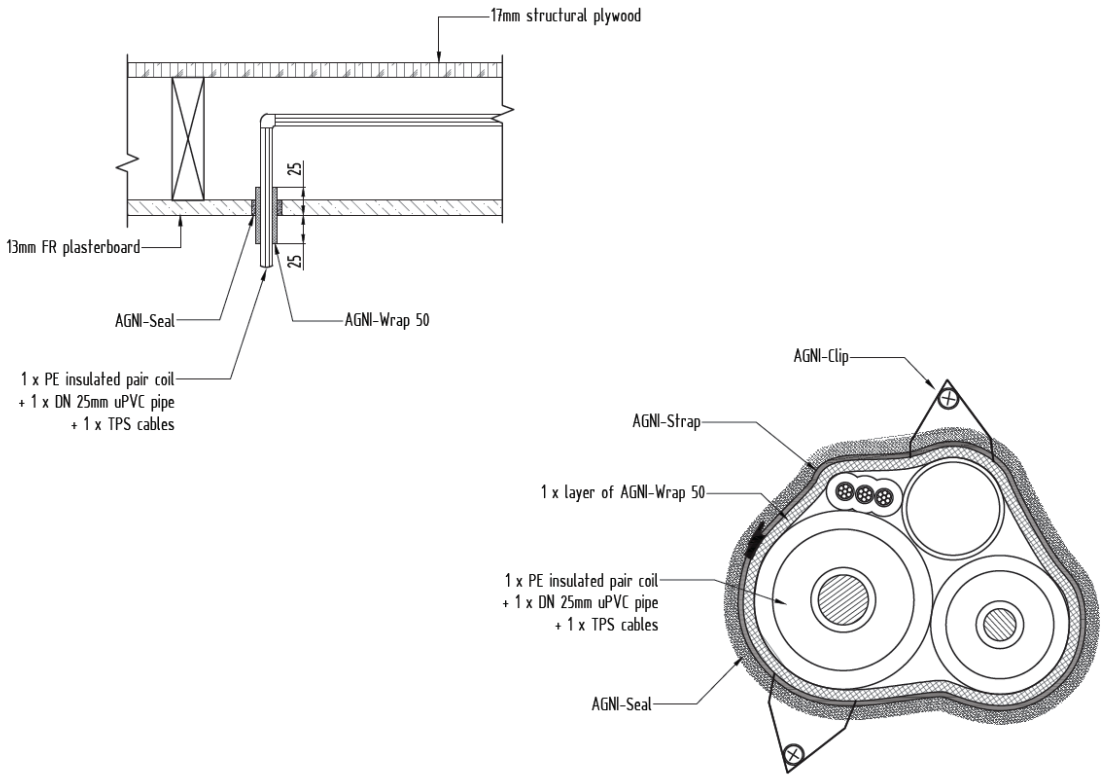

Figure 22 – Specimen G

Service penetration details	
Service	One PE insulated Pair coil + one 25mm uPVC Pipe + one TPS cable
Service Support	Service was supported within the separating element cavity
Aperture Diameter	Min 48mm, Max 87mm
Annular Spacing	Min: 3.5mm, Max: 6mm

Local Fire-stopping system	
Application	Asymmetrical
System description	**Exposed Side:** One Pail Coil, one uPVC pipe, and one TPS cable were wrapped once with AGNI-Wrap 50 and secured with one AGNI-Strap to form separate A/C bundles. The AGNI-Wrap 50 was positioned 25mm within the aperture and 25mm from the unexposed face. AGNI-Seal was used to fill the gap between the AGNI-Wrap and the plasterboard, aligning flush

	with both sides of the plasterboard. Two AGNI-Clips were installed from underneath to secure the installation. **Unexposed Side:** Specimen did not penetrate plywood lining.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 63 minutes
Insulation	No failure at 63 minutes

5.9 Specimen H

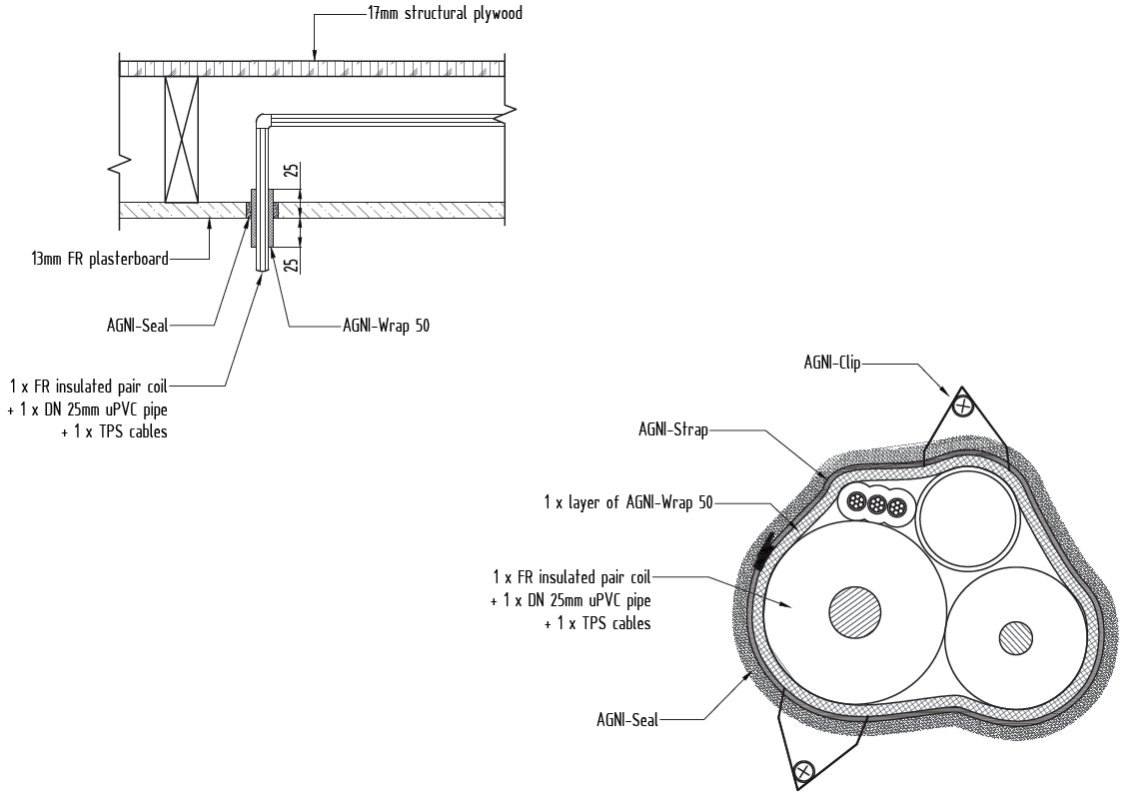

Figure 25 – Specimen H

Service penetration details	
Service	One FR insulated Pair coil + one 25mm uPVC Pipe + one TPS cable
Service Support	Service was supported within the separating element cavity
Aperture Diameter	Min 73mm, Max 120mm
Annular Spacing	3-10mm

Local Fire-stopping system	
Application	Asymmetrical
System description	**Exposed Side:** One Pail Coil, one uPVC pipe, and one TPS cable were wrapped once with AGNI-Wrap 50 and secured with one AGNI-Strap to form separate A/C bundle. The AGNI-Wrap 50 was positioned 25mm within the aperture and 25mm from the unexposed face. AGNI-Seal was used to fill the gap between the AGNI-Wrap and the plasterboard, aligning flush

	with both sides of the plasterboard. Two AGNI-Clips were installed from underneath to secure the installation. **Unexposed Side:** Specimen did not penetrate plywood lining.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 63 minutes
Insulation	No failure at 63 minutes

5.10 Specimen I

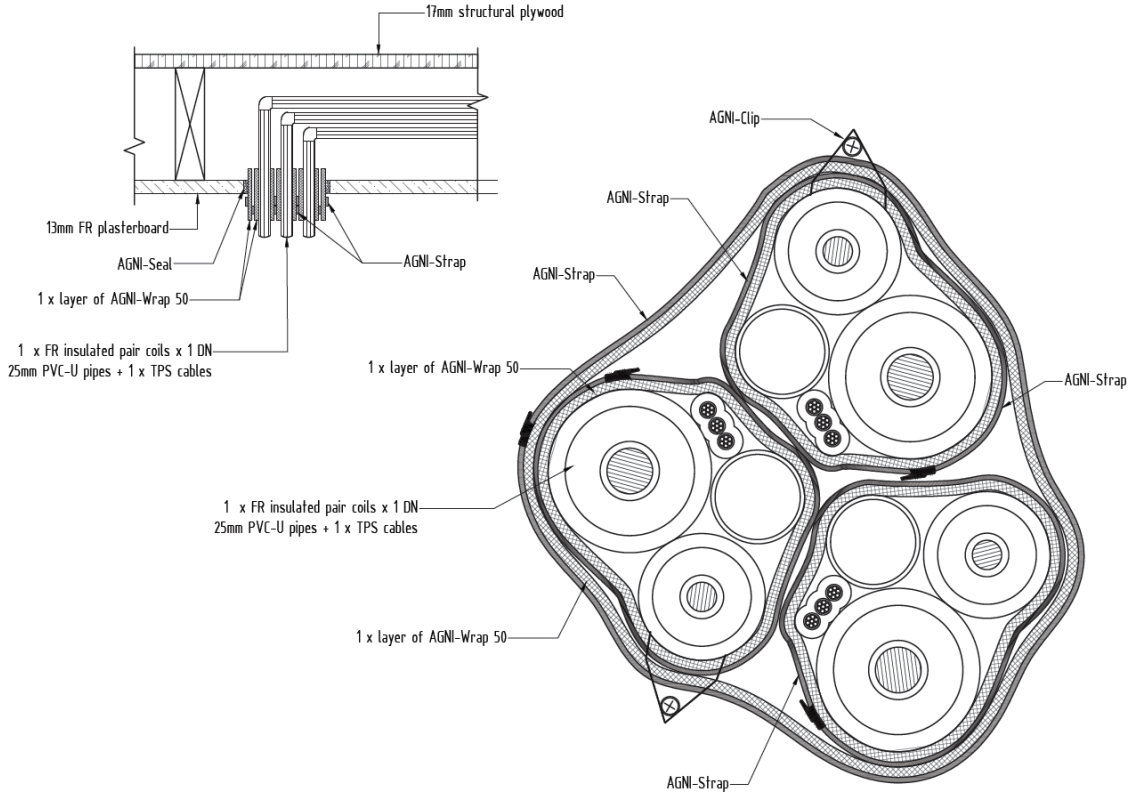

Figure 28 – Specimen I

Service penetration details	
Service	Three FR insulated Pair coil + three 25mm uPVC Pipe + three TPS cable
Service Support	Service was supported within the separating element cavity
Aperture Diameter	Min 160mm, Max 210mm
Annular Spacing	Min: 9mm, Max: 18mm

Local Fire-stopping system	
Application	Asymmetrical
System description	**Exposed Side:** One Pail Coil, one uPVC pipe, and one TPS cable were wrapped once with AGNI-Wrap 50 and secured with one AGNI-Strap to form separate A/C bundles. These bundles were then wrapped together with one revolution of AGNI-Wrap 50 and secured with stainless steel tie. The AGNI-Wrap 50 was positioned 25mm within the aperture and 25mm from the unexposed face. AGNI-Seal was used to fill the gap

	between the AGNI-Wrap and the plasterboard, aligning flush with both sides of the plasterboard. Two AGNI-Clips were installed from underneath to secure the installation. **Unexposed Side:** Specimen did not penetrate plywood lining.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 63 minutes
Insulation	No failure at 63 minutes

6. Photos

6.1 Photos before the test

Figure 31 – Exposed face prior to test commencement

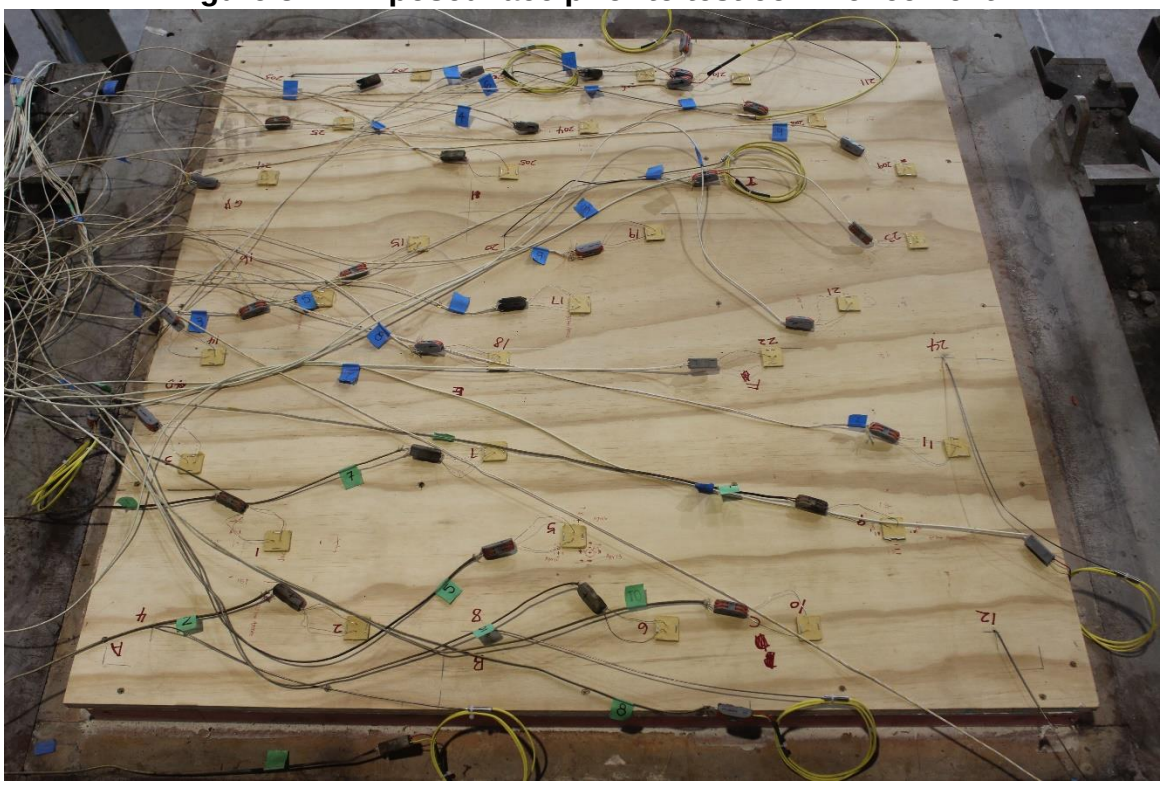

Figure 32 – Unexposed face prior to test commencement