Regulatory Information Report

RIRF24124

Fire resistance test for penetrations through a vertical separating element

Client:	Agnitek Pty Ltd
Test method:	AS1530.4-2014
Report Date:	18/12/2024
Test number:	PF24124

Passive Fire Inspection and Test Services Limited
1/113 Pavilion Drive, Mangere, Auckland 2022, New Zealand
www.firelab.co.nz
tests@firelab.co.nz

Table of Contents

1.1 Document revision schedule

Revision #	Date	Description
1	18/12/2024	Issued to Client

1.2 Signatories

Report	Name	Signature	Date
Prepared by:	Alexey Kokorin		18/12/2024
Authorised by:	Andrew Bain (Authorized signatory)		18/12/2024

ACCREDITED
TESTING LABORATORY

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

2. Report Summary

Service penetrations were tested passing through two layers of 13mm FR Plasterboard on each side of a 64mm (nominal) steel frame.

Sp #	Service	Actual Integrity (min)	Actual Insulation (min)	FRL
1-5	Two layers of 50mm AGNI-BOARD	124NF	124NF	-/120/120
1	60mm STEEL PIPE	124NF	124NF	-/120/120
2	32mm COPPER PIPE	124NF	124NF	-/120/120
3	10mm COPPER PIPE	124NF	102	-/120/90
4	100mm COPPER PIPE	124NF	61	-/120/60
5	150mm COPPER PIPE	124NF	69	-/120/60
6	60mm STEEL PIPE	124NF	124NF	-/120/120
7	32mm COPPER PIPE	124NF	124NF	-/120/120
8	10mm COPPER PIPE	124NF	121	-/120/120
9	100mm COPPER PIPE	124NF	124NF	-/120/120
10	150mm COPPER PIPE	124NF	90	-/120/90

NF – No failure during the test

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

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 services were capped on fire side only.

Testing date:

11/11/2024

Installation completion date:

04/11/2024

Termination of The Test:

The test was discontinued at 124 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 PF24124. 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	64mm (nominal) steel stud frame with two layers of 13mm FR Plasterboard fitted to each side of the frame
	Dimensions	Width / Height (W/H): 1200mm × 1200mm

Materials		
1.3	Item / Product Name	Steel Stud
	Dimensions	Width / Height (W/H): 64mm x 1200mm
	Installation	Used to construct studs and nogs in steel frame
1.4	Item / Product Name	Steel Track
	Dimensions	Width / Height (W/H): 64mm x 1200mm
	Installation	Used to construct top and bottom plates in steel frame
1.5	Item / Product Name	Self-Tapping Screw
	Dimensions	10g x 16mm
	Installation	Used to construct steel stud frame – secure studs, tracks and nogs together
1.6	Item / Product Name	FR Plasterboard
	Dimensions	Width / Height (W/H): 1200mm x 1200mm
		Thickness (T): 13mm
	Installation	Two layers applied to each face of the frame to create separating element
1.7	Item / Product Name	Self Tapping Screw
	Dimensions	41mm
	Installation	Used to secure FR plasterboard to steel frame
1.8	Item / Product Name	Plaster
	Dimensions	15L Pail
	Installation	Used to cover screw heads on plasterboard

4.2 Specimens

Services		
2.1	Item / Product Name	60mm STEEL PIPE
	Dimensions	Diameter (ID): 53.6mm
		Diameter (OD): 60.5mm
		Thickness (T): 3.45mm
2.2	Item / Product Name	32mm COPPER PIPE
	Dimensions	Diameter (ID): 31.1mm
		Diameter (OD): 34.2mm
		Thickness (T): 1.65mm
2.3	Item / Product Name	10mm COPPER PIPE
	Dimensions	Diameter (ID): 7.4mm
		Diameter (OD): 9.5mm
		Thickness (T): 1.55mm
2.4	Item / Product Name	100mm COPPER PIPE
	Dimensions	Diameter (ID): 101.5mm
		Diameter (OD): 104.8mm
		Thickness (T): 1.65mm
2.5	Item / Product Name	150mm COPPER PIPE
	Dimensions	Diameter (ID): 150.2mm
		Diameter (OD): 154.2mm
		Thickness (T): 2.0mm

Sealants		
3.1	Item / Product Name	AGNI-Seal
	Dimensions	600mL Sausage
	Installation	Used to seal around edge of separating element and applied to all specimens

Other		
3.1	Item / Product Name	AGNI-Board
	Dimensions	1000mm (width) x 400mm (height) x 50mm (thickness)
	Installation	Installed around specimens 1-5
3.2	Item / Product Name	AGNI-Shield
	Dimensions	300mm – 600mm wide
	Installation	Installed around specimens 1, 2, 4, 5, 6, 7, 9 and 10

Fixings		
4.1	Item / Product Name	AGNI-Strap
	Dimensions	Width / Length (W/L): 4.6mm x 450mm
	Installation	Used to secure AGNI-Shield

5. Test Results

6.1 Observations during the test

Time min	Test face	SP#	OBSERVATIONS/REMARKS
14	U	3	Sealant beginning to expand
24	U	2, 4, 7	Cracks becoming visible in the sealant around the pipes
42	U	4, 5, 10	Cracks visible in the sealant, smoke coming through the sealant cracks
50	U	10	Sealant beginning to expand
55	U	8	Sealant beginning to expand
64	U	4	Sealant beginning to expand
72	U	10	Sealant continuing to expand
124			**TEST DISCONTINUED**

NOTE: E – Exposed Face (inside furnace)

U – Unexposed Face (outside furnace)

SE – Separating element

6.2 AGNI-Board

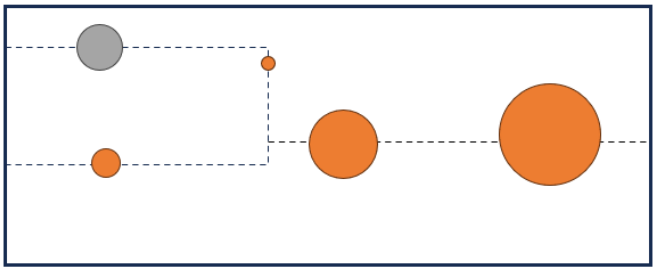


Figure 3 – example of the AGNI-Board cut to fit the exposed face of the aperture

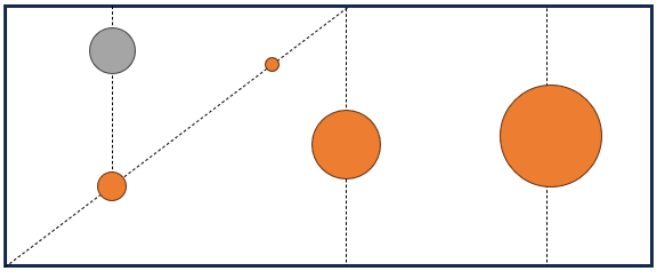


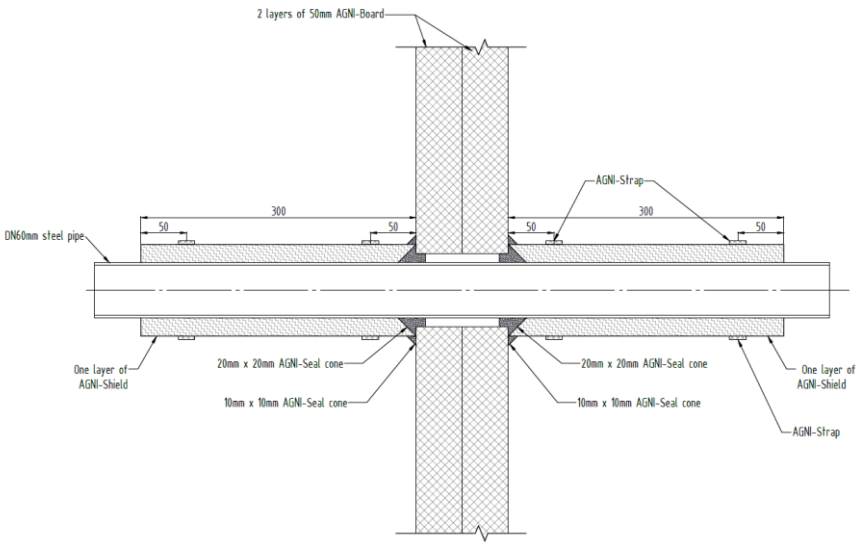
Figure 4 - example of the AGNI-Board cut to fit the unexposed face of the aperture

Service penetration details – main fire stopping system	
Service	AGNI-Board
Aperture Size	1000mm (width) x 400mm (height)

Local Fire-stopping system	
Application	Asymmetrical – cut with staggered joins
System description	1. The pipes were installed into the aperture. 2. AGNI-Board was cut to fit the aperture, holes were cut to fit around the pipes. 3. All edges were coated with AGNI-coat. 4. 10mm deep (nominal) AGNI-Seal sealant was applied around the pipes to fill the annular gaps, finished flush with the AGNI-Board face. 5. 10mm (nominal) AGNI-Seal was applied to seal between the AGNI-Board and the separating element.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 124 minutes
Insulation	No failure at 124 minutes

6.3 Specimen 1

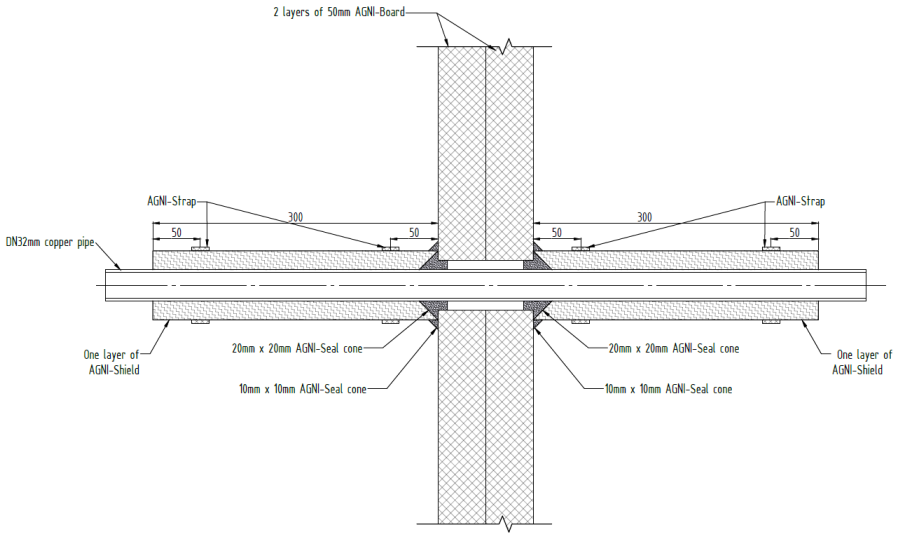


Service penetration details	
Service	60mm STEEL PIPE
Aperture Size	64.7mm
Annular Spacing	Min: 2mm, Max: 4mm

Local Fire-stopping system	
Application	Symmetrical – installed through the AGNI-Board panel
System description	1. A 10mm deep AGNI-Seal was applied in the annular gap between the pips and AGNI-Board. 2. A 20mm x 20mm AGNI-Seal sealant cone was applied around the pipe. 3. One layer of 300mm wide AGNI-Shield was wrapped around the pipe with 100mm overlap and pushed onto the sealant cone. 4. The AGNI-Shield was secured using two AGNI-Straps, 50mm from each end of the AGNI-Shield. 5. 10mm (nominal) AGNI-Seal was applied to seal between the AGNI-Shield and the AGNI-Board.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 124 minutes
Insulation	No failure at 124 minutes

6.4 Specimen 2

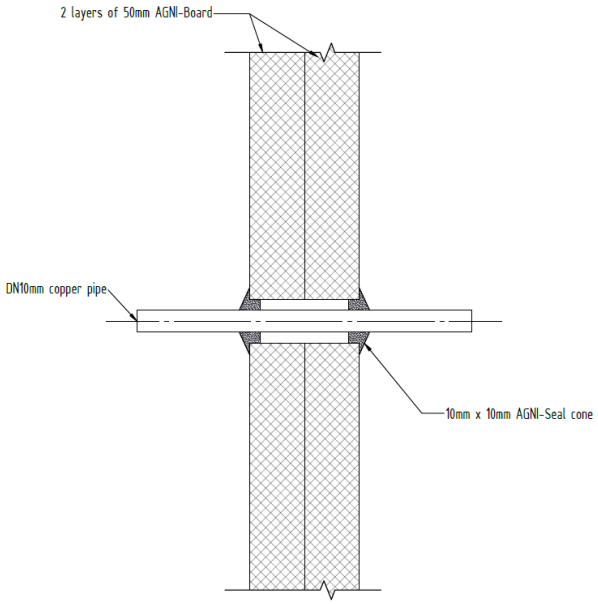


Service penetration details	
Service	32mm COPPER PIPE
Aperture Size	44.7mm
Annular Spacing	Min: 4.0mm, Max: 6.5mm

Local Fire-stopping system	
Application	Symmetrical – installed through the AGNI-Board panel
System description	1. A 10mm deep AGNI-Seal was applied in the annular gap between the pips and AGNI-Board. 2. A 20mm x 20mm AGNI-Seal sealant cone was applied around the pipe. 3. One layer of 300mm wide AGNI-Shield was wrapped around the pipe with 100mm overlap and pushed onto the sealant cone. 4. The AGNI-Shield was secured using two AGNI-Straps, 50mm from each end of the AGNI-Shield. 5. 10mm (nominal) AGNI-Seal was applied to seal between the AGNI-Shield and the AGNI-Board.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 124 minutes
Insulation	No failure at 124 minutes

6.5 Specimen 3

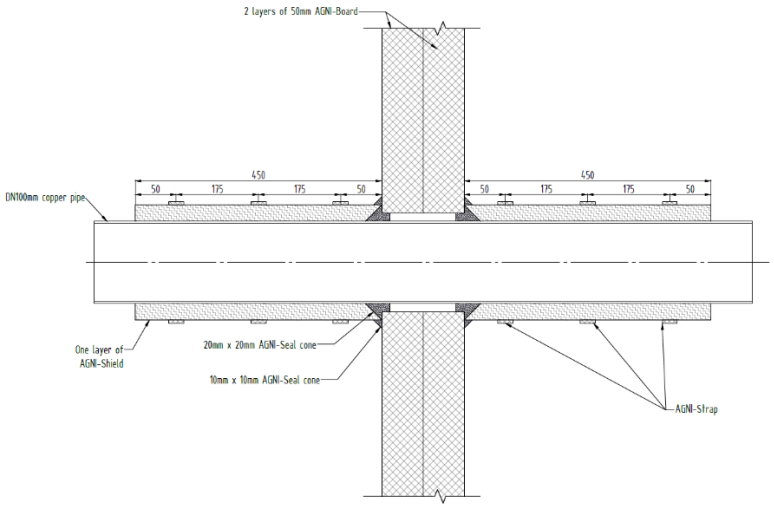


Service penetration details	
Service	10mm COPPER PIPE
Aperture Size	20.4mm
Annular Spacing	Min: 5.0mm, Max: 5.9mm

Local Fire-stopping system	
Application	Symmetrical – installed through the AGNI-Board panel
System description	1. A 10mm deep AGNI-Seal was applied in the annular gap between the pips and AGNI-Board. 2. A 10mm x 10mm AGNI-Seal sealant cone was applied around the pipe, sealing between the AGNI-Board and the service.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 124 minutes
Insulation	102 minutes

6.6 Specimen 4

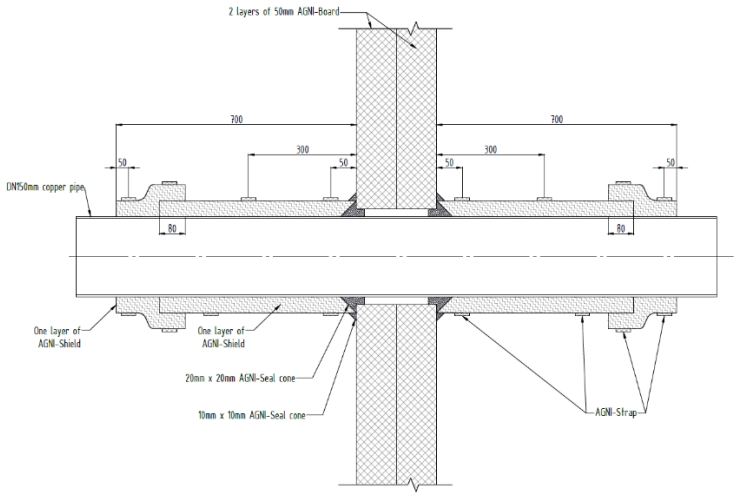


Service penetration details	
Service	100mm COPPER PIPE
Aperture Size	108.1mm
Annular Spacing	Min: 1.0mm, Max: 2.3mm

Local Fire-stopping system	
Application	Symmetrical – installed through the AGNI-Board panel
System description	1. A 10mm deep AGNI-Seal was applied in the annular gap between the pips and AGNI-Board. 2. A 20mm x 20mm AGNI-Seal sealant cone was applied around the pipe. 3. One layer of 600mm wide AGNI-Shield was wrapped around the pipe with 100mm overlap and pushed onto the sealant cone. 4. The AGNI-Shield was secured using three AGNI-Straps, 50mm from each end and in the centre of the AGNI-Shield. 5. 10mm (nominal) AGNI-Seal was applied to seal between the AGNI-Shield and the AGNI-Board.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 124 minutes
Insulation	61 minutes

6.7 Specimen 5

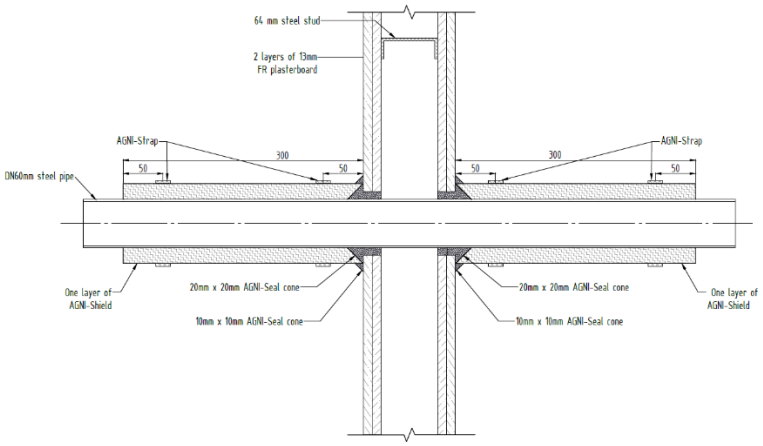


Service penetration details	
Service	150mm COPPER PIPE
Aperture Size	157.3mm
Annular Spacing	Min: 0.5mm, Max: 2.6mm

Local Fire-stopping system	
Application	Symmetrical – installed through the AGNI-Board panel
System description	1. A 10mm deep AGNI-Seal was applied in the annular gap between the pips and AGNI-Board. 2. A 20mm x 20mm AGNI-Seal sealant cone was applied around the pipe. 3. One layer of 700mm wide AGNI-Shield was wrapped around the pipe having the transvers joint with a 100mm overlap. 4. The AGNI-Shield was secured using four AGNI-Straps, 50mm from each end, 300mm from the separating element and at the overlaid section of the AGNI-Shield. 5. 10mm (nominal) AGNI-Seal was applied to seal between the AGNI-Shield and the AGNI-Board.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 124 minutes
Insulation	69 minutes

5.8 Specimen 6

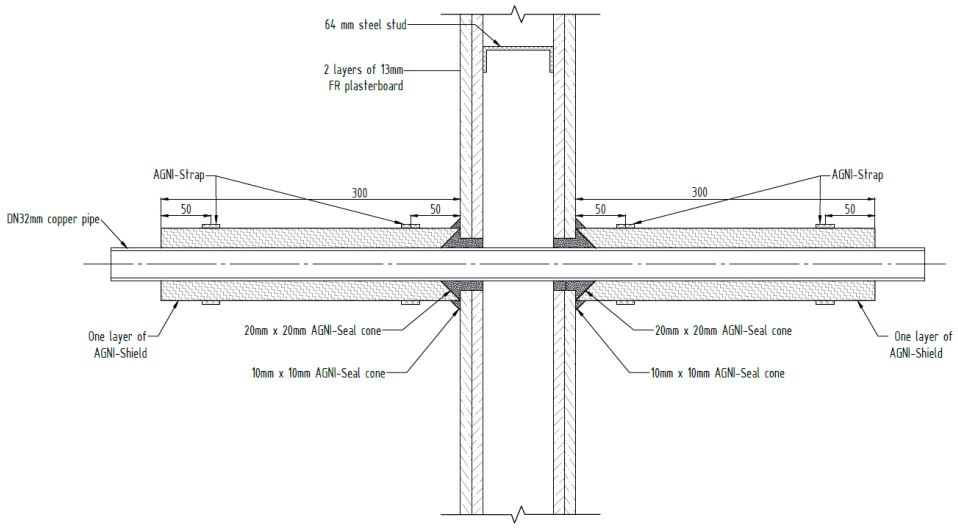


Service penetration details	
Service	60mm STEEL PIPE
Service Support	Exposed side: Multistrut at 430mm Unexposed side: Multistrut at 570mm
Aperture Size	70.8mm
Annular Spacing	Min: 4.2mm, Max: 6.1mm

Local Fire-stopping system	
Application	Symmetrical – applied to both faces of the separating element
System description	1. An AGNI-Seal was applied full depth of plasterboard in the annular gap between the pips and plasterboard. 2. A 20mm x 20mm AGNI-Seal sealant cone was applied around the pipe. 3. One layer of 300mm wide AGNI-Shield was wrapped around the pipe with 100mm overlap and pushed onto the sealant cone. 4. The AGNI-Shield was secured using two AGNI-Straps, 50mm from each end of the AGNI-Shield. 5. 10mm (nominal) AGNI-Seal was applied to seal between the AGNI-Shield and the separating element.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 124 minutes
Insulation	No failure at 124 minutes

5.9 Specimen 7

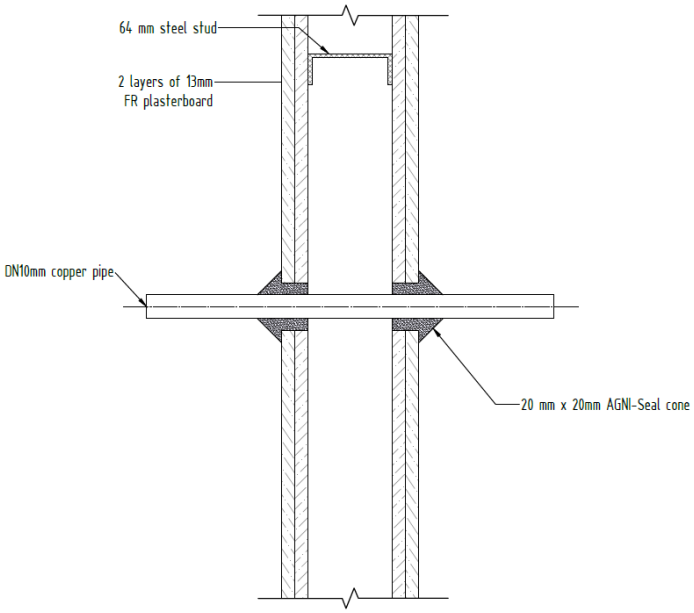


Service penetration details	
Service	32mm COPPER PIPE
Aperture Size	43.4mm
Annular Spacing	Min: 3.6mm, Max: 5.6mm

Local Fire-stopping system	
Application	Symmetrical – applied to both faces of the separating element
System description	1. An AGNI-Seal was applied full depth of plasterboard in the annular gap between the pips and plasterboard. 2. A 20mm x 20mm AGNI-Seal sealant cone was applied around the pipe. 3. One layer of 300mm wide AGNI-Shield was wrapped around the pipe with 100mm overlap and pushed onto the sealant cone. 4. The AGNI-Shield was secured using two AGNI-Straps, 50mm from each end of the AGNI-Shield. 5. 10mm (nominal) AGNI-Seal was applied to seal between the AGNI-Shield and the separating element.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 124 minutes
Insulation	No failure at 124 minutes

5.10 Specimen 8

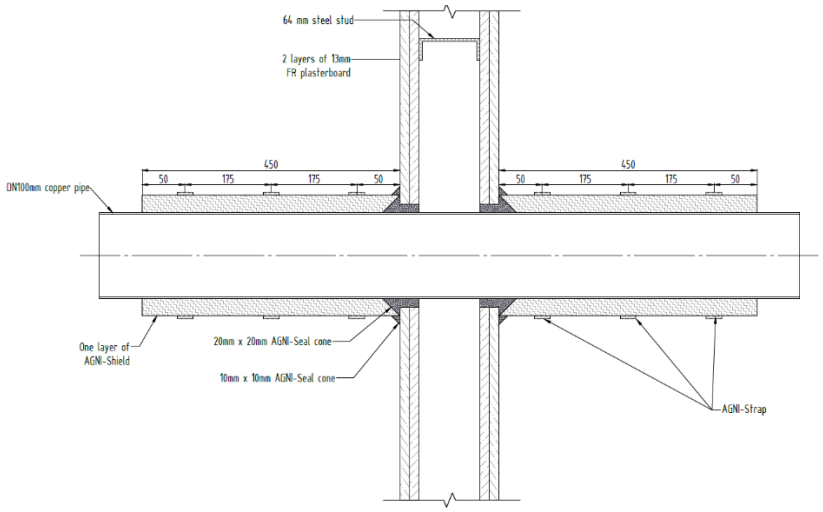


Service penetration details	
Service	10mm COPPER PIPE
Aperture Size	22.9mm
Annular Spacing	Min: 5.0mm, Max: 8.4mm

Local Fire-stopping system	
Application	Symmetrical – applied to both faces of the separating element
System description	1. An AGNI-Seal was applied full depth of plasterboard in the annular gap between the pips and plasterboard. 2. A 20mm x 20mm AGNI-Seal sealant cone was applied around the pipe, sealing between the AGNI-Board and the service.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 124 minutes
Insulation	121 minutes

5.11 Specimen 9

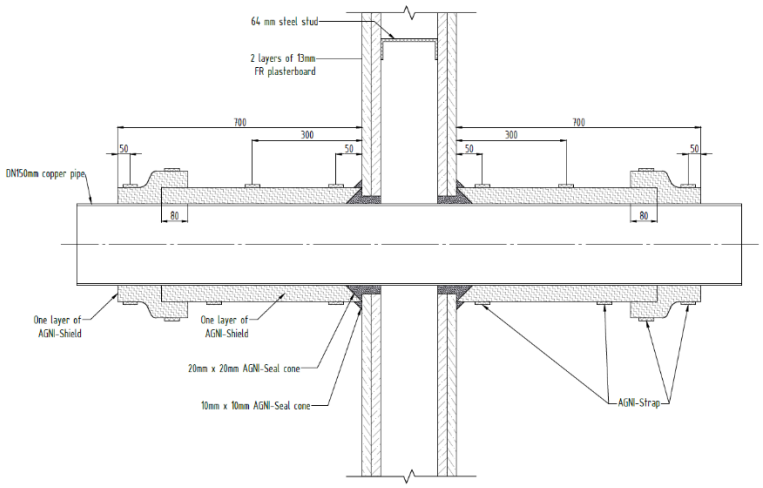


Service penetration details	
Service	100mm COPPER PIPE
Aperture Size	110.4mm
Annular Spacing	Min: 2.0mm, Max: 3.6mm

Local Fire-stopping system	
Application	Symmetrical – applied to both faces of the separating element
System description	1. An AGNI-Seal was applied full depth of plasterboard in the annular gap between the pips and plasterboard. 2. A 20mm x 20mm AGNI-Seal sealant cone was applied around the pipe. 3. One layer of 600mm wide AGNI-Shield was wrapped around the pipe with 100mm overlap and pushed onto the sealant cone. 4. The AGNI-Shield was secured using two AGNI-Straps, 50mm from each end of the AGNI-Shield and one in the middle. 5. 10mm (nominal) AGNI-Seal was applied to seal between the AGNI-Shield and the separating element.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 124 minutes
Insulation	No failure at 124 minutes

6.12 Specimen 10



Service penetration details	
Service	150mm COPPER PIPE
Aperture Size	161.0mm
Annular Spacing	Min: 2.8mm, Max: 4.0mm

Local Fire-stopping system	
Application	Symmetrical – applied to both faces of the separating element
System description	1. An AGNI-Seal was applied full depth of plasterboard in the annular gap between the pips and plasterboard. 2. A 20mm x 20mm AGNI-Seal sealant cone was applied around the pipe. 3. One layer of 700mm wide AGNI-Shield was wrapped around the pipe having a transvers joint with a 100mm overlap. 4. AGNI-Shield was secured using four AGNI-Straps, 50mm from each end, 300mm from the separating element and at the overlaid section of the AGNI-Shield. 5. 10mm (nominal) AGNI-Seal was applied to seal between the AGNI-Shield and the separating element.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 124 minutes
Insulation	90 minutes

6. Photos

7.1 Photos before the test

Figure 16 – Unexposed face prior to test commencement