Fire Testing Laboratory

Regulatory Information Report

RIR2104601

Fire Resistance Test for Linear Joints and penetrations in Concrete Wall

Issued to:	Firestop Centre Ltd
Test method:	AS1530.4-2014
Report Date:	08/07/2025
Test number:	PF21046

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

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1.1 Document revision schedule

Revision #	Date	Description
1	08/07/2025	Issued

1.2 Signatories

Report	Name	Signature	Date
Prepared by:	Alexey Kokorin		08/07/2025
Authorised by:	Andrew Bain (Authorized signatory)		08/07/2025

ACCREDITED
ILAC
TESTING LABORATORY

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

2. Report Summary

A concrete wall separating element was constructed using 4 concrete slabs to accommodate four linear gaps. A slab was fixed to the head of the refractory frame, with three slabs installed vertically below, creating 30mm and 50mm vertical linear joints, and a 40mm horizontal linear joint. Along the 30mm vertical joint, a rectangular section of the concrete slabs was removed to accommodate a 10mm steel plate held in place with M12 x 1.25 threaded rod and nuts and 35mm depth of RLA Penapatch LW Repair Mortar on both sides of the separating element. An aperture was cut from a concrete slab to accommodate a steel pipe. Various widths and lengths of polystyrene rod were recessed into the respective joints from both sides, then filled with a bead of FIRESTOP Ultra sealant, flush with the surface of the slabs. This resulted in 50x30mm and 30x20mm vertical joints, and a 40x30mm horizontal joint

Specimen	Description	Actual Integrity (min)	Actual Insulation (min)	FRL
A	40x30mm horizontal linear joint	360 NF	360 NF	-/360/360
B	50x30mm vertical linear joint	360 NF	360 NF	-/360/360
C	30mm vertical linear joint with stich plate	360 NF	360 NF	-/360/360
D	40DN Steel Pipe	360 NF	360 NF	-/360/360

NF – No failure during the test

3. General Information

3.1 Testing Scope

Applicable Standards:

AS 1530-2014 Part 4: Section 10 Service penetrations and control joints.

AS 4072.1-2005 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

FTSL - 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

Issued to:

Firestop Centre Ltd.

657 Great South Rd, Penrose, Auckland, 1061

New Zealand

Contact e-mail: info@firestopcentre.co.nz

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 Client. The Laboratory was not involved in sampling of the materials. The Laboratory checked materials during construction of the specimen.

Testing date:

06/08/2021

Installation completion date:

22/07/2021

Termination of The Test:

The test was discontinued at 360 minutes.

3.4 Use of the Report

A regulatory information report was issued in addition to the full test report PF21046. This provides the minimum information required for regulatory compliance.

This report shall not be reproduced, except in full.

All specimens were symmetrical construction. Results apply if exposed to fire from either side. 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 / Product Name	Concrete Slab Separating element
	Dimensions	Width / Height: 1200mm x 1200mm
		Wall Thickness: 180mm (nominal)

1.2	Item / Product Name	Concrete Lintel
	Measurements	Width / Height (W/H): 1200mm x 160mm
		Thickness (T): 300mm
	Additional Info	Used to create separating element
1.3	Item / Product Name	Concrete Slab
	Measurements	Height (H): 1000mm
		Thickness (T): 180mm
	Additional Info	3 x slabs of varying widths used to create 2 linear gaps

1.6	Item / Product Name	Steel Stitch Plate
	Measurements	Width / Height (W/H): 400mm x 300mm
		Thickness (T): 10mm
	Additional Info	Used to form separating element

4.2 Specimen A

3.1	Item / Product Name	Formulation F023SDW01 - FIRESTOP Ultra sealant
	Dimensions	600mL
	Installation	Used to seal 40mm linear gap within frame

4.3 Specimen B

3.1	Item / Product Name	Formulation F023SDW01 - FIRESTOP Ultra sealant
	Dimensions	600mL
	Installation	Used to seal 50mm linear gap within frame

4.4 Specimen C

3.1	Item / Product Name	Formulation F023SDW01 - FIRESTOP Ultra sealant
	Dimensions	600mL
	Installation	Used to seal 30mm linear gap within frame
3.2	Item / Product Name	RLA Penapatch LW Repair Mortar
	Measurements	20kg Bag
	Installation	Installed in stitch plate cavity, flush with slab surface

4.5 Specimen D

3.1	Item / Product Name	Formulation F023SDW01 - FIRESTOP Ultra sealant
	Dimensions	600mL
	Installation	Installed in aperture 30mm deep. Bead installed between pipe – wrap, wrap – SE.
2.1	Item / Product Name	40DN Steel Pipe
	Measurements	Inner Diameter (ID): 41.73mm
		Outer Diameter (OD): 48.26mm

		Thickness (T): 3.11mm
	Additional Info	Installed through aperture
4.3	Item / Product Name	Stainless Steel Cable Ties
	Measurements	4.6 x 200mm
	Installation	Used to fix wrap to services
5.1	Item / Product Name	Superwool Plus Ceramic Fibre Blanket
	Measurements	Width / Height (W/H): 610mm x 14640mm
		Thickness (T): 13mm
		Density (ρ): 128kg/m^3
	Installation	Wrapped around service 2 ¼ times Used as backing in annular gap, recessed 30mm

5. Test Results

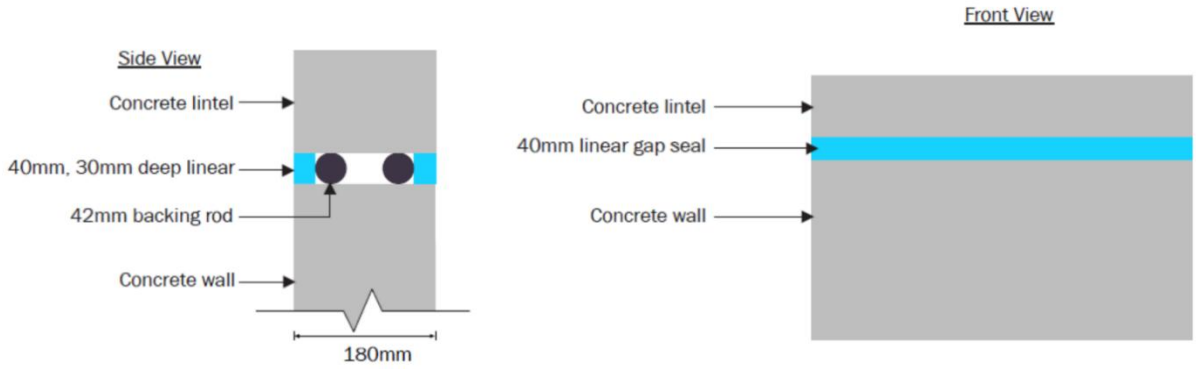
5.1 Observations during the test

Time Minutes	Test Face	SP	Observations
10	E	ALL	Mastic has visibly combusted, discolouring and visible surface cracks
10	E	C	Mortar above stitch plate is visibly a lighter colour, discoloring between mortar and separating element
24	E	C	Visible white discolouring of mastic
24	E	D	Mastic has minor separation between specimen wrap and separating element
24	E	SE	Visible spots of spalling on the separating element, including the mortar ontop of stitch plate
30	E	B	Large visible expansion of mastic
45	E	C	Visible mastic combustion where stitch plate and mortar are located
50	U	D	Visible steam/moisture rising from the wrap
60	E	C	Where combustion of mastic had previously occurred, the mastic is beginning to fall away from the specimen, and the aperture is slightly recessed
75	E/U	ALL	No notable changes
90	U	B	Minor expansion of the mastic
105	E	D	Further separation and gap formation near mastic and specimen wrap junction
105	E	C	Gap forming along the top edge of the stitch plate mortar
105	E	A	Mastic separating from the separating element, top edge of gap seal
120	U	ALL	No notable changes
120	U	D	Moisture coming from wrap is no longer visible
120	E	C	Visible crack in the mastic near stitch plate
150	E/U	ALL	No notable changes
157	U	A, C	Visible expansion of the mastic

180	E/U	ALL	No notable changes
180	E	C	Gap near top of the stitch plate has opened further
207	U	C	Visible cracking and opening at the top left corner of the mortar junctions
210	E/U	ALL	No notable changes
215	U	A, B, C	Visible expansion of the gap seal
215	U	A, B, C	Bubbling of mastic which overlaps concrete separating element
240	U	A, B, C	Further expansion of mastic
240	E	C	Further visible gaps around mortar junction
240	E	SE	Visible white spots on the separating element
248	U	B	Lower half of the mastic has visible white discolouring
248	U	C	Discolouring between mastic joint and stitch plate
270	E/U	ALL	No notable changes
285	E/U	ALL	No notable changes
300	U	B	Mastic separating from concrete slab in three locations
300	U	A, B, C	Further expansion of mastic
300	E	SE	Increased number of white spots on separating element
315	U	B	Further separating of the mastic, both sides of the gap seal
330	U	A	Minor visible gas in mastic
330	E	D	Pipe wrap is deteriorating with visible break underneath
350	E	D	The break in the wrap has opened up further
360	E/U	ALL	No notable changes
360			TEST DISCONTINUED

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

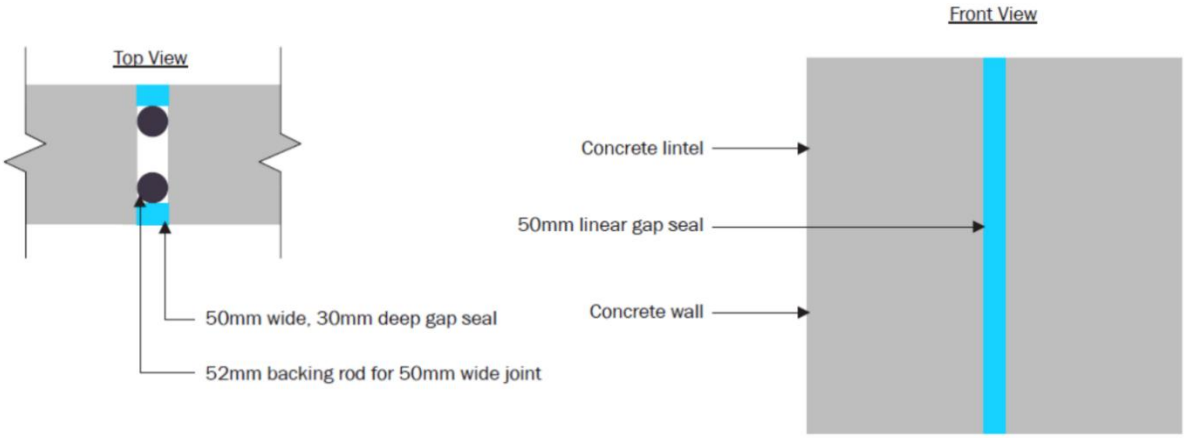
5.2 Specimen A – 40mm Horizontal Linear Joint



Service	40mm wide linear joint
Service Details	Concrete lintel (1.2), Concrete slab 1 (1.3), Concrete slab 2 (1.4), Concrete slab 3 (1.5), Sealant (3.1)
Local Fire-stopping Protection	
Application	Symmetrical
Protection Used	Polystyrene backing rod was placed in aperture from both faces, recessed 30mm (nominal). A bead of mastic was placed on top of the backing rod, flush with the concrete slabs.

Structural adequacy	**Not applicable**
Integrity	**No failure at 360 min**
Insulation	**No failure at 360 min**

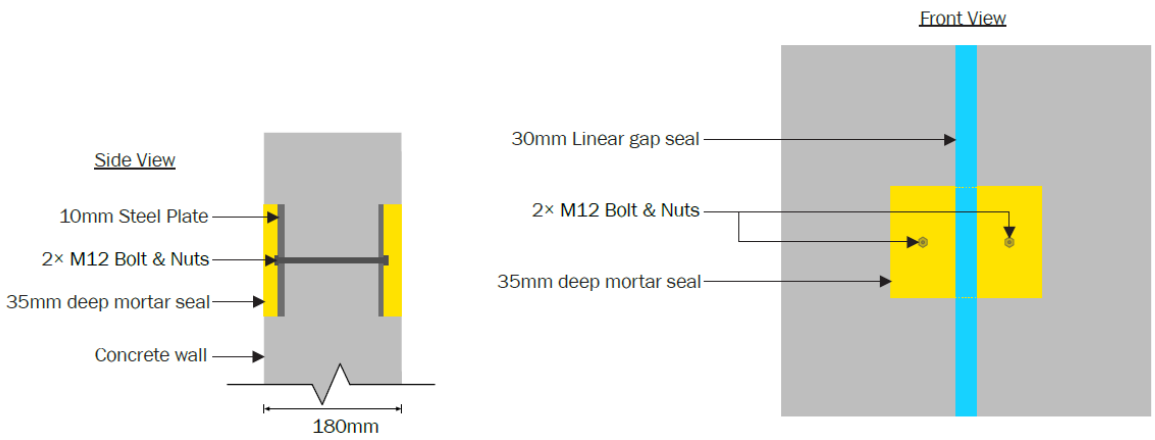
5.3 Specimen B – 50mm Vertical Linear Joint



Service	50mm wide linear joint
Service Details	Concrete slab 1 (1.3), Concrete slab 2 (1.4) Sealant (3.1)
Local Fire-stopping Protection	
Application	Symmetrical
Protection Used	Polystyrene backing rod was placed in aperture from both faces, recessed 30mm (nominal). A bead of mastic was placed on top of the backing rod, flush with the concrete slabs.

Structural adequacy	**Not applicable**
Integrity	**No failure at 360 min**
Insulation	**No failure at 360 min**

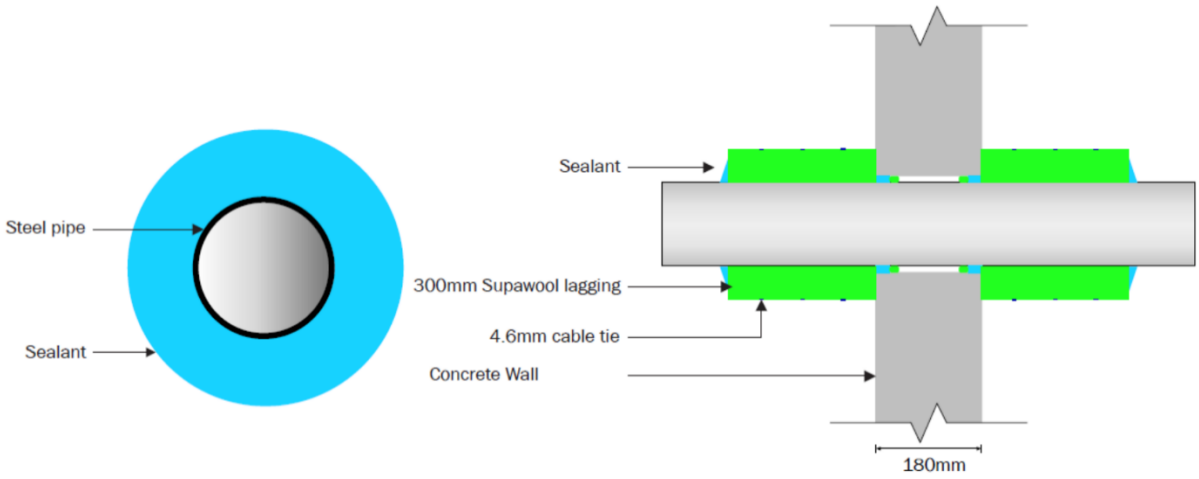
5.4 Specimen C – 30mm Vertical Linear Joint with stitch plate



Service	Stitch Plate with 30mm wide Gap Seal
Service Details	Concrete lintel (1.2), Concrete slab 1 (1.3), Concrete slab 2 (1.4), Concrete slab 3 (1.5), Sealant (3.1)
Local Fire-stopping Protection	
Application	Symmetrical
Protection Used	Polystyrene backing rod was placed in aperture from both faces, above and below the stitch plate, recessed 20mm (nominal). Polystyrene backing tape was placed ontop of the stitch plate to ensure the depth was 35mm (nominal). A bead of mastic was placed on top of the backing rod, and on top of the stitch plate, flush with the concrete slabs. This resulted in a gap seal of 20mm along the length of the aperture, and a depth of 35mm along the stitch plate.

Structural adequacy	**Not applicable**
Integrity	**No failure at 360 min**
Insulation	**No failure at 360 min**

5.5 Specimen D – 40DN Steel Pipe

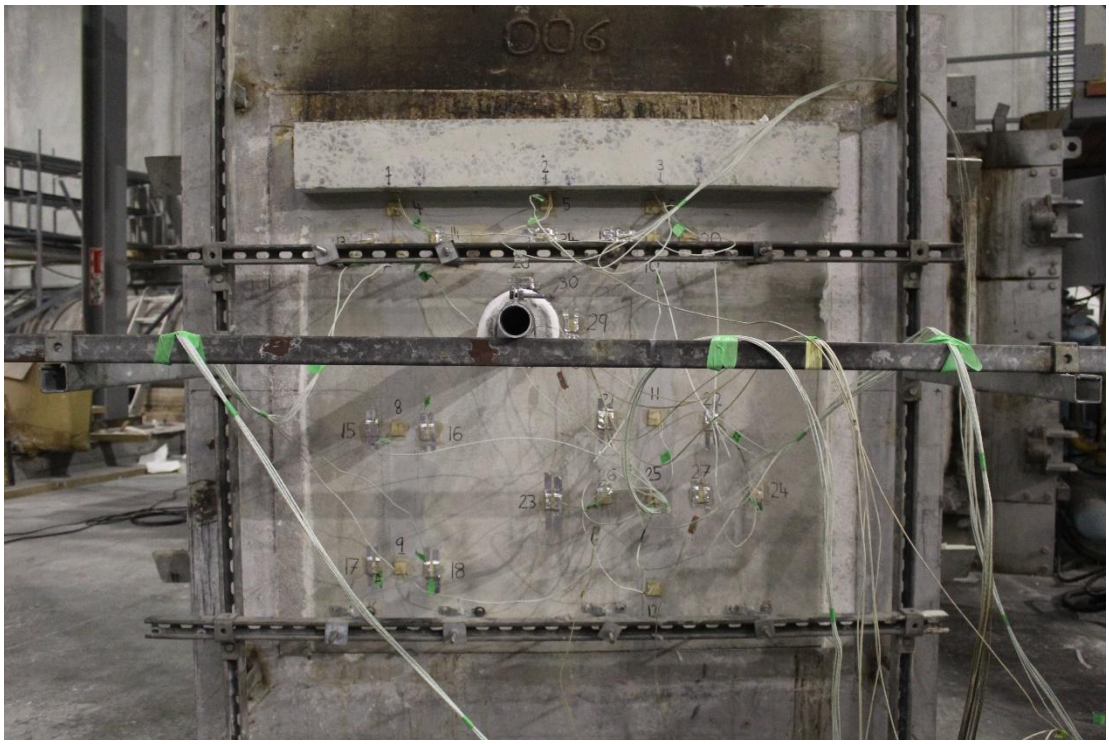


Service	40DN Steel Pipe
Service Details	Pipe (2.1), Sealant (3.1), Concrete slab 2 (1.4), Ceramic Fibre Blanket (5.1), Cable ties (4.3)
Aperture Size	72mm
Annular Spacing	Min: 6mm, Max: 20mm
Local Fire-stopping Protection	
Application	Symmetrical
Protection Used	The steel pipe (2.1) was passed through the aperture, extending 850mm from both faces. Ceramic fibre backing was installed in the aperture, recessed 30mm (nominal) from both faces. Sealant (3.1) was applied to the apertures, flush with the separating element. A length of Ceramic fibre was cut and wrapped around the service 2 ¼ times. The ceramic fibre was secures using cable ties (4.3), and extended 610mm from both faces. A 25mm (nominal) radius bead of sealant was applied between the concrete slab and ceramic fibre. Sealant was applied between the end of the ceramic fibre and the pipe to fill any remaining gaps.

Structural adequacy	**Not applicable**
Integrity	**No failure at 360 min**
Insulation	**No failure at 360 min**

6. Photos

Unexposed faced:



Exposed face: