Regulatory Information Report

RIRF24098

Fire resistance test for penetrations through the horizontal separating element

Client:	Agnitek Pty Ltd
Test method:	AS1530.4-2014
Report Date:	29/10/2024
Test number:	PF24098

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	29/10/2024	Issued to Client

1.2 Signatories

Report	Name	Signature	Date
Prepared by:	Alexey Kokorin		29/10/2024
Authorised by:	Andrew Bain (Authorized signatory)		29/10/2024

ACCREDITED
IANZ
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 150mm thick concrete horizontal separating element (80mm profiled decking with 70mm topping). Services were capped on the fire side.

SP #	Service	Through topping/ rib	Actual Integrity (min)	Actual Insulation (min)	FRL
1	DN80 PVC-U PIPE	Both	123NF	123NF	-/120/120
2	DN100 PVC-U PIPE	Both	123NF	123NF	-/120/120
3	DN100 PVC-U PIPE	Topping	123NF	123NF	-/120/120
4	90mm PPR PIPE	Both	123NF	123NF	-/120/120
5	DN65 PVC-U PIPE	Both	123NF	123NF	-/120/120
6	PE PAIR COIL + 20mm CONDENSATE PIPE + TPS CABLE	Both	123NF	105	-/120/90
7	DN32 PVC-U PIPE	Both	123NF	123NF	-/120/120
8	50mm FLEXIBLE CONDUIT - empty	Both	123NF	123NF	-/120/120
9	50mm FLEXIBLE CONDUIT – filled 6 x TPS cables	Both	123NF	123NF	-/120/120
10	DN50 PVC-U PIPE	Both	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

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. Services were capped from exposed side only.

Testing date:

02/10/2024

Installation completion date:

20/09/2024

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 PF24098. 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	Concrete Slab (profiled decking composite slab)
	Dimensions	Width / Height (W/H): 1225mm × 1460mm
		Slab Thickness (T): Peak - 150mm Valley – 80mm Topping – 70mm

4.2 Specimens

Services		
2.1	Item / Product Name	DN80 PVC-U DWV PIPE
	Dimensions	Inner Diameter (ID): 75mm
		Outer Diameter (OD): 82mm
		Thickness (T): 3.5mm
2.2	Item / Product Name	DN100 PVC-U DWV PIPE
	Dimensions	Diameter (ID): 104mm
		Diameter (OD): 111mm
		Thickness (T): 3.5mm
2.3	Item / Product Name	SDR11 S 90mm PPR PIPE
	Dimensions	Inner Diameter (ID):73.6mm
		Outer Diameter (OD): 90mm
		Thickness (T): 8.2mm
2.4	Item / Product Name	DN65 PVC-U DWV PIPE
	Dimensions	Diameter (ID): 63mm
		Diameter (OD): 69mm
		Thickness (T): 3mm
	Item / Product Name	PE insulated pair coil

2.5	Copper Tube 1	Overall Dimensions (OD): 19.05mm
		Wall Thickness (T): 1.14mm
	Copper Tube 2	Overall Dimensions (OD): 9.52mm
		Wall Thickness (T): 0.81mm
	Insulation	Thickness (T): 8mm
	Material	Polyethylene foam
2.6	Item / Product Name	uPVC ELECTRICAL CONDUIT 25mm
	Dimensions	Diameter (OD): 20mm
		Diameter (ID): 16mm
		Thickness (T): 2mm
2.7	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
2.8	Item / Product Name	DN32 PVC-U DWV PIPE
	Dimensions	Inner Diameter (ID): 31.8mm
		Outer Diameter (OD): 36.8mm
		Thickness (T): 2.5mm
2.9	Item / Product Name	50mm FLEXIBLE CONDUIT
	Dimensions	Inner Diameter (ID): 40mm
		Outer Diameter (OD): 50mm
		Thickness (T): 1mm (ribbed)
2.10	Item / Product Name	DN50 PVC-U DWV PIPE
	Dimensions	Inner Diameter (ID): 50.6mm
		Outer Diameter (OD): 55.7mm
		Thickness (T): 2.5mm

Sealants		
3.1	Item / Product Name	AGNI-Seal
	Dimensions	600mL sausage
	Installation	Installed 10mm (nominal) deep between separating element and pipe for all specimens

Intumescent		
4.1	Item / Product Name	AGNI-Sleeve
	Dimensions	Width (W): 200mm
		Thickness (T): 3.5mm
	Installation	Installed around services

Fixings		
5.1	Item / Product Name	Ramset Shuredrive Anchor
	Dimensions	Width / Height (W/H): 6mm x 30mm
	Installation	Used to secure AGNI-Sleeve to concrete slab on unexposed face

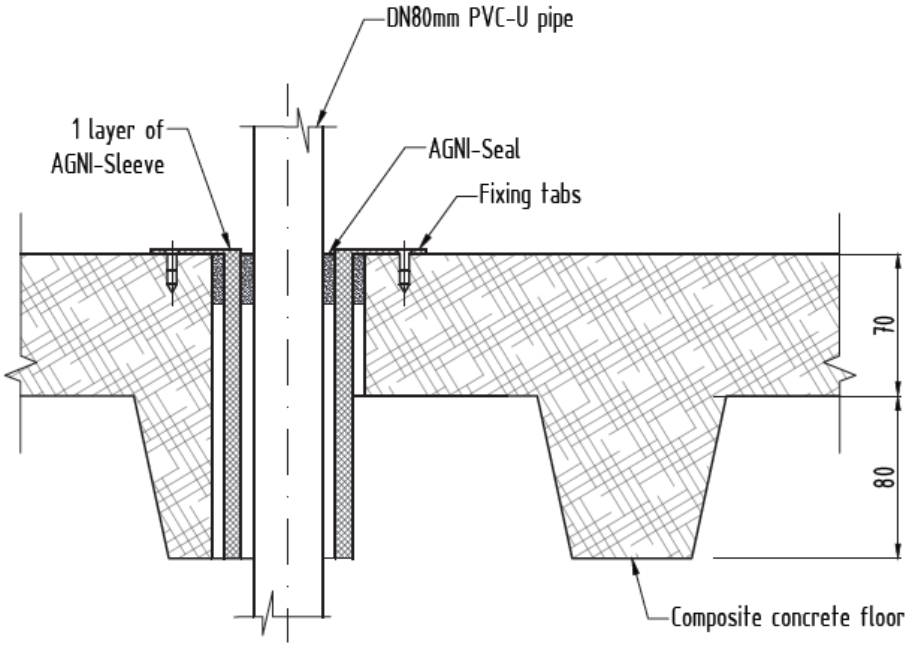
6. Test Results

6.1 Observations during the test

Time min	Test face	SP#	OBSERVATIONS/REMARKS
1	U	3, 5, 7	Minor smoke coming from around pipes
5	U	8, 9	Minor smoke coming from around pipes
15	U	5	Pipe slightly pushing up and out of the slab
15	U	4	Pipe slightly dropping down into slab
19	U	2	Pipe slightly pushing up and out of the slab
39	U	SE	Moisture appears on the slab
39	U	4	Pipe seen to be closing in the aperture
79	U	6, 7, 10	Pipe pushing out of the slab
85	U	ALL	Maximum temperature of 100°C using roving thermocouple on specimens and slab
96	U	6	Intumescent beginning to expand, pushing out of aperture
113	U	1, 4, 7, 8, 9	Intumescent expanding, pushing sealant out of aperture
123			**TEST DISCONTINUED**

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

6.2 Specimen 1

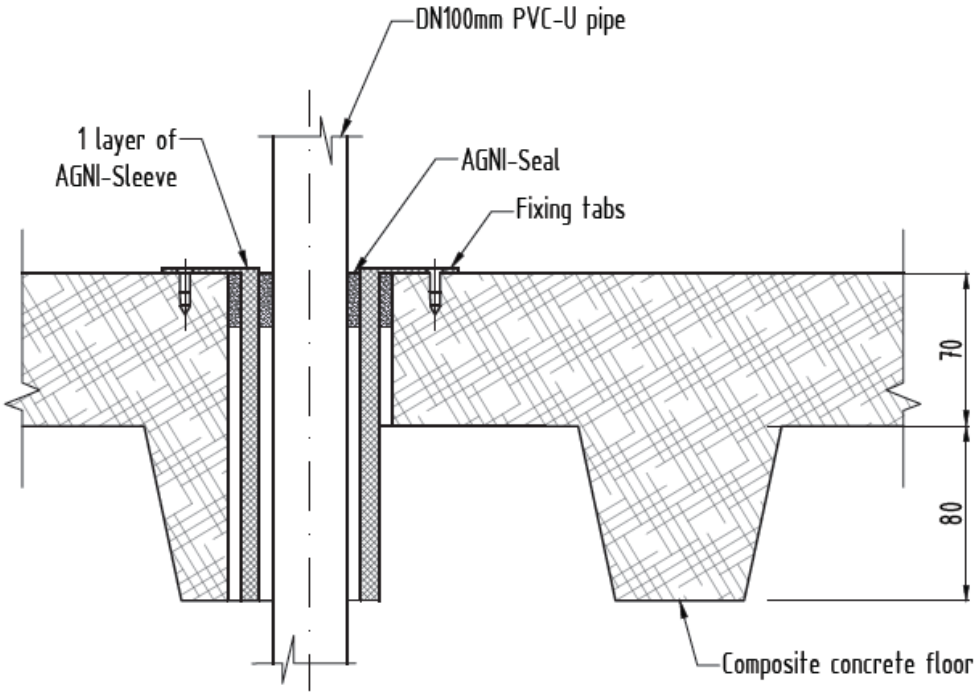


Service penetration details	
Service	DN80 PVC-U DWV PIPE
Aperture Diameter	102mm
Annular Spacing	Min: 5mm Max: 15mm

Local Fire-stopping system	
Application	Asymmetrical – installed from the unexposed side
System description	1. 200mm AGNI-Sleeve was cut to fit one revolution of the aperture (allowing 50mm for the fixing tabs). 2. The AGNI-Sleeve was then cut down to include two 50mm high x 25mm wide tabs, approximately opposite each other once installed into the aperture. 3. The cut AGNI-Sleeve was inserted into the aperture through the unexposed surface, tabs remained past the face of the unexposed surface. 4. The tabs were bent over onto the surface of the separating element and secured using concrete anchors. 5. AGNI-Seal was applied 10mm (nominal) deep between the separating element and the pipe, finishing flush with the face of the separating element.

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

6.3 Specimen 2



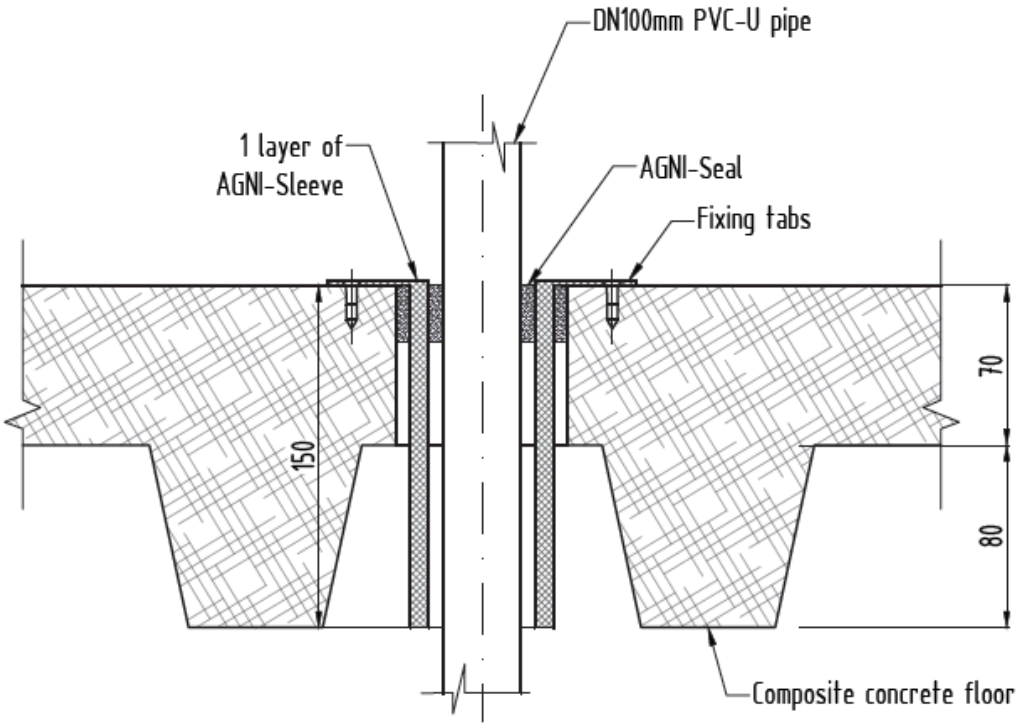
Service penetration details	
Service	DN100 PVC-U DWV PIPE
Aperture Diameter	127mm
Annular Spacing	Min: 5.5mm Max: 9.5mm

Local Fire-stopping system	
Application	Asymmetrical – installed from the unexposed side
System description	1. 200mm wide AGNI-Sleeve was cut to fit one revolution of the aperture (allowing 50mm for the fixing tabs). 2. The AGNI-Sleeve was then cut down to include two 50mm high x 25mm wide tabs, approximately opposite each other once installed into the aperture. 3. The cut AGNI-Sleeve was inserted into the aperture through the unexposed surface, tabs remained past the face of the unexposed surface. 4. The tabs were bent over onto the surface of the separating element and secured using concrete anchors.

	5. AGNI-Seal was applied 10mm (nominal) deep between the separating element and the pipe, finishing flush with the face of the separating element.

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

6.4 Specimen 3



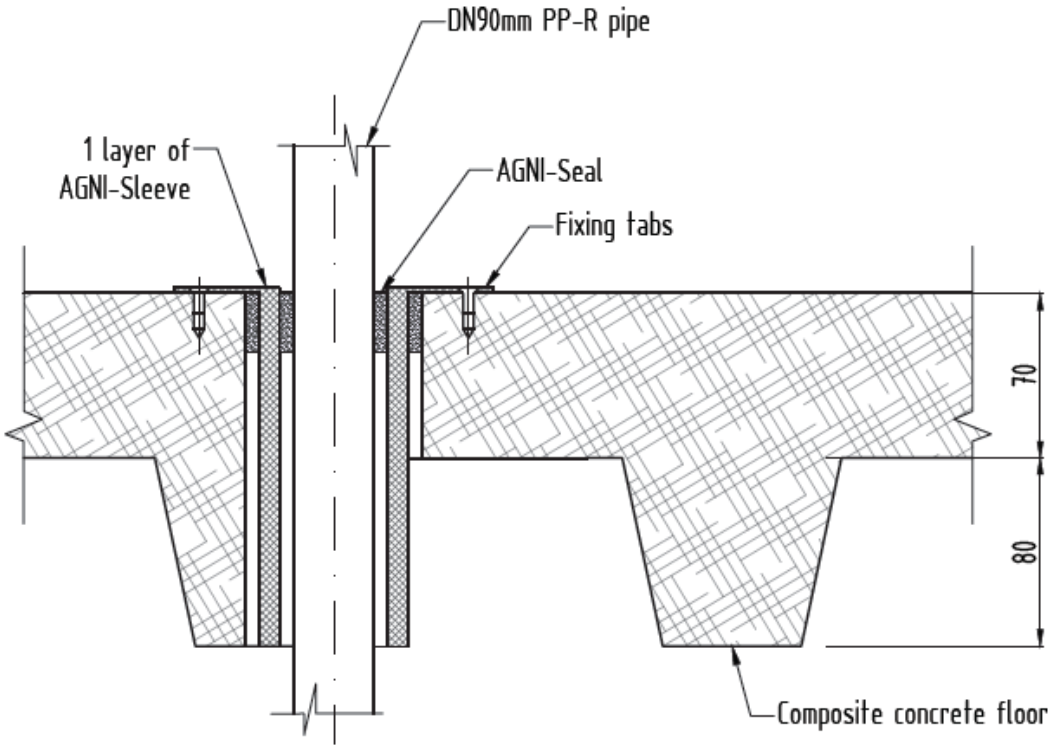
Service penetration details	
Service	DN100 PVC-U DWV PIPE
Aperture Diameter	127mm
Annular Spacing	Min: 5.5mm Max: 9.5mm

Local Fire-stopping system	
Application	Asymmetrical – installed from the unexposed side
System description	1. 200mm wide AGNI-Sleeve was cut to fit one revolution of the aperture (allowing 50mm for the fixing tabs). 2. The AGNI-Sleeve was then cut down to include two 50mm high x 25mm wide tabs, approximately opposite each other once installed into the aperture. 3. The cut AGNI-Sleeve was inserted into the aperture through the unexposed surface, tabs remained past the face of the unexposed surface. 4. The tabs were bent over onto the surface of the separating element and secured using concrete anchors.

	5. AGNI-Seal was applied 10mm (nominal) deep between the separating element and the pipe, finishing flush with the face of the separating element.

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

6.5 Specimen 4



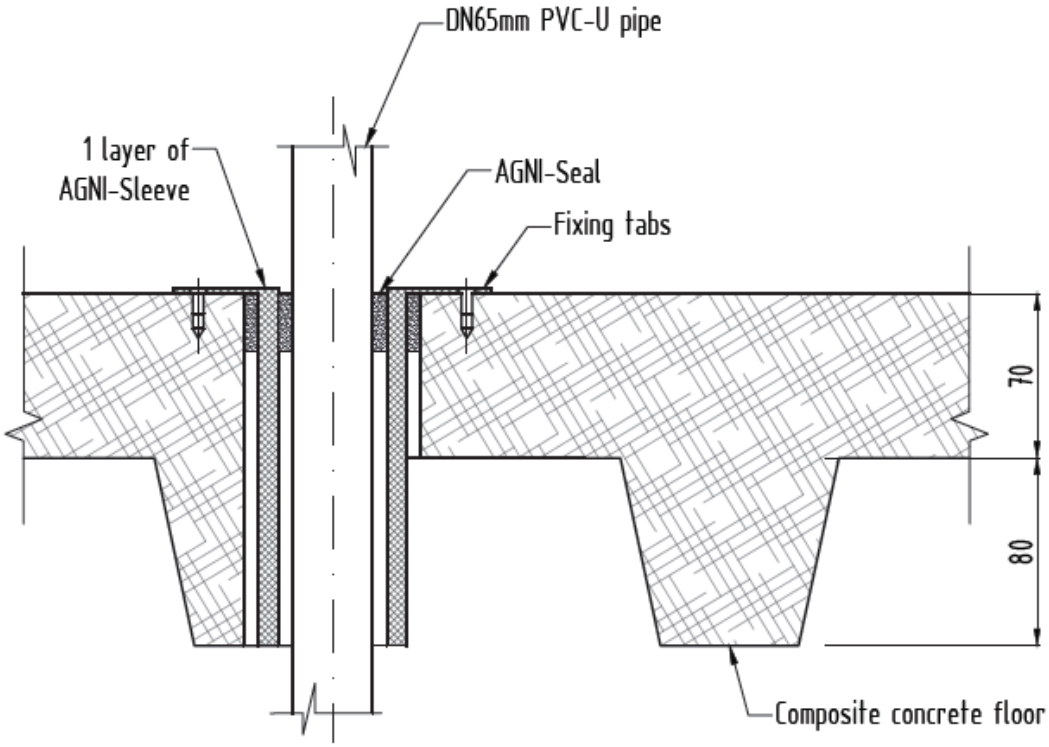
Service penetration details	
Service	90mm PPR PIPE
Service Support	Unexposed Side - Multistrut at 600mm and 1650mm
Aperture Diameter	127mm
Annular Spacing	Min: 17.5mm Max: 19.5mm

Local Fire-stopping system	
Application	Asymmetrical – installed from the unexposed side
System description	1. 200mm wide AGNI-Sleeve was cut to fit one revolution of the aperture (allowing 50mm for the fixing tabs). 2. The AGNI-Sleeve was then cut down to include two 50mm high x 25mm wide tabs, approximately opposite each other once installed into the aperture. 3. The cut AGNI-Sleeve was inserted into the aperture through the unexposed surface, tabs remained past the face of the unexposed surface.

	4. The tabs were bent over onto the surface of the separating element and secured using concrete anchors. 5. AGNI-Seal was applied 10mm (nominal) deep between the separating element and the pipe, finishing flush with the face of the separating element.

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

6.6 Specimen 5



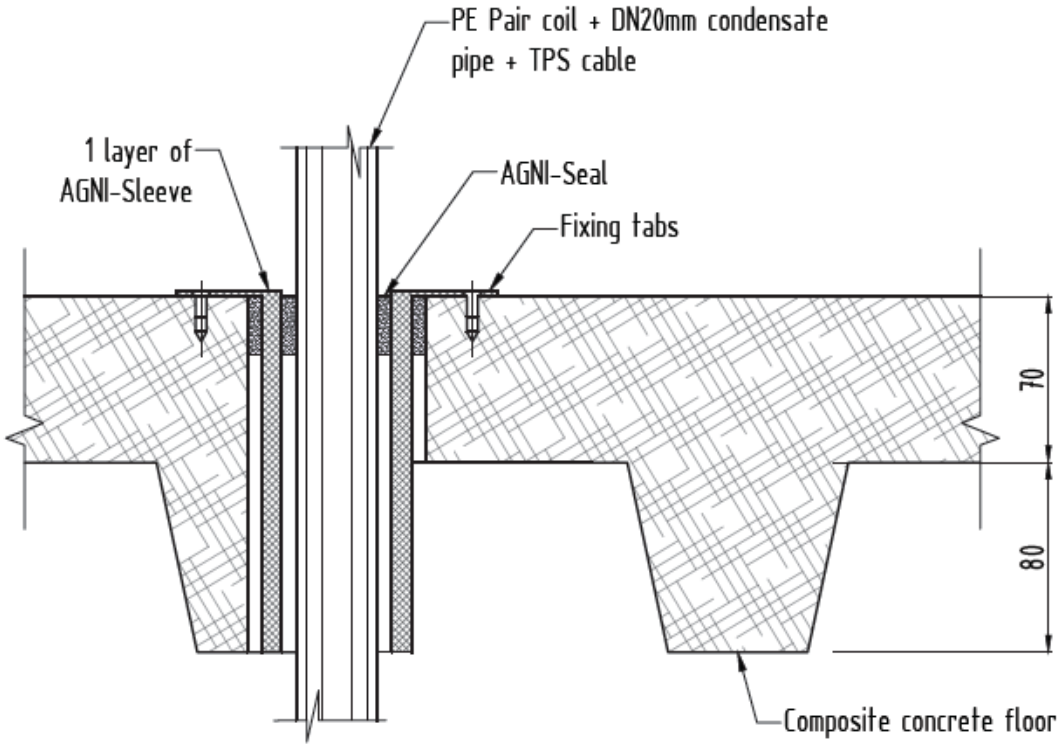
Service penetration details	
Service	MARLEY OPTIM DN65 PVC-U PIPE
Aperture Diameter	82mm
Annular Spacing	Min: 4.5mm Max: 8.5mm

Local Fire-stopping system	
Application	Asymmetrical – installed from the unexposed side
System description	1. 200mm wide AGNI-Sleeve was cut to fit one revolution of the aperture (allowing 50mm for the fixing tabs). 2. The AGNI-Sleeve was then cut down to include two 50mm high x 25mm wide tabs, approximately opposite each other once installed into the aperture. 3. The cut AGNI-Sleeve was inserted into the aperture through the unexposed surface, tabs remained past the face of the unexposed surface. 4. The tabs were bent over onto the surface of the separating element and secured using concrete anchors.

	5. AGNI-Seal was applied (10mm nominal) side between the separating element and the pipe, finishing flush with the face of the separating element.

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	PE PAIR COIL + 20mm CONDENSATE PIPE + TPS CABLE
Aperture Diameter	65mm
Annular Spacing	Min: 4mm Max: 11mm

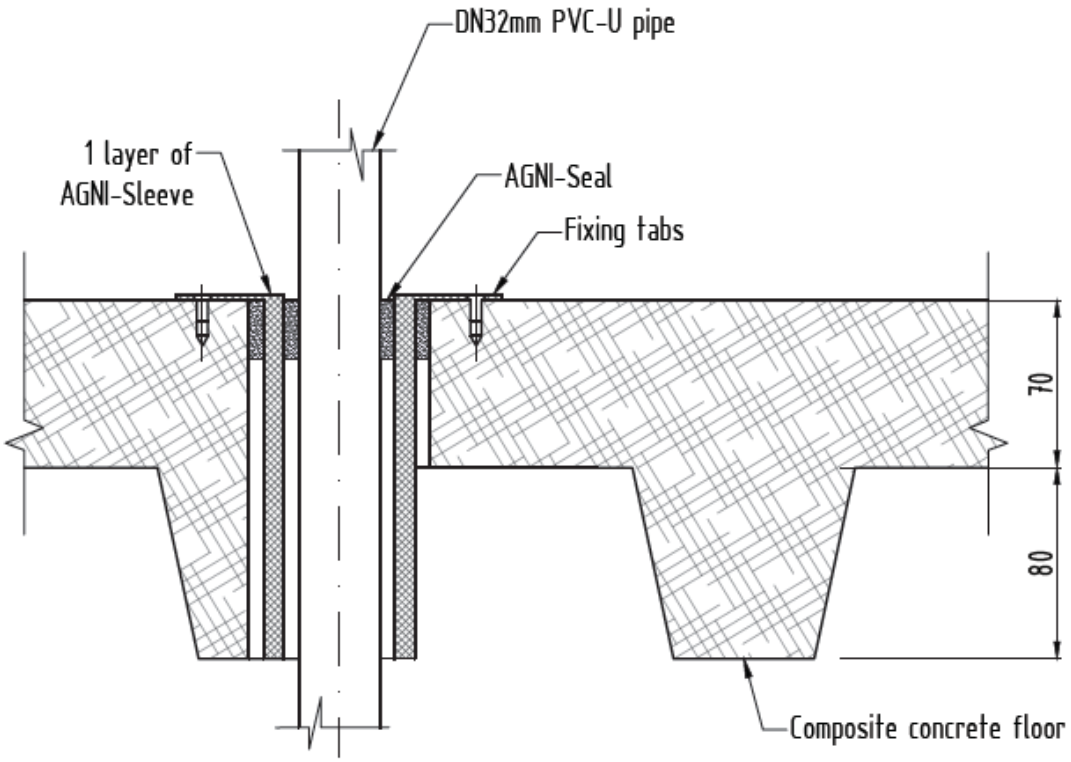
Local Fire-stopping system	
Application	Asymmetrical – installed from the unexposed side
System description	1. 180mm wide AGNI-Sleeve was cut to fit one revolution of the aperture (allowing 50mm for the fixing tabs). 2. The AGNI-Sleeve was then cut down to include two 30mm high x 15mm wide tabs, approximately opposite each other once installed into the aperture. 3. The cut AGNI-Sleeve was inserted into the aperture through the unexposed surface, tabs remained past the face of the unexposed surface. 4. The tabs were bent over onto the surface of the separating element and secured using concrete anchors.

	5. AGNI-Seal was applied (10mm nominal) deep between the separating element and the pipe, finishing flush with the face of the separating element.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 123 minutes
Insulation	105 minutes

SpTC222 failed insulation criteria at 105 minutes, the thermocouple was installed on the slab surface, no insulation failure was recorded on the services.

6.8 Specimen 7



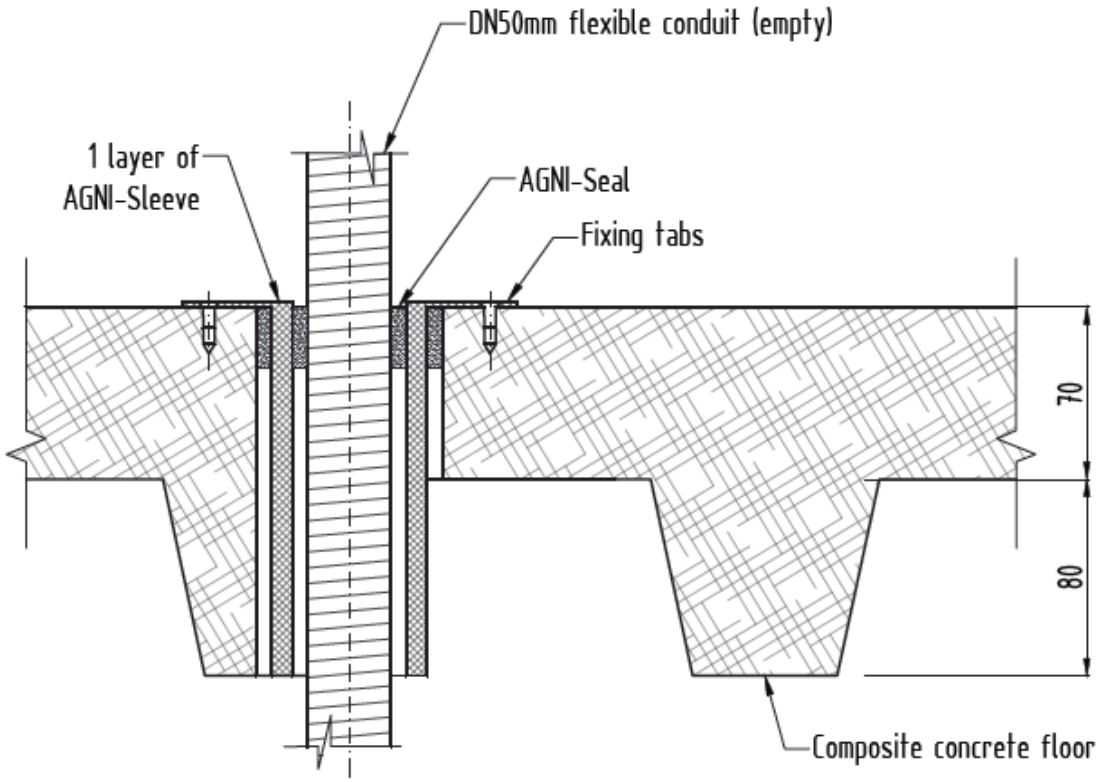
Service penetration details	
Service	DN32 PVC-U PIPE
Aperture Diameter	47mm
Annular Spacing	Min: 4mm Max: 6mm

Local Fire-stopping system	
Application	Asymmetrical – installed from the unexposed side
System description	1. 200mm wide AGNI-Sleeve was cut to fit one revolution of the aperture (allowing 50mm for the fixing tabs). 2. The AGNI-Sleeve was then cut down to include two 50mm high x 25mm wide tabs, approximately opposite each other once installed into the aperture. 3. The cut AGNI-Sleeve was inserted into the aperture through the unexposed surface, tabs remained past the face of the unexposed surface. 4. The tabs were bent over onto the surface of the separating element and secured using concrete anchors.

	5. AGNI-Seal was applied 10mm (nominal) deep between the separating element and the pipe, finishing flush with the face of the separating element.

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

6.9 Specimen 8



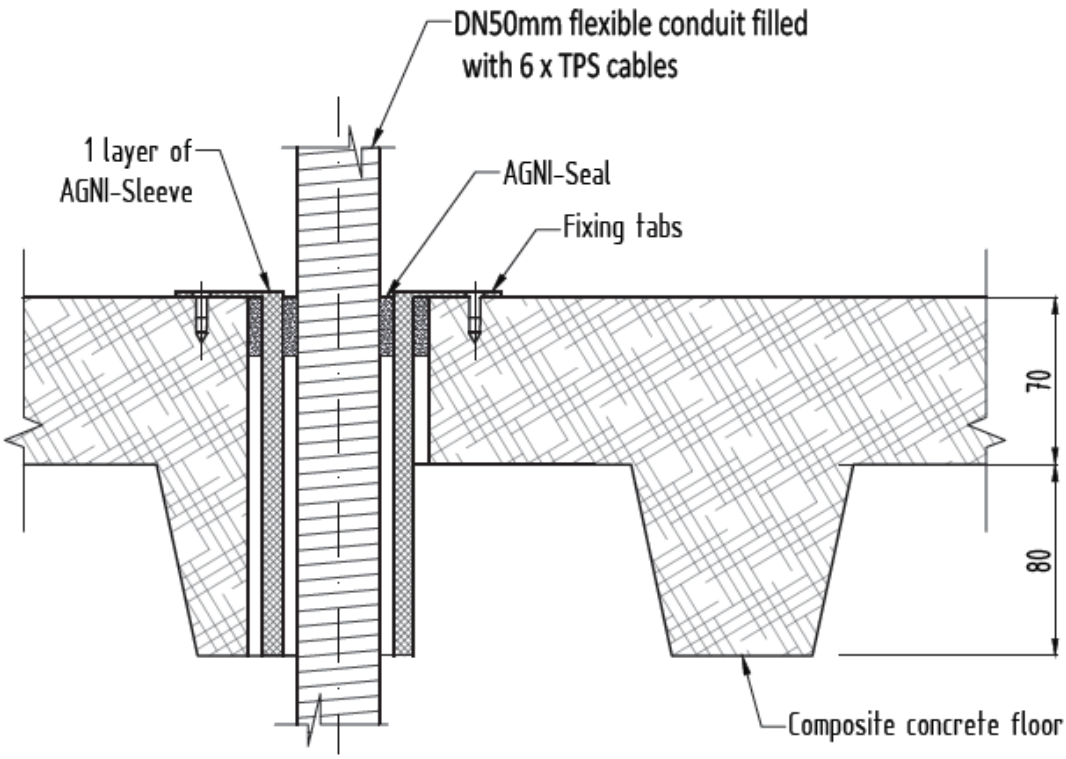
Service penetration details	
Service	EASI 50mm FLEXIBLE CONDUIT (empty)
Aperture Diameter	65mm
Annular Spacing	Min: 4mm Max: 11mm

Local Fire-stopping system	
Application	Asymmetrical – installed from the unexposed side
System description	1. 200mm wide AGNI-Sleeve was cut to fit one revolution of the aperture (allowing 50mm for the fixing tabs). 2. The AGNI-Sleeve was then cut down to include two 50mm high x 25mm wide tabs, approximately opposite each other once installed into the aperture. 3. The cut AGNI-Sleeve was inserted into the aperture through the unexposed surface, tabs remained past the face of the unexposed surface. 4. The tabs were bent over onto the surface of the separating element and secured using concrete anchors.

	5. AGNI-Seal was applied 10mm (nominal) deep between the separating element and the pipe, finishing flush with the face of the separating element.

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

6.10 Specimen 9



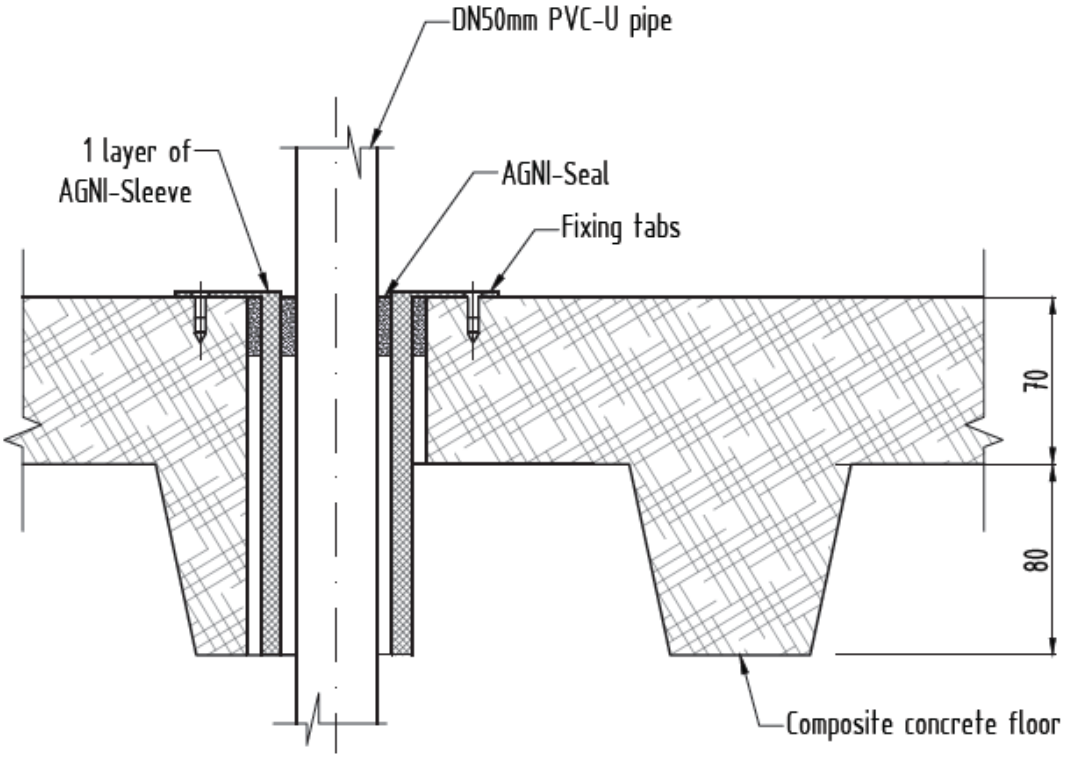
Service penetration details	
Service	EASI 50mm FLEXIBLE CONDUIT (filled 6 x TPS Cables)
Aperture Diameter	65mm
Annular Spacing	Min: 5mm Max: 10mm

Local Fire-stopping system	
Application	Asymmetrical – installed from the unexposed side
System description	1. 200mm wide AGNI-Sleeve was cut to fit one revolution of the aperture (allowing 50mm for the fixing tabs). 2. The AGNI-Sleeve was then cut down to include two 50mm high x 25mm wide tabs, approximately opposite each other once installed into the aperture. 3. The cut AGNI-Sleeve was inserted into the aperture through the unexposed surface, tabs remained past the face of the unexposed surface. 4. The tabs were bent over onto the surface of the separating element and secured using concrete anchors.

	5. AGNI-Seal was applied 10mm (nominal) deep between the separating element and the pipe, finishing flush with the face of the separating element.

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

6.11 Specimen 10



Service penetration details	
Service	DN50 PVC-U PIPE
Aperture Diameter	65mm
Annular Spacing	Min: 4mm Max: 5mm

Local Fire-stopping system	
Application	Asymmetrical – installed from the unexposed side
System description	1. 200mm wide AGNI-Sleeve was cut to fit one revolution of the aperture (allowing 50mm for the fixing tabs). 2. The AGNI-Sleeve was then cut down to include two 50mm high x 25mm wide tabs, approximately opposite each other once installed into the aperture. 3. The cut AGNI-Sleeve was inserted into the aperture through the unexposed surface, tabs remained past the face of the unexposed surface.

	4. The tabs were bent over onto the surface of the separating element and secured using concrete anchors. 5. AGNI-Seal was applied 10mm (nominal) deep between the separating element and the pipe, finishing flush with the face of the separating element.

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