Regulatory Information Report

RIRF24100

Fire resistance test for penetrations through a vertical separating element

Client:	Agnitek Pty Ltd
Test method:	AS1530.4-2014
Report Date:	10/10/2024
Test number:	PF24100

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

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1.1 Document revision schedule

Revision #	Date	Description
1	27/09/2024	Issued to Client
2	10/10/2024	Specimen 6 drawing is corrected

1.2 Signatories

Report	Name	Signature	Date
Prepared by:	Alexey Kokorin		10/10/2024
Authorised by:	Andrew Bain (Authorized signatory)		10/10/2024

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 a vertical separating element consisting of two layers of 13mm FR Plasterboard on both sides, fitted to a 64mm (nominal) steel frame.

Specimen #	Service	Actual Integrity (min)	Actual Insulation (min)	FRL
1	DN80 PVC-U PIPE	123NF	123NF	-/120/120
2	DN16 PEX PIPE	123NF	123NF	-/120/120
3	DN20 PEX/AL/PEX PIPE	123NF	123NF	-/120/120
4	DN100 PVC-U PIPE	123NF	123NF	-/120/120
5	DN65 PVC-U PIPE	123NF	123NF	-/120/120
6	DN50 PVC-U PIPE	123NF	123NF	-/120/120
7	DN100 PVC-U PIPE	123NF	123NF	-/120/120
8	50mm Flexible Conduit – filled 9 x TPS Cables	123NF	121	-/120/120
9	50mm Flexible Conduit - empty	123NF	123NF	-/120/120

NF – No Failure

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

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. Pipes were capped on the exposed side only.

Testing date:

02/09/2024

Installation completion date:

27/08/2024

Termination of The Test:

The test was discontinued at 123 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 PF24100. 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, 0.5BMT
	Installation	Used to construct studs in steel frame and nogs
1.4	Item / Product Name	Steel Track
	Dimensions	Width / Height (W/H): 64mm x 1200mm, 0.5BMT
	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
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 GIB Fyreline to steel frame
1.8	Item / Product Name	Plaster
	Dimensions	5L Pail
	Installation	Used to cover screw heads on plasterboard

4.2 Specimens

Services		
2.1	Item / Product Name	DN80 PVC-U PIPE
	Dimensions	Diameter (OD): 82.5mm
		Diameter (ID): 75.5mm
		Thickness (T): 3.5mm
2.2	Item / Product Name	DN16 PEX PIPE
	Dimensions	Inner Diameter (ID): 11.5mm
		Outer Diameter (OD): 16.5mm
		Thickness (T): 2.5mm
2.3	Item / Product Name	PE-X/AL/PE-X DN20 PIPE
	Dimensions	Inner Diameter (ID):15mm
		Outer Diameter (OD): 20mm
		Thickness (T): 2.5mm
2.4	Item / Product Name	DN100 PVC-U PIPE
	Dimensions	Diameter (ID): 104mm
		Diameter (OD): 110mm
		Thickness (T): 3mm
2.5	Item / Product Name	DN65 PVC-U PIPE
	Dimensions	Inner Diameter (ID): 63mm
		Outer Diameter (OD): 69mm
		Thickness (T): 3mm
2.6	Item / Product Name	DN50 PVC-U PIPE
	Dimensions	Inner Diameter (ID): 50mm
		Outer Diameter (OD): 56mm
		Thickness (T): 3mm
2.7	Item / Product Name	FLEXIBLE CONDUIT
	Dimensions	Inner Diameter (ID): 40mm
		Outer Diameter (OD): 50mm
		Thickness (T): 5mm
	Item / Product Name	ELECTRICAL CABLE 450/750V 2C + E

2.8	Cable Dimensions	Width x Depth (W/D): 14mm x 6.5mm
	Core Dimensions	Overall Diameter (OD): 4mm
		Wire Diameter: 0.85mm
	Earth Dimensions	Overall Diameter (OD): 3.2mm
		Wire Diameter: 0.64mm

Sealants		
3.1	Item / Product Name	AGNI-Seal
	Dimensions	600mL
	Installation	Between separating element and AGNI-Wrap/AGNI-Sleeve, between AGNI-Wrap/AGNI-Sleeve and pipe

Intumescent		
4.1	Item / Product Name	AGNI-Wrap
	Dimensions	Width (W): 50mm
		Thickness (T): 3.5mm
	Installation	Installed around services
4.2	Item / Product Name	AGNI-Sleeve
	Dimensions	Width (W): 140mm
		Thickness (T): 3.5mm
	Installation	Installed around service in cavity seven

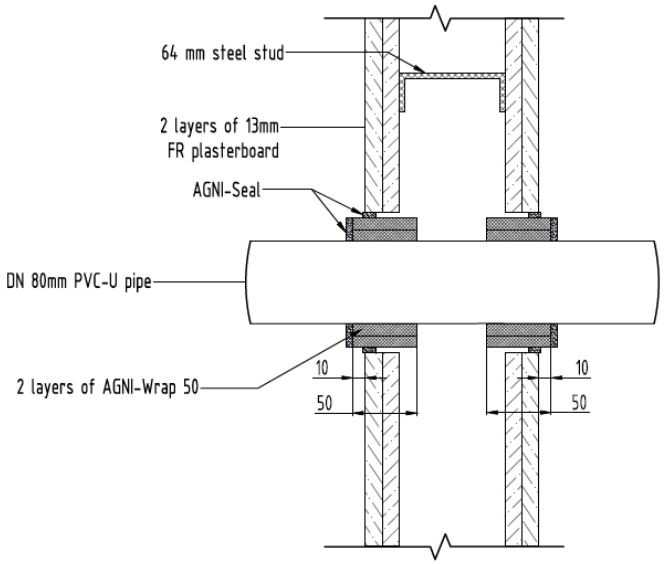
6. Test Results

6.1 Observations during the test

Time min	Test face	SP#	OBSERVATIONS/REMARKS
5	E	ALL	Pipes fallen away from SE
7	U	4	Pipe distorting, gap between pipe and sealant
10	U	7	Pipe distorting, smoke coming from gap between pipe and SE
10	U	1	Sealant cracking around pipe
13	U	1	Wrap pushing out from aperture
19	U	9	Sealant cracked around pipe, smoke coming from gap between pipe and SE
24	U	8	Sealant cracked around pipe, smoke coming from gap between pipe and SE
30	U	3	Sealant expanding
59	U	1	Discolouration of SE above pipe
64	U	7, 9	Intumescent expanded as seen through the gap between the pipe and SE
92	U	5, 6	Sealant cracking, smoke coming from gap between pipe and SE
116	U	6, 7, 8	Wrap partially expanded
123			**TEST DISCONTINUED**

NOTE: **E - Exposed Face (inside furnace)**
U - Unexposed Face (outside furnace)
SE - Separating element

6.2 Specimen 1

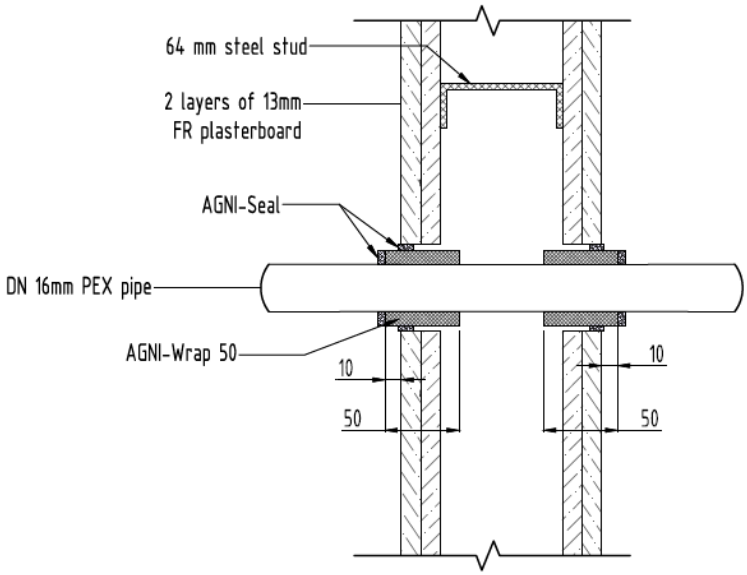


Service penetration details	
Service	DN80 PVC-U DWV PIPE
Aperture Diameter	102.5mm
Annular Spacing	Min: 8mm Max: 12mm

Local Fire-stopping system	
Application	Symmetrical – applied to both faces of the separating element
System description	The following procedure was followed: 1. Two revolutions of 3.5mm thick AGNI-Wrap was inserted 40mm into aperture leaving 10mm past the separating element. 2. A bead of AGNI-Seal (5mm nominal) was applied between the separating element and AGNI-Wrap 3. The gap between the AGNI-Wrap and the pipe was filled with AGNI-Seal, finished flush with the edge of the AGNI-Wrap

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 123 minutes
Insulation	No failure at 123 minutes

6.3 Specimen 2

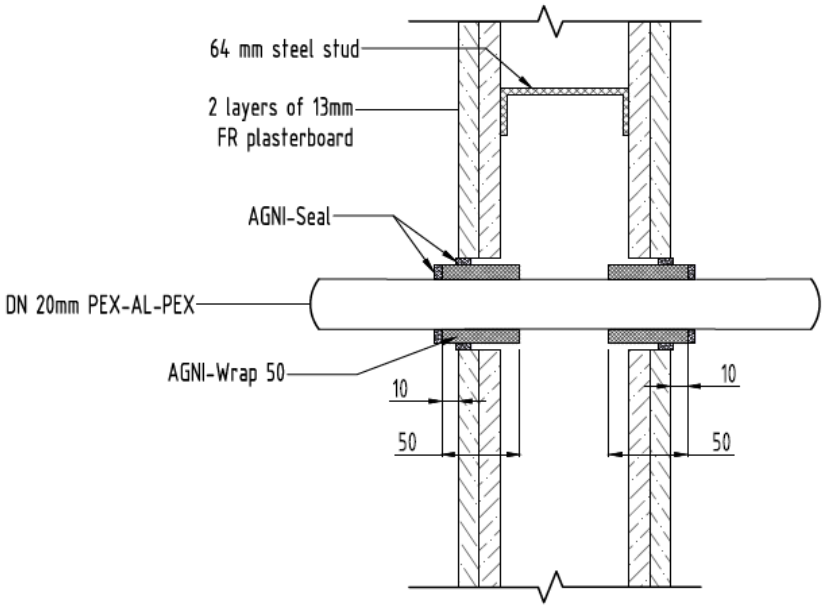


Service penetration details	
Service	DN16 PEX PIPE
Aperture Diameter	36mm
Annular Spacing	Min: 4.5mm Max: 15mm

Local Fire-stopping system	
Application	Symmetrical – applied to both faces of the separating element
System description	The following procedure was followed: 1. One revolution of 3.5mm thick AGNI-Wrap was inserted 40mm into aperture leaving 10mm past the separating element. 2. A bead of AGNI-Seal (5mm nominal) was applied between the separating element and AGNI-Wrap 3. The gap between the AGNI-Wrap and the pipe was filled with AGNI-Seal, finished flush with the edge of the AGNI-Wrap

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 123 minutes
Insulation	No failure at 123 minutes

6.4 Specimen 3

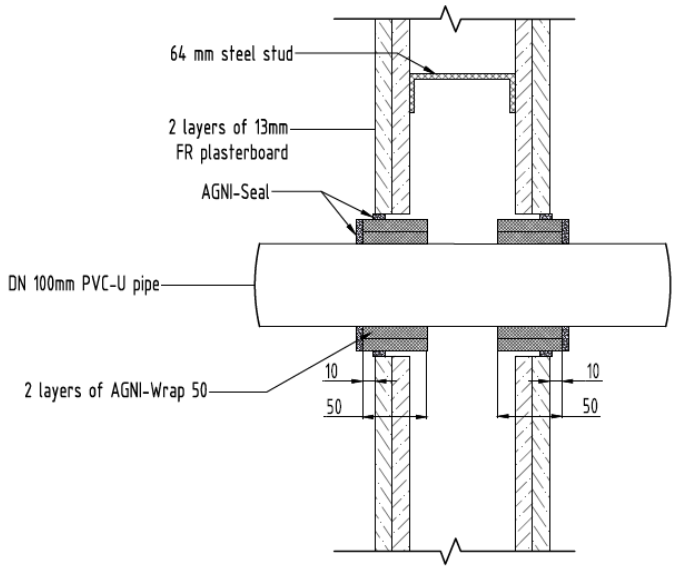


Service penetration details	
Service	PE-X/AL/PE-X DN20 PIPE
Aperture Diameter	39mm
Annular Spacing	Min: 6mm Max: 13mm

Local Fire-stopping system	
Application	Symmetrical – applied to both faces of the separating element
System description	The following procedure was followed: 1. One revolution of 3.5mm thick AGNI-Wrap was inserted 40mm into aperture leaving 10mm past the separating element. 2. A bead of AGNI-Seal (5mm nominal) was applied between the separating element and AGNI-Wrap 3. The gap between the AGNI-Wrap and the pipe was filled with AGNI-Seal, finished flush with the edge of the AGNI-Wrap

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 123 minutes
Insulation	No failure at 123 minutes

6.5 Specimen 4

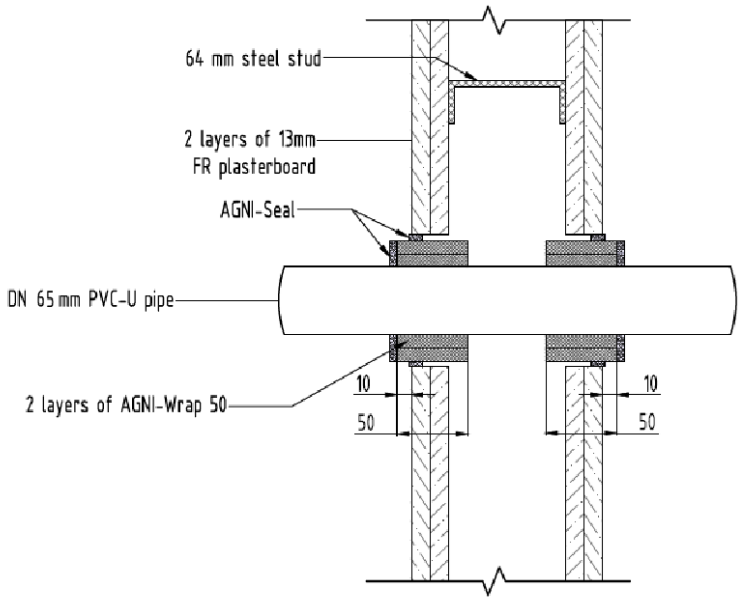


Service penetration details	
Service	DN100 PVC-U PIPE
Aperture Diameter	125mm
Annular Spacing	Min: 7mm Max: 8mm

Local Fire-stopping system	
Application	Symmetrical – applied to both faces of the separating element
System description	The following procedure was followed: 1. Two revolutions of 3.5mm thick AGNI-Wrap was inserted 40mm into aperture leaving 10mm past the separating element. 2. A bead of AGNI-Seal (5mm nominal) was applied between the separating element and AGNI-Wrap 3. The gap between the AGNI-Wrap and the pipe was filled with AGNI-Seal, finished flush with the edge of the AGNI-Wrap

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 123 minutes
Insulation	No failure at 123 minutes

6.6 Specimen 5

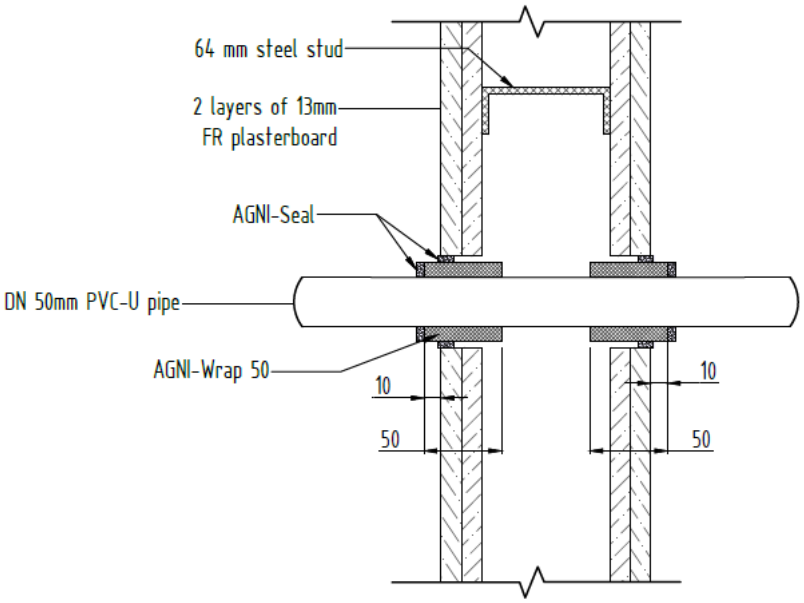


Service penetration details	
Service	DN65 PVC-U PIPE
Aperture Diameter	86mm
Annular Spacing	Min: 8mm Max: 9mm

Local Fire-stopping system	
Application	Symmetrical – applied to both faces of the separating element
System description	The following procedure was followed: 1. Two revolutions of 3.5mm thick AGNI-Wrap was inserted 40mm into aperture leaving 10mm past the separating element. 2. A bead of AGNI-Seal (5mm nominal) was applied between the separating element and AGNI-Wrap 3. The gap between the AGNI-Wrap and the pipe was filled with AGNI-Seal, finished flush with the edge of the AGNI-Wrap

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 123 minutes
Insulation	No failure at 123 minutes

6.7 Specimen 6

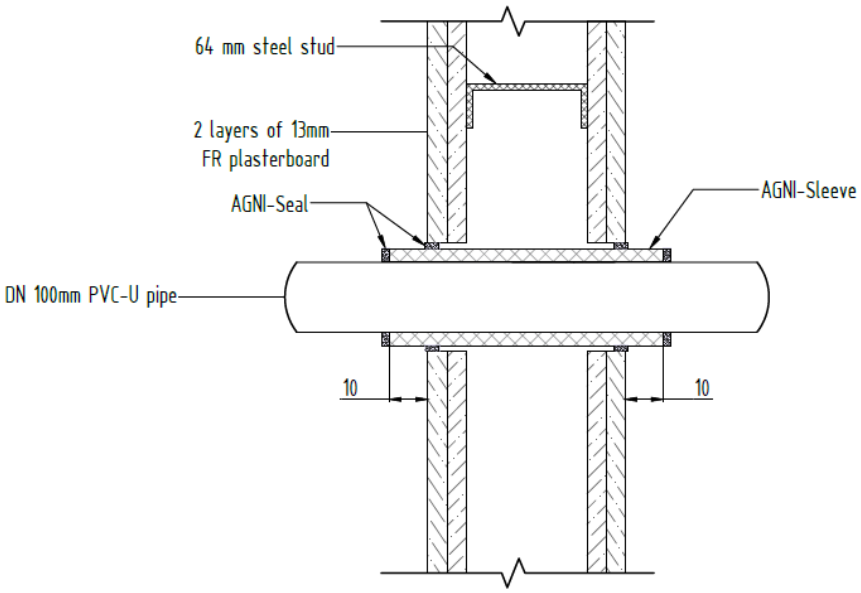


Service penetration details	
Service	DN50 PVC-U PIPE
Aperture Diameter	70mm
Annular Spacing	Min: 5mm Max: 9mm

Local Fire-stopping system	
Application	Symmetrical – applied to both faces of the separating element
System description	The following procedure was followed: 1. One revolution of 3.5mm thick AGNI-Wrap was inserted 40mm into aperture leaving 10mm past the separating element. 2. A bead of AGNI-Seal (5mm nominal) was applied between the separating element and AGNI-Wrap 3. The gap between the AGNI-Wrap and the pipe was filled with AGNI-Seal, finished flush with the edge of the AGNI-Wrap

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 123 minutes
Insulation	No failure at 123 minutes

6.8 Specimen 7

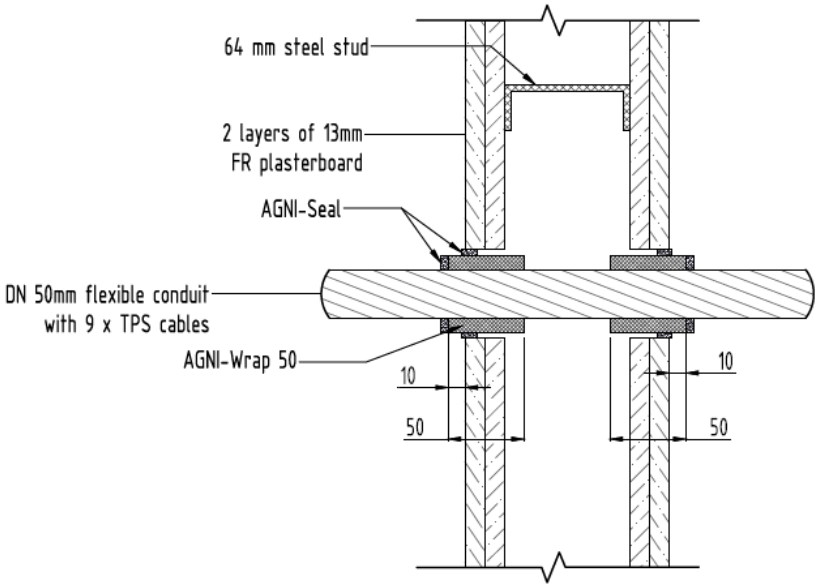


Service penetration details	
Service	DN100 PVC-U PIPE
Aperture Diameter	125mm
Annular Spacing	Min: 6.5mm Max: 8.5mm

Local Fire-stopping system	
Application	Symmetrical – applied passing through separating element
System description	The following procedure was followed: 1. One revolution of 3.5mm thick, 140mm wide AGNI-Sleeve was inserted into aperture finishing 10mm past the separating element on both faces. 2. A bead of AGNI-Seal (5mm nominal) was applied between the separating element and AGNI-Sleeve 3. The gap between the AGNI-Sleeve and the pipe was filled with AGNI-Seal, finished flush with the edge of the AGNI-Sleeve

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 123 minutes
Insulation	No failure at 123 minutes

6.9 Specimen 8

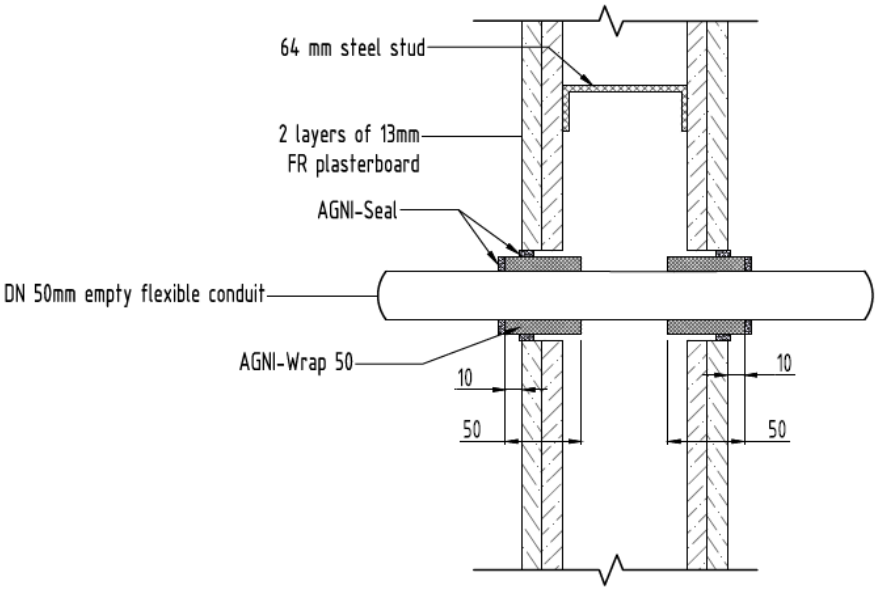


Service penetration details	
Service	50mm FLEXIBLE CONDUIT – filled 9 x TPS Cables
Aperture Diameter	69mm
Annular Spacing	Min: 8mm Max: 11mm

Local Fire-stopping system	
Application	Symmetrical – applied to both faces of the separating element
System description	The following procedure was followed: 1. One revolution of 3.5mm thick AGNI-Wrap was inserted 40mm into aperture leaving 10mm past the separating element. 2. A bead of AGNI-Seal (5mm nominal) was applied between the separating element and AGNI-Wrap 3. The gap between the AGNI-Wrap and the pipe was filled with AGNI-Seal, finished flush with the edge of the AGNI-Wrap

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 123 minutes
Insulation	121 minutes

6.10 Specimen 9



Service penetration details	
Service	50mm FLEXIBLE CONDUIT – empty
Aperture Diameter	69mm
Annular Spacing	Min: 9mm Max: 10mm

Local Fire-stopping system	
Application	Symmetrical – applied to both faces of the separating element
System description	The following procedure was followed: 1. One revolution of 3.5mm thick AGNI-Wrap was inserted 40mm into aperture leaving 10mm past the separating element. 2. A bead of AGNI-Seal (5mm nominal) was applied between the separating element and AGNI-Wrap 3. The gap between the AGNI-Wrap and the pipe was filled with AGNI-Seal, finished flush with the edge of the AGNI-Wrap

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 123 minutes
Insulation	No failure at 123 minutes

7. Photos

7.1 Photos before the test

Figure 1 – Exposed face prior to test commencement

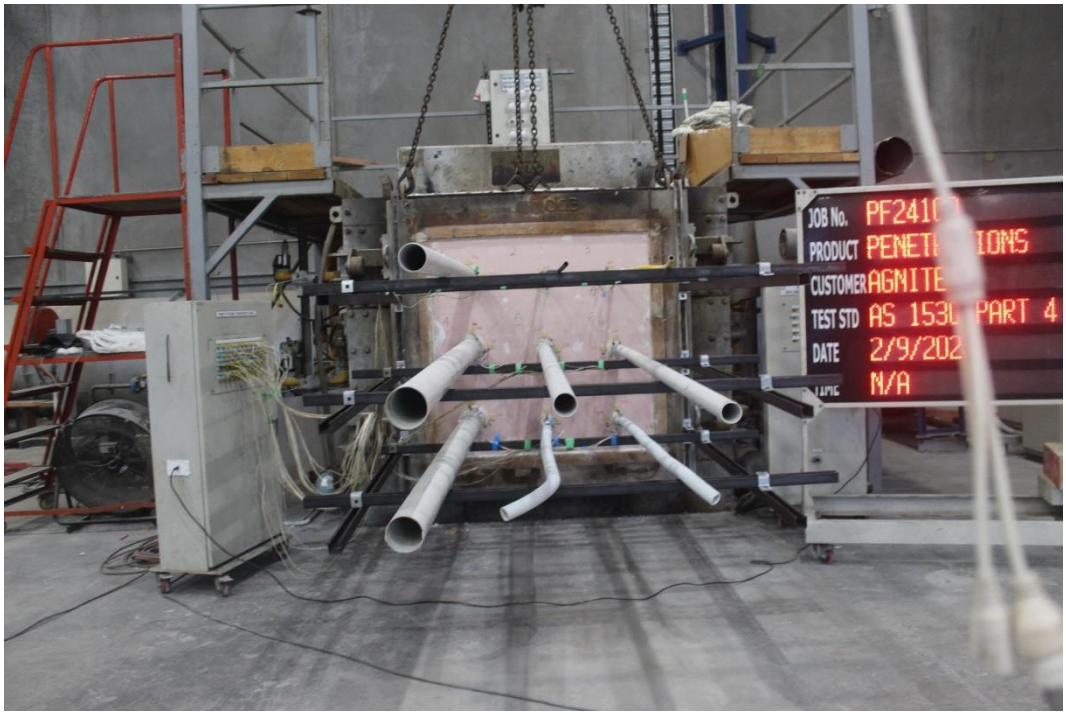


Figure 2 – Unexposed face prior to test commencement