

Regulatory Information Report

RIRF24110

**Fire resistance test for penetrations through a
vertical separating element**

Client: Agnitek Pty Ltd

Test method: AS1530.4-2014

Report Date: 15/11/2024

Test number: PF24110



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1.1 Document revision schedule

Revision #	Date	Description
1	15/11/2024	Issued to Client

1.2 Signatories

Report	Name	Signature	Date
Prepared by:	Alexey Kokorin		15/11/2024
Authorised by:	Andrew Bain (Authorized signatory)		15/11/2024



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



2. Report Summary

Service penetration was tested passing through two layers of 13mm FR Plasterboard on each side of a 64mm (nominal) steel frame. Service are capped of fire side only.

Specimen #	Service	Actual Integrity (min)	Actual Insulation (min)	FRL
1	AGNI-Box – filled	123NF	36	-/120/30
1a	40mm Steel Pipe	123NF	107	-
1b	60mm Steel Pipe	123NF	73	-
1c	25mm Copper Pipe	123NF	60	-
1d	50mm Copper Pipe	123NF	36	-
2	AGNI-Box – filled	123NF	92	-/120/90
2a	25mm Aluminium Cable	123NF	100	-
2b	30mm Aluminium Cable	123NF	101	-
2c	50mm Aluminium Cable	123NF	97	-
2d	25mm Flexible Conduit (filled)	123NF	92	-
3	AGNI-Box – filled	123NF	123NF	-/120/120
3a	50mm Flexible Conduit (empty)	123NF	123NF	-
3b	50mm Flexible Conduit (filled)	123NF	123NF	-
3c	50mm PVC Pipe	123NF	123NF	-
3d	25mm Flexible Conduit (empty)	123NF	123NF	-
5	AGNI-Box – filled	123NF	123NF	-/120/120
5a	1 x XLPE single-core cable	123NF	123NF	-
5b	1 x APEC 2023 X-90 Electra Cable	123NF	123NF	-
5c	3 x Electra 2018 V-90 Electric Cable	123NF	123NF	-
5d	8 x Electra Cable 2023 X-90	123NF	123NF	-
6	AGNI-Box – filled	123NF	93	-/120/90
6a	1 x XLPE single-core cable	123NF	93	-
6b	1 x APEC 2023 X-90 Electra Cable	123NF	106	-
6c	3 x Electra 2018 V-90 Electric Cable	123NF	123NF	-
6d	8 x Electra Cable 2023 X-90	123NF	114	-

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

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.

Testing date:

18/10/2024

Installation completion date:

14/10/2024

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 PF24110. 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 x 1200mm

Materials		
1.3	Item / Product Name	Steel Stud
	Dimensions	Width / Height (W/H): 64mm x 1200mm
	Installation	Used to construct studs 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 and nogs
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 GIB Fyreline to 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	AGNI-Box
	Dimensions	Width / Height (W/H): 300mm x 151mm (OD)
	Construction	The AGNI-Box is constructed using 0.9bmt steel measuring 300mm (width) x 151mm (height) x 200mm (depth). A 50mm recessed steel lip surrounds all four side of both faces of the AGNI-Box and holds two layers of 3.5mm intumescent material that are cut to size. The recessed space was fitted with 50mm thick foam to the both faces of the AGNI-Box.
2.2	Item / Product Name	40mm STEEL PIPE
	Dimensions	Diameter (OD): 42.6mm
		Diameter (ID): 35.8mm
		Thickness (T): 3.4mm
2.3	Item / Product Name	60mm STEEL PIPE
	Dimensions	Diameter (OD): 60.5mm
		Diameter (ID): 53.6mm
		Thickness (T): 3.45mm
2.4	Item / Product Name	KEMBLER AS1432 SDR7.4 DN32B
	Dimensions	Diameter (OD): 27.5mm
		Diameter (ID): 24.5mm
		Thickness (T): 1.5mm
2.5	Item / Product Name	SDR7.4 DN50 copper pipe
	Dimensions	Diameter (OD): 53.5mm
		Diameter (ID): 50.5mm
		Thickness (T): 1.5mm
2.6	Item / Product Name	MULTICORE ALUMINIUM cable 4 CORE + EARTH CABLE
	Cable	Diameter (OD): 28.2mm (nominal)
	Conductors	Diameter (OD): 6.9mm (nominal)

		Conductor fine wire EC1350 aluminium, Class 5, to IEC 60228 and AS/NZS 1125
2.7	Item / Product Name	MULTICORE ALUMINIUM Cable 4 CORE + EARTH CABLE
	Cable	Diameter (OD): 29.8mm (nominal)
		Low friction E-RUBBER S-20 thermoplastic, elastomeric
Conductors	Diameter (OD): 7.4mm (nominal)	
2.8	Item / Product Name	X-90 ELECTRIC CABLE 0.6/1kV 4CX185 SQMM ALUMINIUM CABLE
	Cable	Diameter (OD): 48.9mm
	Conductor	Aluminium 1350, compacted Stranded, Sector-shaped, AS / NZS 1125
2.9	Item / Product Name	25mm FLEXIBLE CONDUIT
	Dimensions	Diameter (OD): 19.5mm
		Diameter (ID): 25mm
		Thickness (T): 2.75mm
2.10	Item / Product Name	ELECTRICAL CABLE 450/750V 2C + E
	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
2.11	Item / Product Name	50mm FLEXIBLE CONDUIT
	Dimensions	Diameter (OD): 50mm
		Diameter (ID): 40mm
		Thickness (T): 5mm
2.12	Item / Product Name	DN50 PVC-U DWV PIPE
	Dimensions	Diameter (ID): 50.3mm
		Diameter (OD): 55.7mm
		Thickness (T): 2.7mm
2.17	Item / Product Name	D1 Cable Tray
	Dimensions	Height (Overall): 59mm

		Width (Overall): 320mm
		Depth (Overall): 1209mm
2.18	Item / Product Name	XLPE single-core 0.6/1 kV CU
	Dimensions	Diameter (OD): 41.4mm
		Thickness (T): 2.4mm (insulation)
Cable location	1 located in D1 Cable Tray (Position A)	
2.19	Item / Product Name	APEC 2023 X-90 Electra Cable 0.6/1 kV 3C+E CU
	Dimensions	Diameter (OD): 53.8mm
		Thickness (T): 0.7mm (insulation)
Cable location	1 located on D1 Cable Tray (Position B)	
2.20	Item / Product Name	Electra Cable 2018 V-90 Electric Cable 0.6/1 kV 6mm ² x 3C+E CU
	Dimensions	Diameter (OD): 16mm
	Cable location	3 located on D1 Cable Tray (Position C)
2.21	Item / Product Name	Electra Cable 2023 X-90 0.6/1 kV CU
	Dimensions	Diameter (OD): 20.5mm
	Cable location	8 located on D1 Cable Tray (Position D)

Sealants

3.1	Item / Product Name	AGNI-Seal
	Dimensions	600mL Sausage
	Installation	Used to seal between the edge of separating element, sealant applied to all specimens

Fixings

4.1	Item / Product Name	Self Tapping Screw
	Dimensions	41mm
	Installation	Used to secure AGNI-Box to steel frame
4.2	Item / Product Name	Self-Tapping Screw
	Dimensions	10g x 16mm
	Installation	Used to construct AGNI-Box steel frame



4.3	Item / Product Name	AGNI-Strap
	Dimensions	Width / Length (W/L): 4.6mm x 450mm
	Installation	Used to secure AGNI-Shield around specimen 5

Intumescent

5.1	Item	AGNI-Shield
	Dimensions	Width / Length (W/L): 300mm x 1000mm
		Thickness (T): 13mm
	Installation	Installed around specimen 5 with 100mm overlap

Other

6.1	Item / Product Name	Steel Stud 64mm 0.55bmt
	Dimensions	Width / Height (W/H): 300mm x 151mm
	Installation	Used to frame AGNI-Box

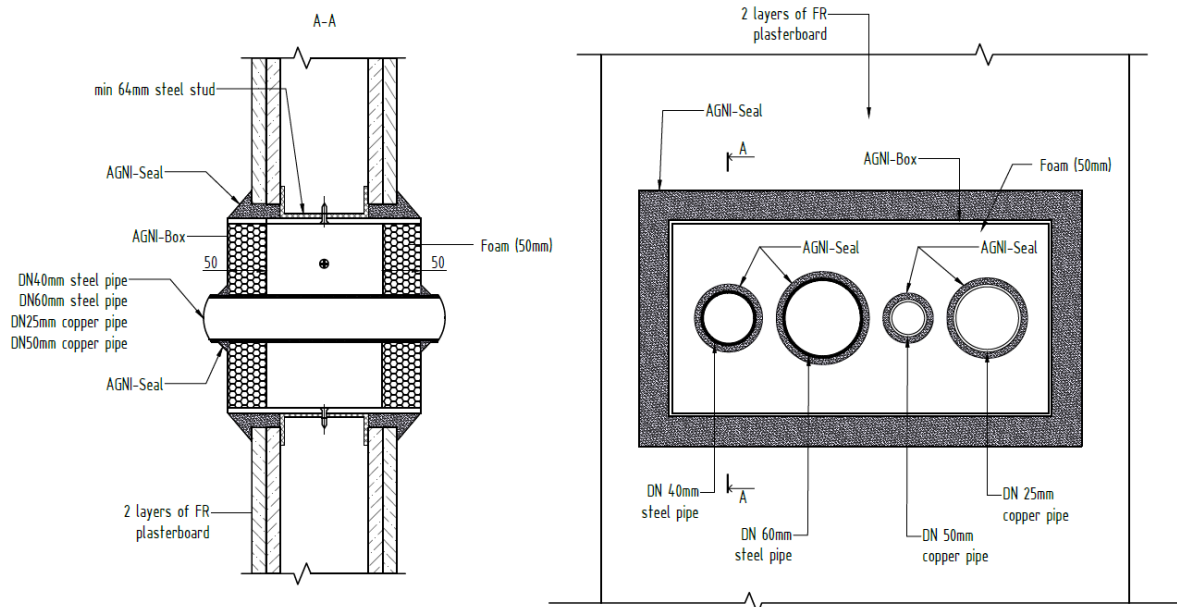
5. Test Results

5.1 Observations during the test

Time min	Test face	SP#	OBSERVATIONS/REMARKS
2	U	1-3, 6	Smoke coming from between services and foam face
2	U	5	Smoke coming from between services and sleeve
123			TEST DISCONTINUED

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

5.2 Specimen 1



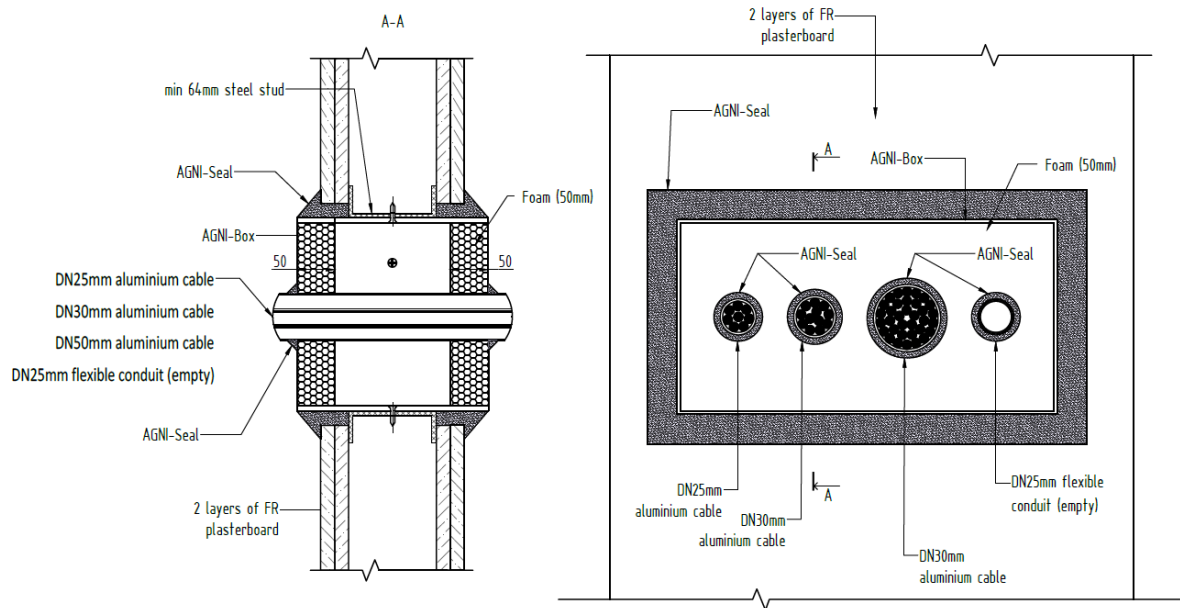
Service penetration details

Service	AGNI-Box – filled 40mm Steel Pipe + 60mm Steel Pipe + 25mm Copper Pipe + 50mm Copper Pipe
Aperture Size	300mm x 151mm
Annular Spacing	Min: 0mm, Max: 5mm

Local Fire-stopping system

Application	Symmetrical – applied to both faces of separating element
System description	<ol style="list-style-type: none"> 64mm steel stud frame was constructed (300mm wide x 151mm height) in the centre of the cavity for a tight fit of the AGNI-Box. AGNI-Box was installed and secured to the steel stud frame using 41mm screws on each of the four sides of the AGNI-Box. A 50mm AGNI-Seal sealant cone was applied around the edge of the AGNI-Box. Services were installed through the AGNI-Box and the foam face was cut to fit around these services. AGNI-Seal (10mm nominal) was applied to seal between pipes and foam face of AGNI-Box.

5.3 Specimen 2

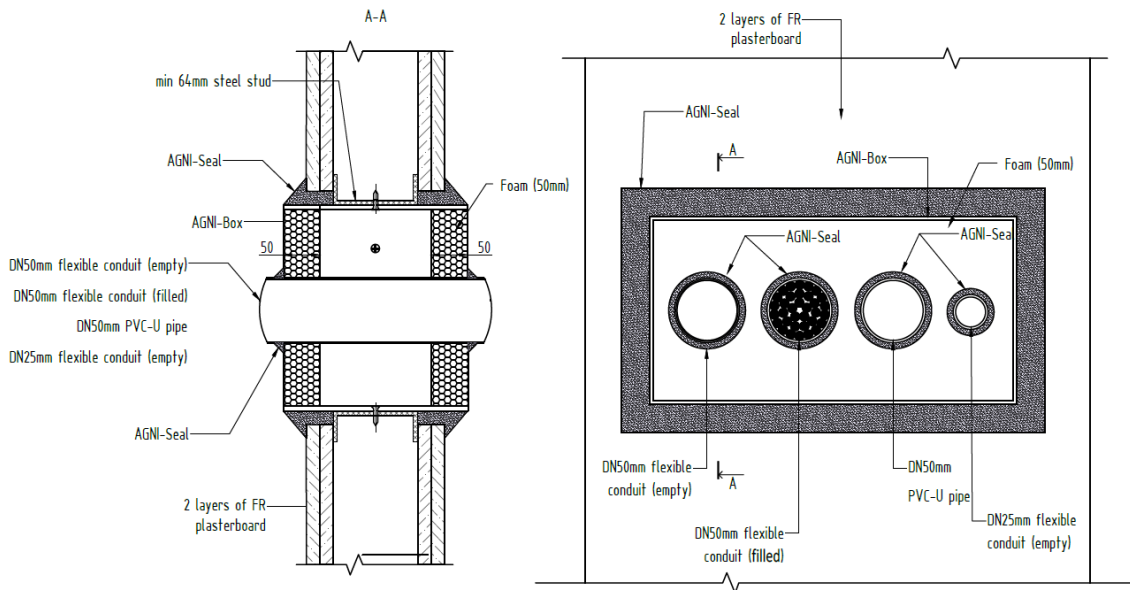


Service penetration details	
Service	AGNI-Box – filled 25mm Aluminium Cable + 30mm Aluminium Cable + 50mm Aluminium Cable + 25mm Flexible Conduit (filled 2 x TPS Cables)
Aperture Size	300mm x 151mm
Annular Spacing	Min: 0mm, Max: 5mm

Local Fire-stopping system	
Application	Symmetrical – applied to both faces of separating element
System description	<ol style="list-style-type: none"> 64mm steel stud frame was constructed (300mm wide x 151mm height) in the centre of the cavity for a tight fit of the AGNI-Box. AGNI-Box was installed and secured to the steel stud frame using 41mm screws on each of the four sides of the AGNI-Box. A 50mm AGNI-Seal sealant cone was applied around the edge of the AGNI-Box. Services were installed through the AGNI-Box and the foam face was cut to fit around these services. AGNI-Seal (10mm nominal) was applied to seal between pipes and foam face of AGNI-Box.



5.4 Specimen 3



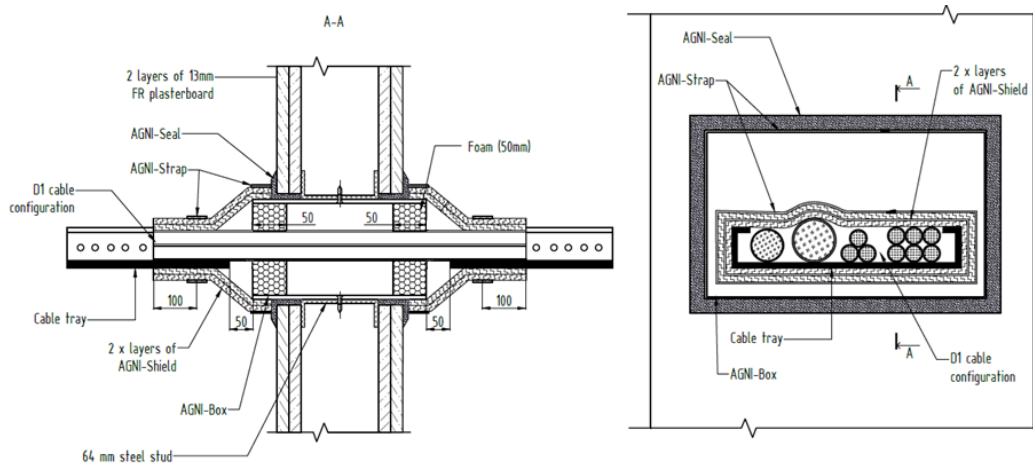
Service penetration details

Service	AGNI-Box – filled 50mm Flexible Conduit (empty) + 50mm Flexible Conduit (filled 6 x TPS Cables) + 50mm PVC Pipe + 25mm Flexible Conduit (empty)
Aperture Size	300mm x 151mm
Annular Spacing	Min: 0mm, Max: 5mm

Local Fire-stopping system

Application	Symmetrical – applied to both faces of separating element
System description	<ol style="list-style-type: none"> 64mm steel stud frame was constructed (300mm wide x 151mm height) in the centre of the cavity for a tight fit of the AGNI-Box. AGNI-Box was installed and secured to the steel stud frame using 41mm screws on each of the four sides of the AGNI-Box. A 50mm AGNI-Seal sealant cone was applied around the edge of the AGNI-Box. Services were installed through the AGNI-Box and the foam face was cut to fit around these services. AGNI-Seal (10mm nominal) was applied to seal between pipes and foam face of AGNI-Box.

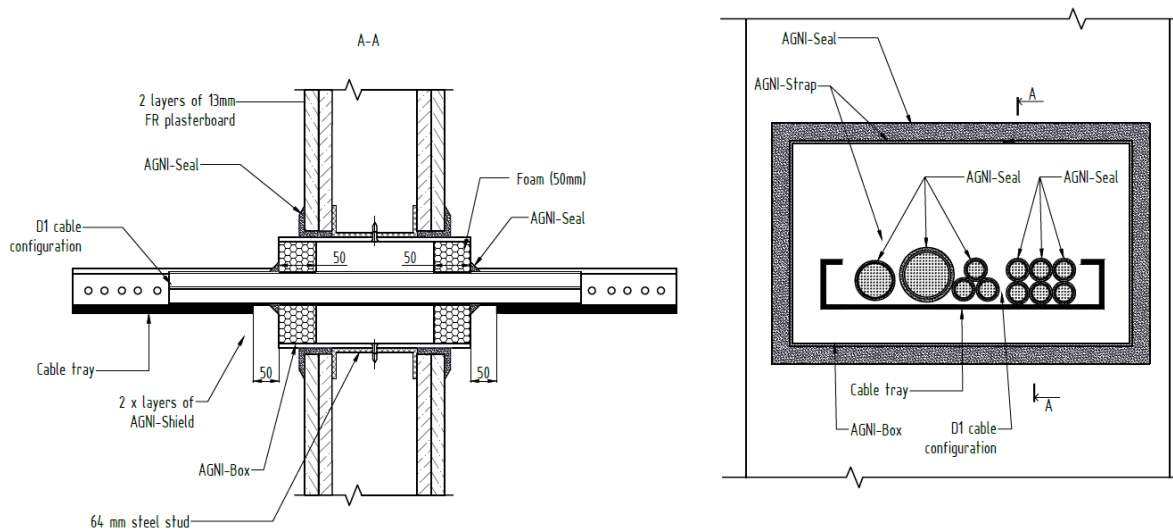
5.5 Specimen 5



Service penetration details	
Service	AGNI-Box – filled D1 Cable Tray, Tray was interrupted
Aperture Size	300mm x 151mm
Annular Spacing	Min: 0mm, Max: 1mm

Local Fire-stopping system	
Application	Symmetrical – applied to both faces of separating element
System description	<ol style="list-style-type: none"> 1. 64mm steel stud frame was constructed (300mm wide x 151mm height) in the centre of the cavity for a tight fit of the AGNI-Box. 2. AGNI-Box was installed and secured to the steel stud frame using 41mm screws on each of the four sides of the AGNI-Box. 3. The cable tray was installed on both sides of the wall, starting nominally 50mm from the AGNI-Box. 4. Cables were passed through the AGNI-Box and secured to the cable tray. 5. AGNI-Seal (10mm nominal) was applied to seal the annular gap between the AGNI-Box and the separating element. 6. The foam was cut to fit around the cables and cable tray. 7. One layer of 300mm wide AGNI-Shield was wrapped around the specimen with a 100mm overlap. 8. Two AGNI-Straps were used to secure the AGNI-Shield to the specimen. 9. AGNI-Seal was applied between the AGNI-Shield and the separating element (20mm nominal).

5.6 Specimen 6



Service penetration details	
Service	AGNI-Box – filled D1 Cable Tray, Tray was interrupted
Service Support	Exposed Face: Multistrut at 220mm Unexposed Face: Multistrut at 340mm and 825mm
Aperture Size	300mm x 151mm
Annular Spacing	Min: 0mm, Max: 1mm

Local Fire-stopping system	
Application	Symmetrical – applied to both faces of separating element
System description	<ol style="list-style-type: none"> 1. 64mm steel stud frame was constructed (300mm wide x 151mm height) in the centre of the cavity for a tight fit of the AGNI-Box. 2. AGNI-Box was installed and secured to the steel stud frame using 41mm screws on each of the four sides of the AGNI-Box. 3. A 50mm AGNI-Seal sealant cone was applied around the edge of the AGNI-Box. 4. The cable tray was installed on both sides of the wall, starting nominally 50mm from the AGNI-Box. 5. Cables were passed through the AGNI-Box and secured to the cable tray. 6. The foam was cut to fit around the cables and cable tray. 7. AGNI-Seal (10mm nominal) was applied to seal between cables and foam face of AGNI-Box.

6. Photos

6.1 Photos before the test



Figure 1 – Exposed face prior to test commencement