HOW TO INCLUDE SEISMIC MOVEMENT IN FIRESTOP

2nd July

WHO WE ARE

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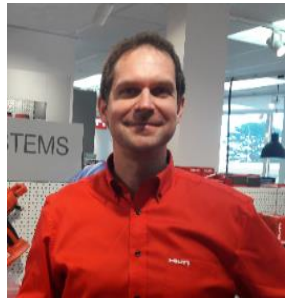

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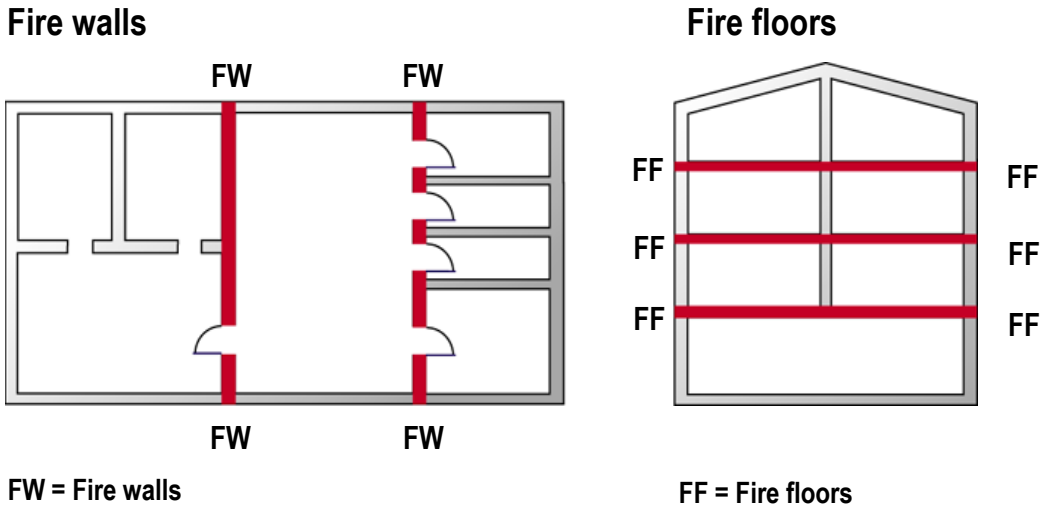
AGENDA

1. Introduction
2. Seismic and Firestop
3. Key Applications – Commercial
4. Key Applications – Residential
5. Services for Fire Protection Systems
6. Summary
7. Discussion and Q&A

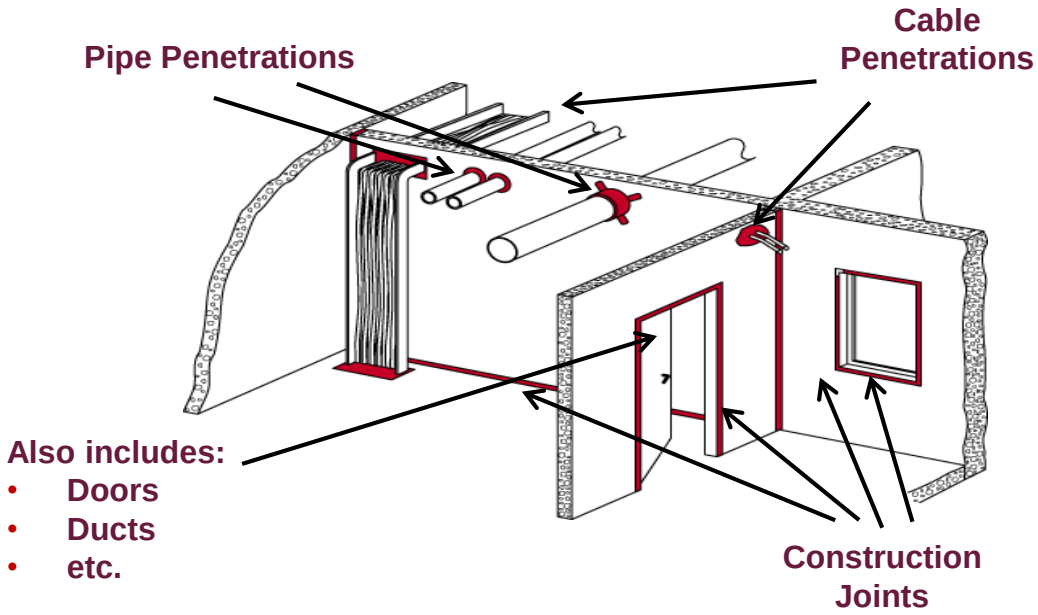
PRINCIPLES OF FIRE PROTECTION THROUGH COMPARTMENTATION

Compartmentation



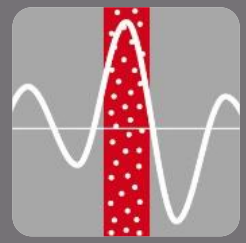
Compartmentation is the principle used to create fire cells, that provide a safe path for people to exit a building during a fire.

Penetrations and construction joints



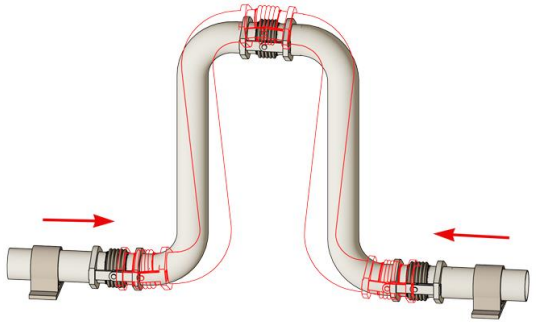
These weak points must be fire rated with passive fire products, allowing the fire cell to achieve its required Fire Resistance Level or FRL…

DESIGN TO THE FULL SYSTEM REQUIREMENTS

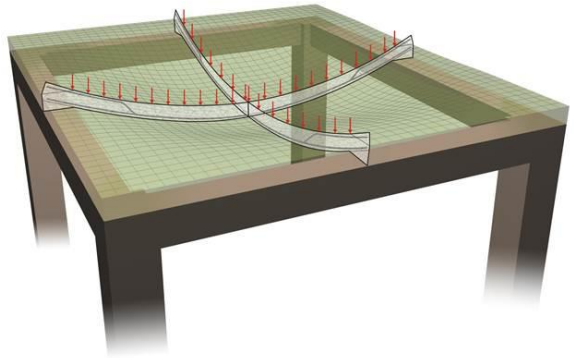


SEISMIC AND FIRESTOP

BUILDINGS AND BUILDING SERVICES ARE CONSTANTLY SUBJECTED TO MOVEMENT



Thermal expansion and contraction of piping

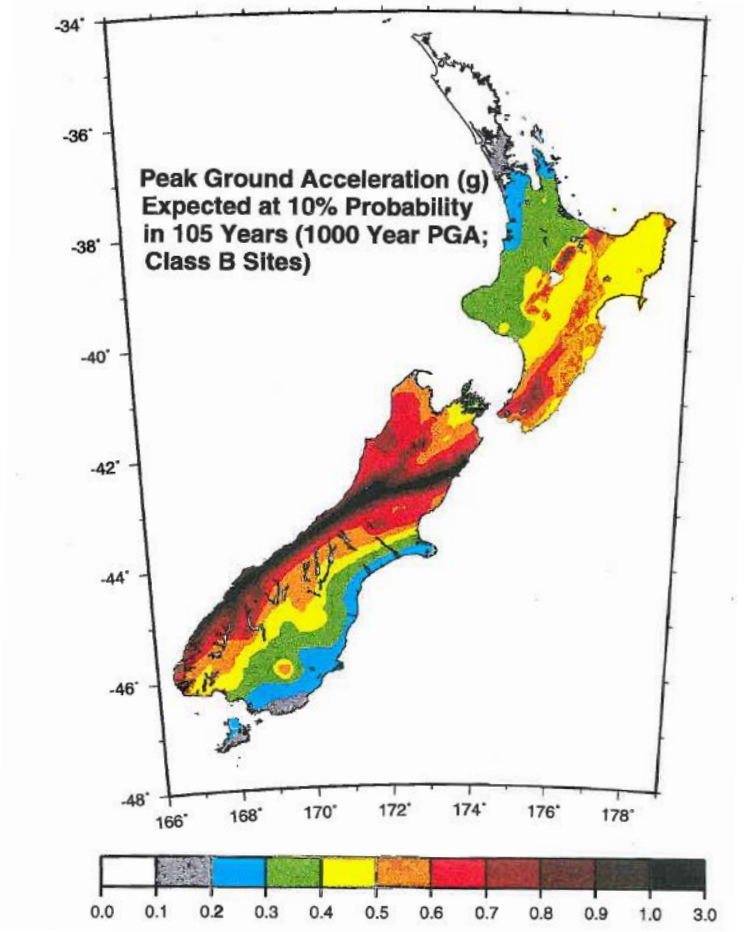


Slab deflection

Push-pull actions (e.g. vibrations)

Mechanical forces (e.g. water hammer)

EARTHQUAKES ARE UNAVOIDABLE AND REPRESENT A CRITICAL DESIGN CONSIDERATION IN NEW ZEALAND



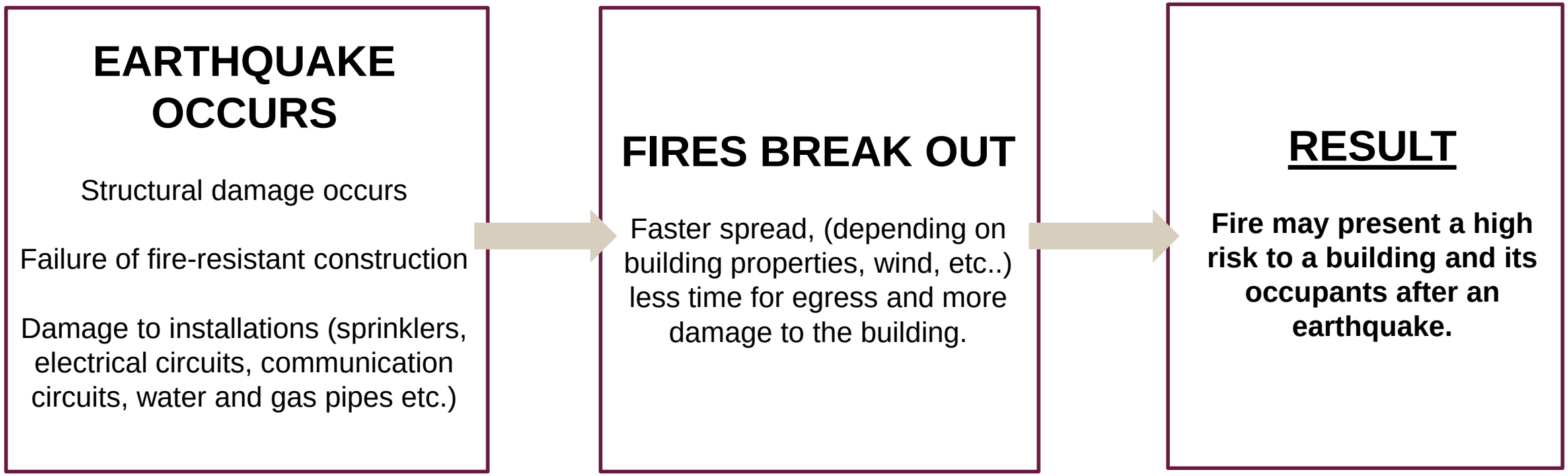
They lead to huge economic and human losses

FIRE IS THE MOST COMMON POST EARTHQUAKE RISK

- Multiple simultaneous ignitions: **50-75%** of the fires start **immediately after** the event
- **About 50% of the fires** reported in the data **occurred more than several hours** (and up to several days) after the earthquake events
- For example, after the earthquake of Northridge in 1994, there were a total of 466 fires reported after the earthquake, some of them were due because of the rupture of natural gas valves.

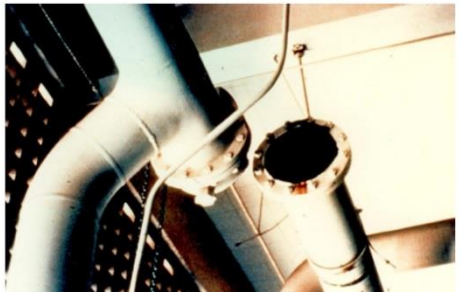
Sources: (1)A Method for Evaluating Fire After Earthquake Scenarios for Single Buildings. Elizabeth J. Kelly and Raymond N. Tell
(2) After the Shaking Stops: A Communitywide Approach to Managing Post-Quake Fires. Insurance Institute for Business & Home Safety
(3) Hospital Seismic Safety. California healthcare foundation January 2009

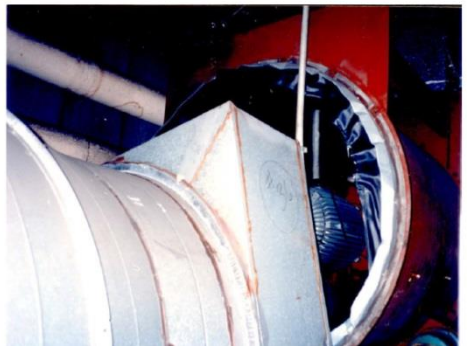
HOWEVER EARTHQUAKES OFTEN DO FAR LESS DAMAGE THAN THE FIRES THAT FOLLOW THEM



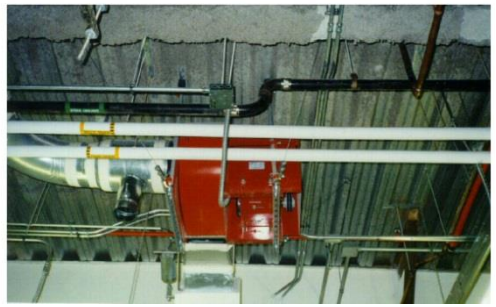
MOST FIRES AFTER SEISMIC EVENTS HAPPEN DUE TO DAMAGES IN ELECTRICITY AND GAS INSTALLATIONS

Mechanical



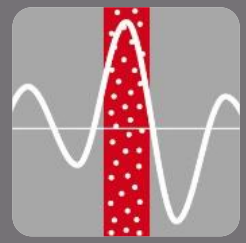


Electrical



Interiors

An additional level of reliability will ensure safety and reduce repair costs



HOW CAN WE ADDRESS THIS IN DESIGN?

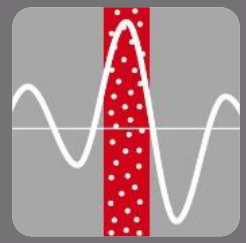
OUR LOCAL STANDARDS DO NOT PROVIDE A QUALIFICATION FOR MOVEMENT IN FIRESTOP

- A trusted test procedure and qualification should be used for designing movement for firestop through penetrations.

- The Standard **“ASTM E3037: Standard Test Method for Measuring Relative Movement Capabilities of Through-Penetration Firestop Systems”** offers a pathway to perform these checks.

- The standard is state-of-the-art for testing and qualifying systems for movement.

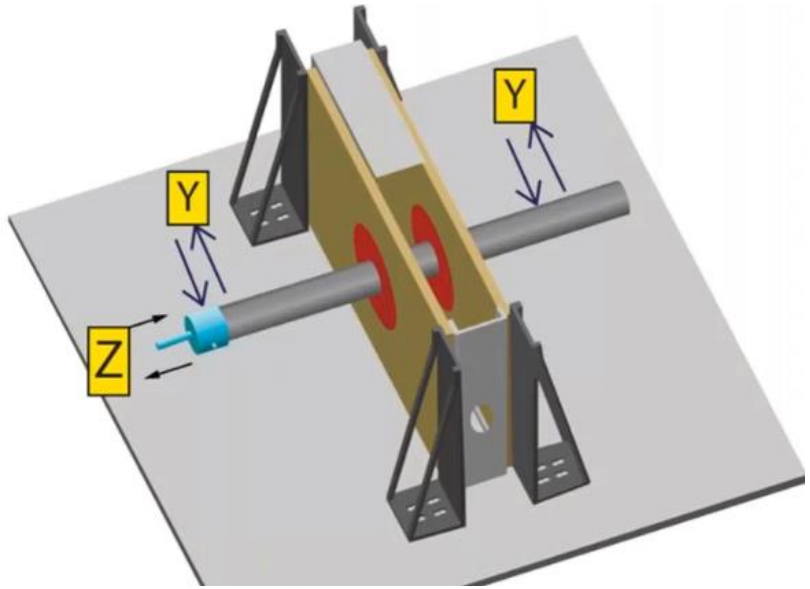
ASTM E3037 can be referenced as a best practice

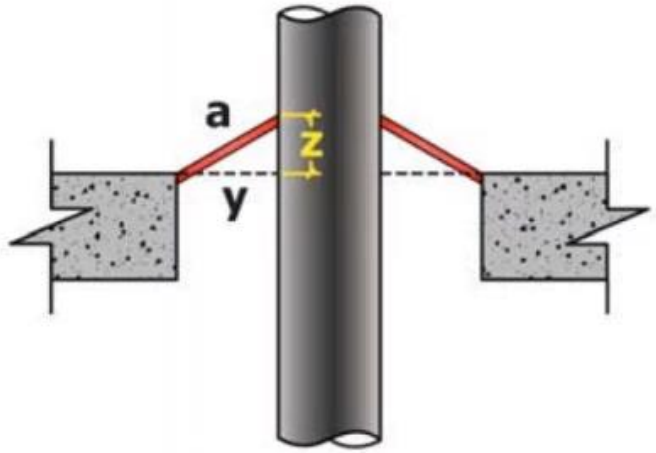


ASTM E3037 TEST SETUP

FIRESTOP MOVEMENT TEST STANDARD ASTM E3037

- Standardised bench test
- Movement test is not the fire test, the fire test happens after the movement cycling
- Maximum movement is specified and recorded
- Test is relevant to total setup (ie including wall construction etc.)
- Output is in terms of qualification of performance
- Test is conducted in two axis





ALL PARAMETERS NEED TO BE SPECIFIED FOR THE TEST SETUP

Penetrant:

- Type
- Size
- Orientation
- Quantity

Firestop Material(s):

- Type (e.g. sealant, device etc.)
- Thickness
- Orientation

Annular space:

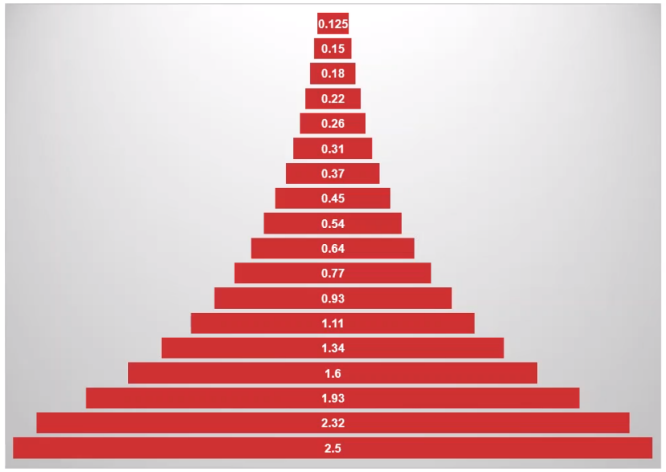
- Minimum
- Maximum
- Symmetrical/Eccentric

Supporting construction:

- Generic or Specific
- Gypsum
- Masonry/concrete
- CLT
- Other

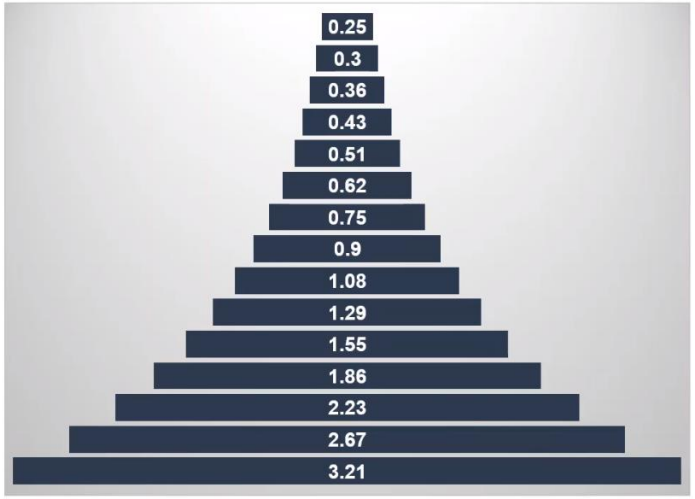
UPPER DISPLACEMENT LIMIT IS DETERMINED BEFORE THE TEST BY THE TEST SPONSOR

Y Direction	
Cycles	Displacement (in.)
10	0.125
3	0.15
3	0.18
3	0.22
3	0.26
3	0.31
3	0.37
3	0.45
3	0.54
3	0.64
3	0.77
3	0.93
3	1.11
3	1.34
3	1.6
3	1.93
3	2.32
3	2.5

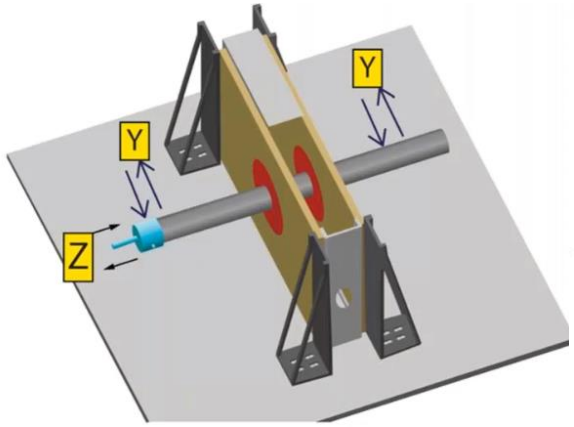


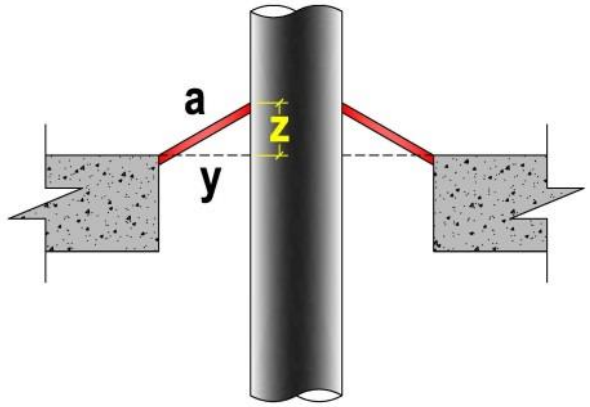
Cycling in Y direction

Z Direction	
Cycles	Displacement (in.)
10	0.25
3	0.3
3	0.36
3	0.43
3	0.51
3	0.62
3	0.75
3	0.9
3	1.08
3	1.29
3	1.55
3	1.86
3	2.23
3	2.67
3	3.21

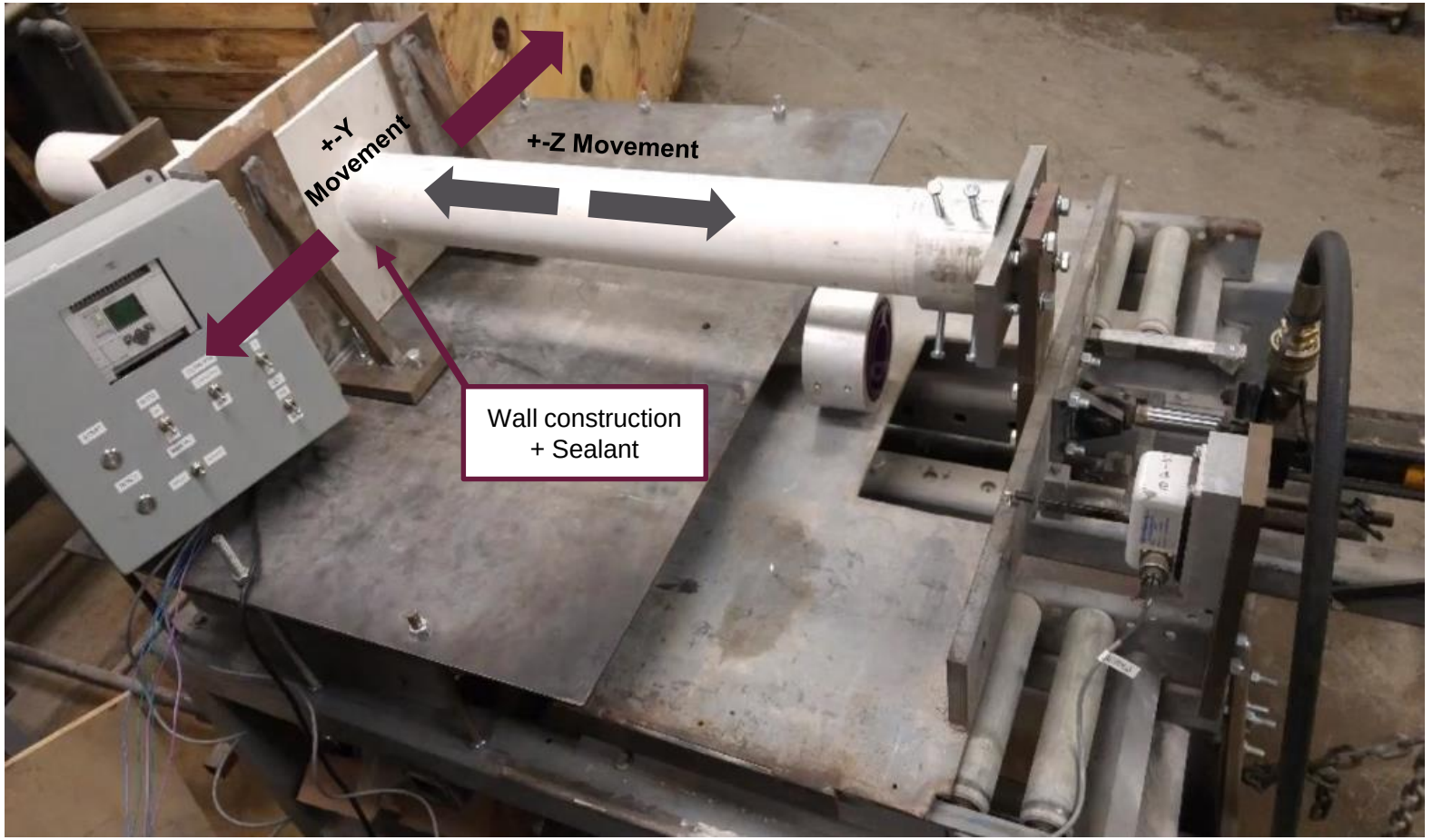


Cycling in Z direction

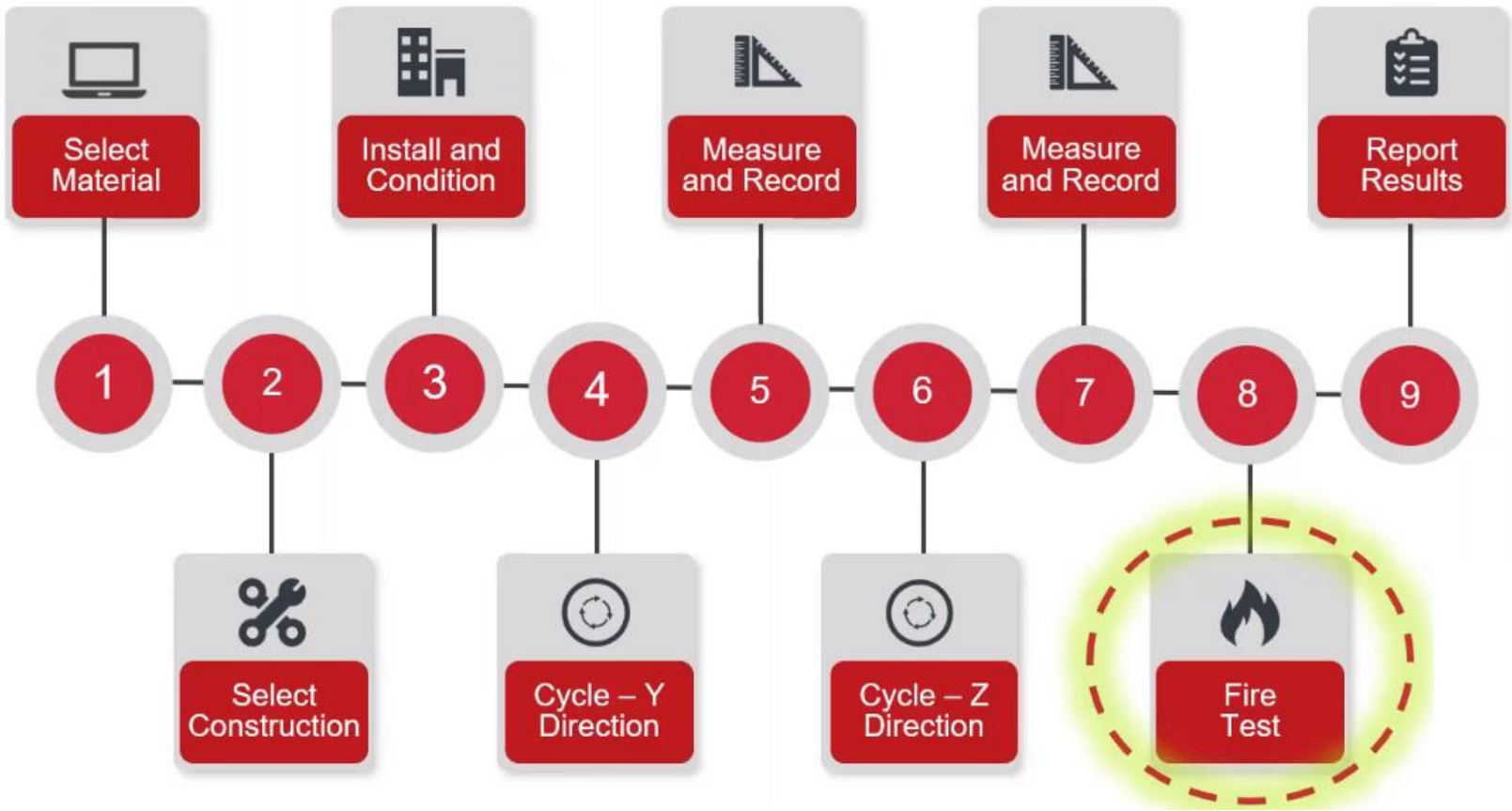


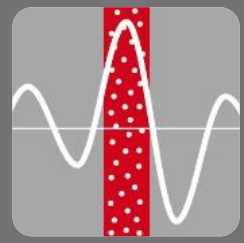


ONE TEST APPARATUS IN UL NORTH AMERICA NORTHBROOK FACIALITY



ALL THE RELEVANT PARAMETERS NEED TO BE SPECIFIED BY THE TEST SPONSOR FOR THE APPLICATION





QUALIFICATION

ASTM E3037 REQUIRES THAT THE SYSTEM HAS A FIRE TEST PASS AS WELL

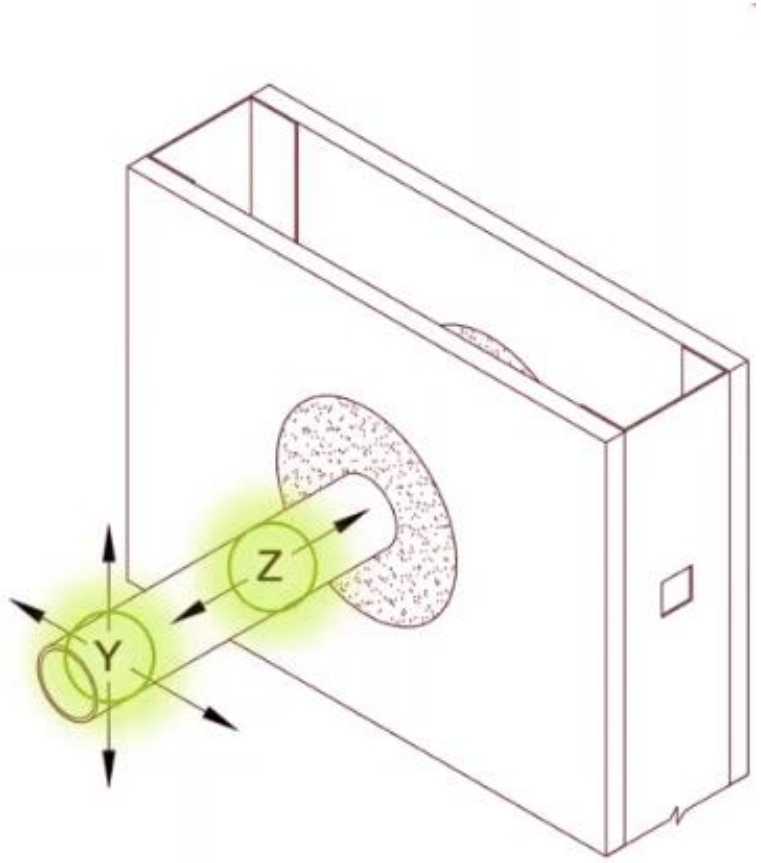
Fire Test Scope

- Evaluate firestop systems ability to withstand movement and fire
- Evaluation of cyclic axial movement testing, not rotational or shear
- Movement test – ASTM E3037
- Fire test – UL 1479 or EN 1366
- System needs to have a fire test to have a certification

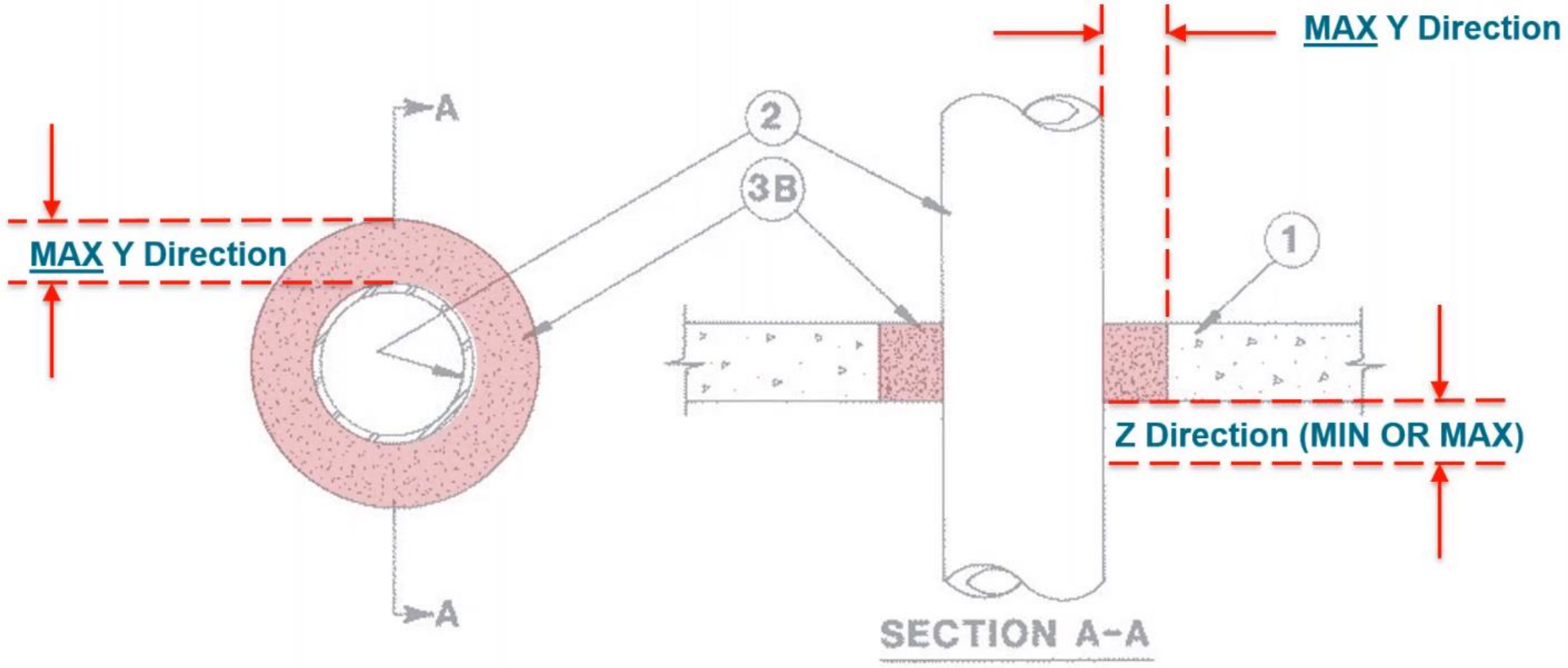
THE MOVEMENT RATINGS ARE REPORTED SEPARATELY FOR THE Y AND Z DIRECTIONS

Example Cases	Y Direction [% of Annular Space]	Z Direction [mm]
A	5%	6
B	10%	12
C	50%	24
D	90%	81

- Y = % of the max annular space tested (applied to minimum annular space in the field).
- Z = displacement of minimum annular space tested
- Will not certify a test sample for Y direction that does not have at least 3mm annular space per ASTM E3037
- Can test for 0 annular in Z direction

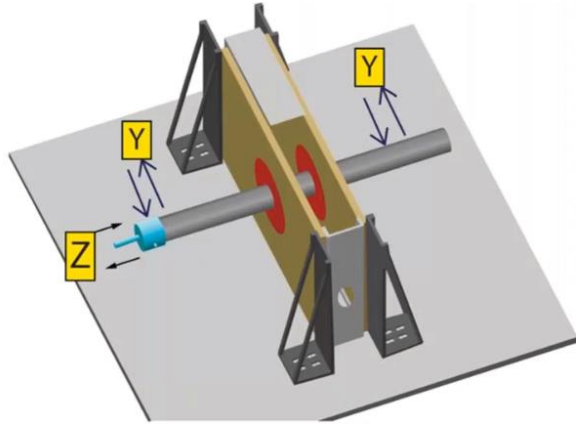


LIMITATIONS ON VALUES FOR MOVEMENT IN THE Y AND Z DIRECTIONS



PERFORMANCE IN BOTH DIRECTIONS IS CLASSIFIED ACC. TO CLASSES, A BEING THE BEST

Nomenclature permitted to be used	Y-direction	Z-direction
Class A	≥ 50%	
Class B	≥25%	
Class C	< 25%	
Class A		≥ 1 inch (25 mm)
Class B		≥0.5 inch (13 mm)
Class C		< 0.5 inch (13 mm)

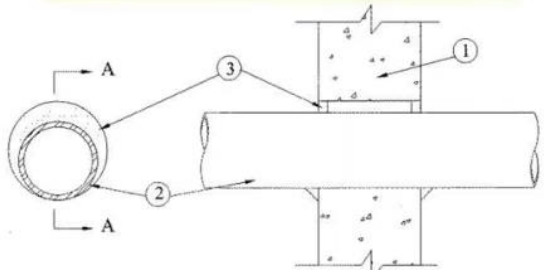


A separate fire rating will correspond with the movement rating for a firestop system

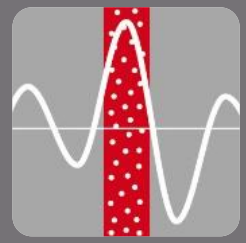
AS PART OF THE UL LISTING WILL INCLUDE MOVEMENT

System No. C-AJ-12
December 25, 2019

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 2 and 3 Hr (See Item 4)	F Ratings - 2 and 3 Hr (See Item 4)
T Rating - 0 Hr	FT Rating - 0 Hr
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Ratings - 2 and 3 Hr (See Item 4)
L Rating At 400 F - Less Than 1 CFM/sq ft	FTH Rating - 0 Hr
W Rating - Class 1 (See Item 4B)	L Rating At Ambient - Less Than 1 CFM/sq ft
	L Rating At 400 F - Less Than 1 CFM/sq ft
L Rating with Movement – See Table 1.	
M Rating (Movement) – See Table 1.	

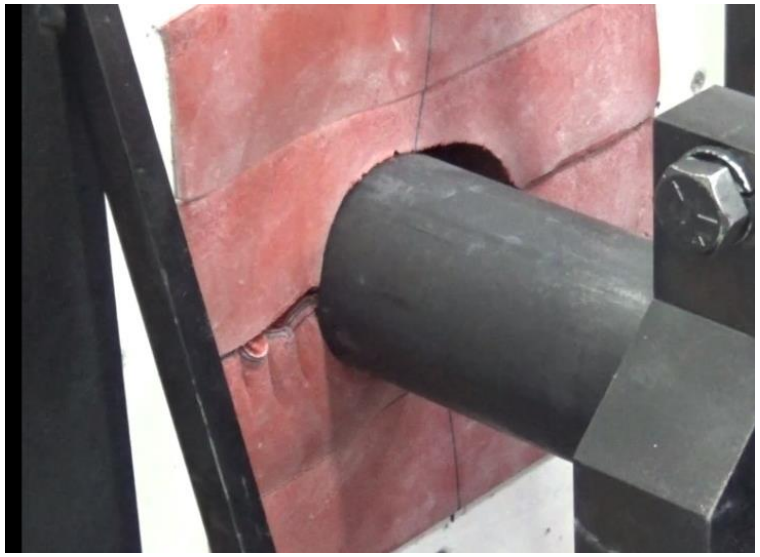


Contact a local Hilti Engineer for the movement data for your application



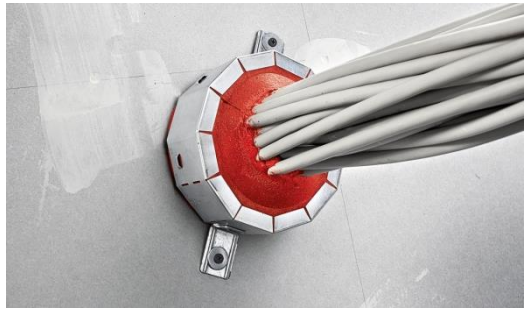
HOW DO DIFFERENT SYSTEMS STACK UP IN PRACTICE?

COATED BOARD VS BLOCKS



The movement ability of blocks is much better than of coated board thanks to its flexibility. Fire performance is assured due to intumescent material

WE HAVE MANY OF OUR MOVEMENT TESTED FIRESTOP PRODUCTS IN NZ



LET US CONSIDER ADDITIONAL ATTRIBUTES FOR OUR APPLICATIONS

ADDITIONAL ATTRIBUTES BEYOND FRL/FRR AND MOVEMENT FOR FIRE PROTECTION SYSTEMS


Seismic Resistance


Ease of Re-penetration


Smoke and Gas Tightness


Acoustic Insulation

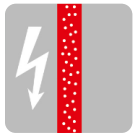

Water Tightness


Thermal Insulation


Green building Certification


Rodent Resistance


Mold and Mildew Resistance


Electrical Resistance


Chemical Resistance

Use additional test and certificates to meet all your design requirements

POLL

APPLICATIONS IN COMMERCIAL AND RESIDENTIAL BUILDINGS

BEYOND RESIDENTIAL APARTMENTS THERE ARE APPLICATIONS FOR A WIDER RANGE OF PROJECTS

Cable Trays

Sprinkler Pipes

Server/Network Rooms

Curtain Wall Facade

Specified solutions need to be covered by applications specific tests and approvals.

The codes define the basic requirements for a firestop solution.

Designing a full system required consideration of additional attributes for your systems as well.

Needs when designing commercial and residential buildings

- Comfort of building occupants
- Building efficiently
- Robustness of design
- Serviceability

Additional Attributes to contribute to needs

Mold and Mildew Resistance

Acoustic Insulation

Seismic Resistance

Smoke and gas tightness

Thermal Insulation

Re-penetration ease

COMMERCIAL AND RESIDENTIAL BUILDINGS – CABLE TRAYS

Intumescent Sealant

CP611a

Speed Sleeve and Gangplate

CFS-SL GA

Firestop Block

CFS BL

Single Layer Plasterboard approved

Mold and Mildew Resistance

Easy Re-penetration

Seismic Resistance

Smoke and gas tightness

Acoustic Insulation

Seismic Resistance

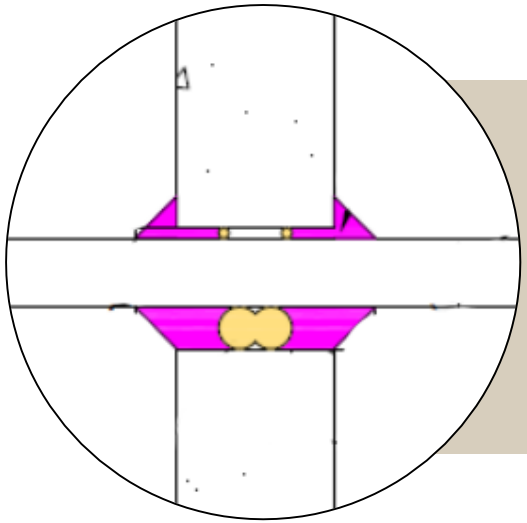
Chemical Resistance

Basic Solution

Advanced Solution 1

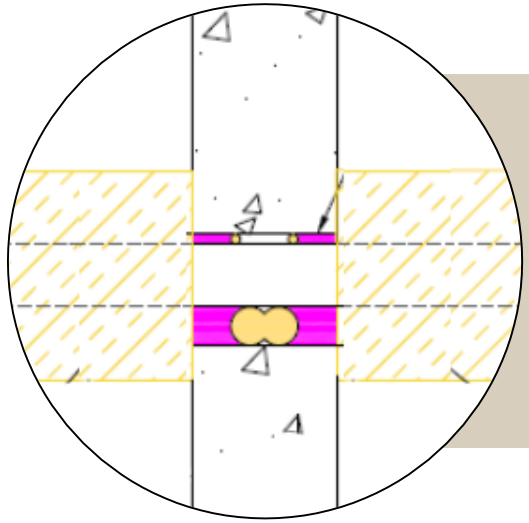
Advanced Solution 2

COMMERCIAL AND RESIDENTIAL BUILDINGS – SPRINKLER PIPES



Acoustic Sealant

CP 606



Acoustic Sealant and Insulation

CP 606 + Insulation

Acoustic Insulation

Smoke and gas tightness

Single Layer Plasterboard approved

Basic Solution 1

Acoustic Insulation

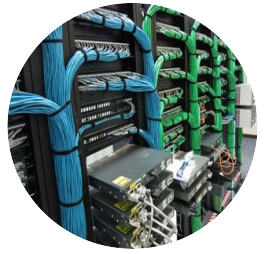
Smoke and gas tightness

Single Layer Plasterboard approved

Thermal Insulation

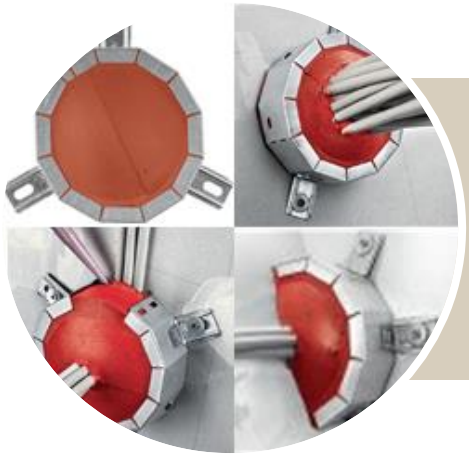
Basic Solution 2

COMMERCIAL AND RESIDENTIAL BUILDINGS – SERVER ROOMS



Intumescent Sealant

CP611a



Cable Collar

CFS-CC

Speed Sleeve and Gangplate

CFS-SL GA

Single Layer Plasterboard approved

Mold and Mildew Resistance

Acoustic Insulation

Seismic Resistance

Thermal Insulation

Easy Re-penetration

Seismic Resistance

Smoke and gas tightness

Basic Solution 1

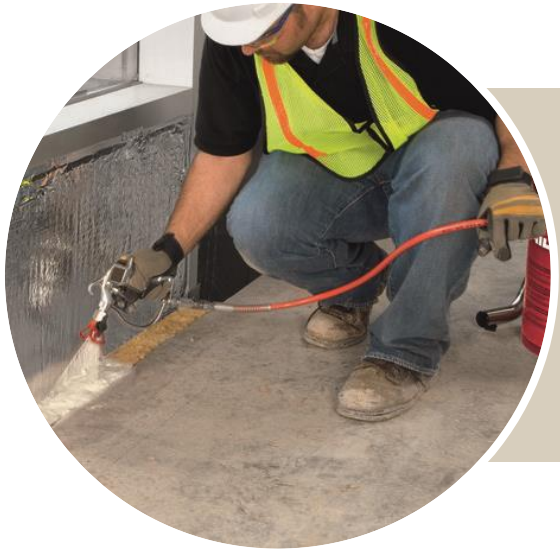
Basic Solution 2

Advanced Solution

HIGH RISE BUILDINGS - CURTAIN WALL FACADE

Acrylic Speed Spray

CFS-SP WB



Silicon Speed Spray

CFS-SP SIL

Acoustic Insulation

Smoke and gas tightness

Seismic Resistance

Advanced Solution 1

Acoustic Insulation

Smoke and gas tightness

Water Resistance

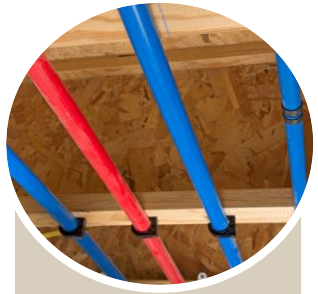
Seismic Resistance

Advanced Solution 2

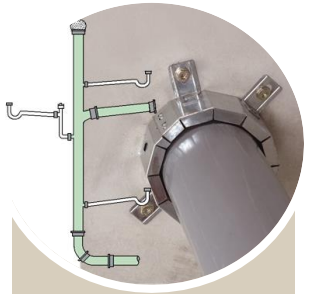
FIRESTOP APPLICATIONS IN A RESIDENTIAL APARTMENT

THERE ARE SPECIFIC REQUIREMENTS FOR PARTITIONS AND FIRESTOP IN A RESIDENTIAL APARTMENT

Cable Penetrations



Water and Gas supply pipes



Stack pipes

HVAC Services

Plasterboard Wall Linings

Specified solutions need to be covered by applications specific tests and approvals.

The codes define the basic requirements for a firestop solution.

Designing a full system required consideration of additional attributes for your systems as well.

Needs when designing residential apartments

- Comfort of building occupants
- Building efficiently
- Robustness of design
- Ease of installation

Additional Attributes to contribute to needs

Mold and Mildew Resistance

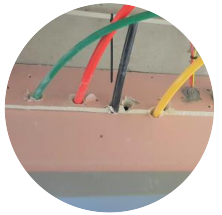
Acoustic Insulation

Seismic Resistance

Smoke and gas tightness

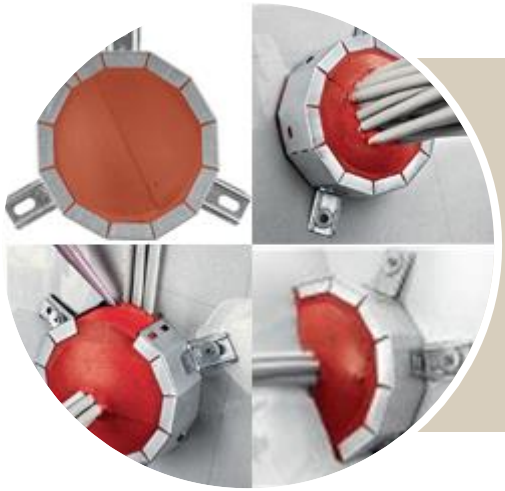
Thermal Insulation

RESIDENTIAL APARTMENTS – CABLE PENETRATIONS



Intumescent Sealant

CP611a



Cable Collar

CFS-CC

Single Layer Plasterboard approved

Mold and Mildew Resistance

Acoustic Insulation

Seismic Resistance

Thermal Insulation

Easy Re-penetration

Basic Solution

Advanced Solution

RESIDENTIAL APARTMENTS – WATER AND GAS SUPPLY PIPES

Intumescent Sealant

CP611a

Intumescent Sealant

CP611a + CFS CP

Single Layer Plasterboard approved

Mold and Mildew Resistance

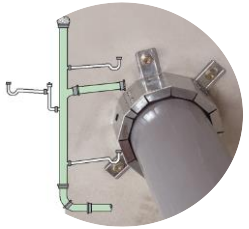
Basic Solution 1

Single Layer Plasterboard approved

Mold and Mildew Resistance

Basic Solution 2

RESIDENTIAL APARTMENTS – MAIN AND SOIL STACKS, AND VENT PIPES



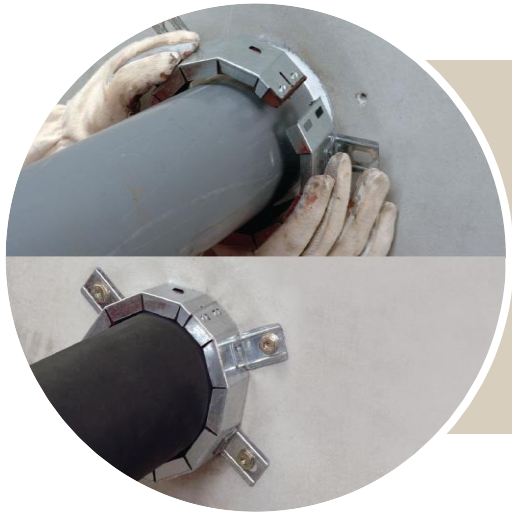
Firestop Wrap Strip

CP 648

Mold and Mildew Resistance

Acoustic Insulation

Basic Solution 1



Firestop Pipe Collar

CFS-C P

Water Resistance

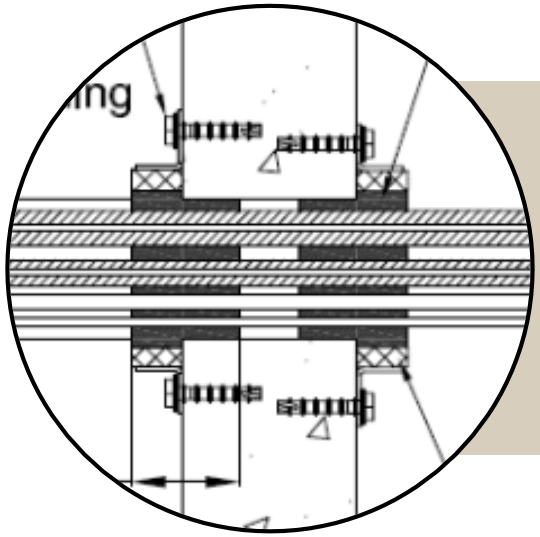
Mold and Mildew Resistance

Acoustic Insulation

Seismic Resistance

Basic Solution 2

RESIDENTIAL APARTMENTS – HVAC SERVICE BUNDLE



Intumescent sealant with Collar

CFS-C P +
CP 611A

Firestop Foam and bandage

CFS-F FX +
CFS-B

Mold and Mildew Resistance

Basic Solution 1

Mold and Mildew Resistance

Smoke and gas tightness

Basic Solution 2

RESIDENTIAL APARTMENTS - PLASTERBOARD WALL LININGS

Acoustic Sealant

CP 606

Mold and Mildew Resistance

Smoke and gas tightness

Single Layer Plasterboard approved

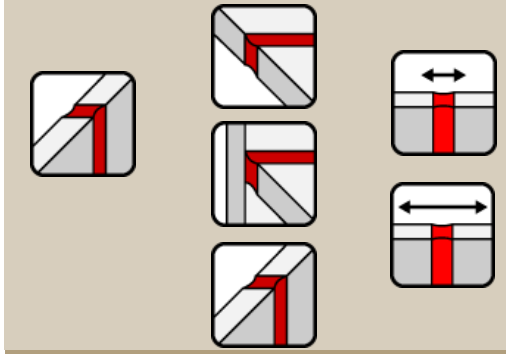
Acoustic Insulation

Basic Solution

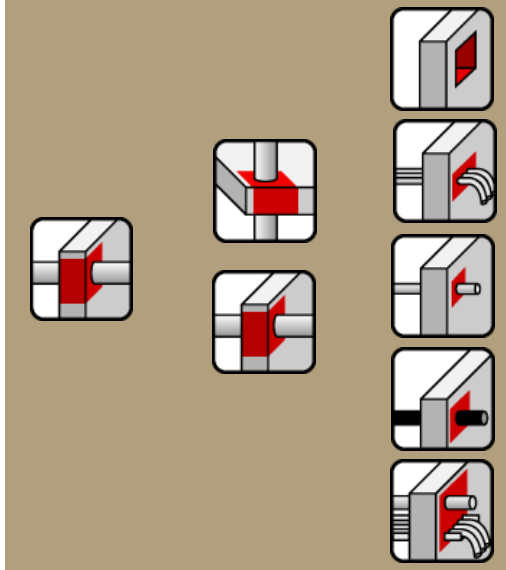
HILTI WILL SUPPORT YOU WITH YOUR FULL FIRESTOP SYSTEM

PASSIVE FIRE CONSULTATION AT A PROJECT LEVEL

Type of Construction Joint



Type of service penetration



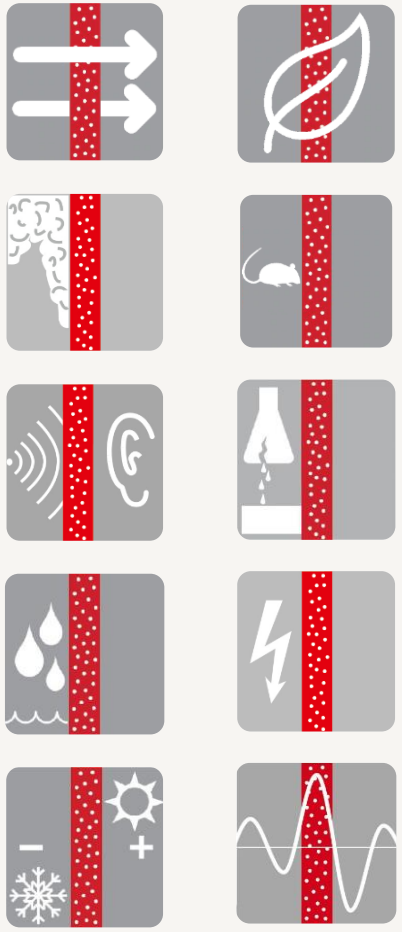
Substrate

Fire Resistance Level

FRR
Integrity

FRR
Insulation

Additional Attributes

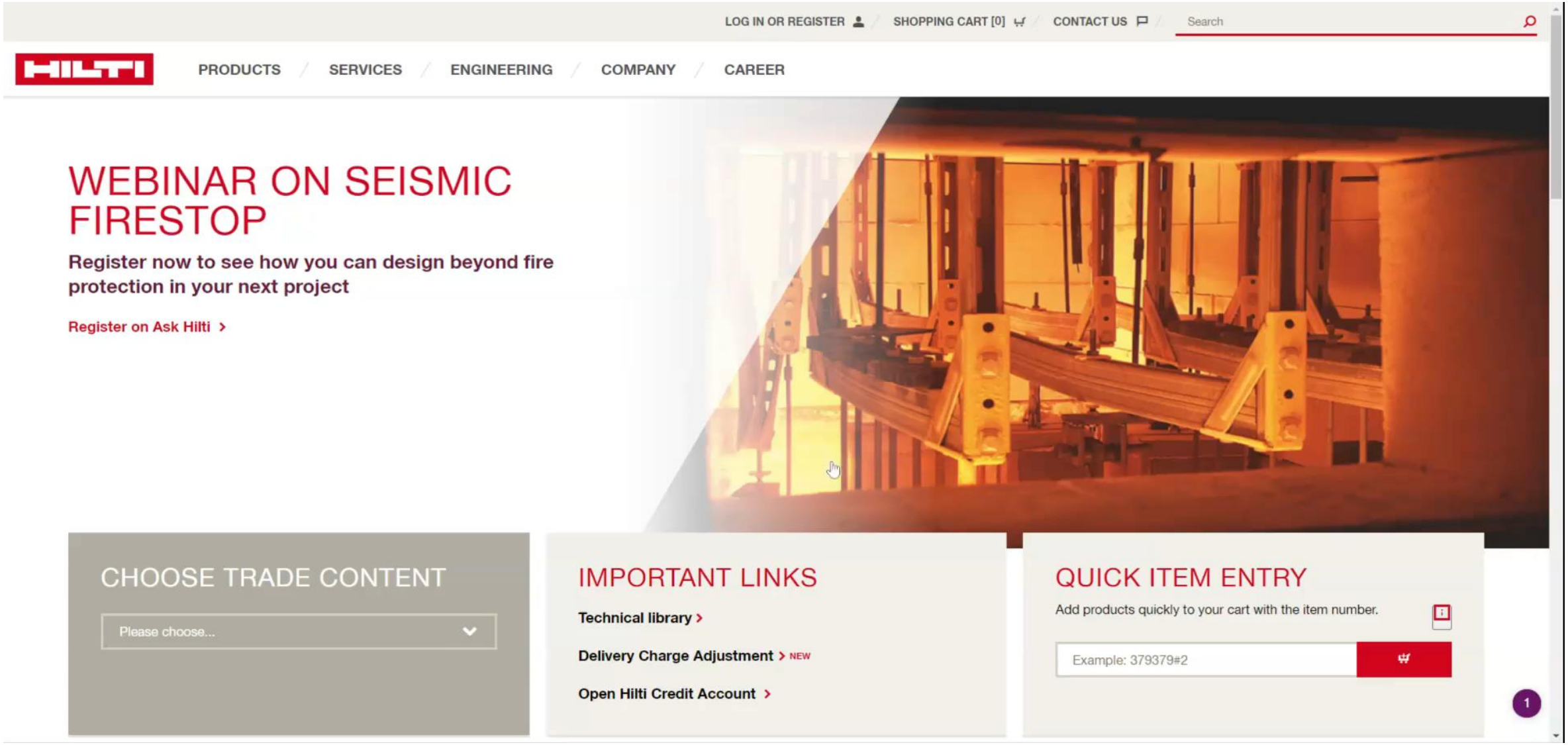


FIRESTOP PRODUCT APPLICATION GUIDE

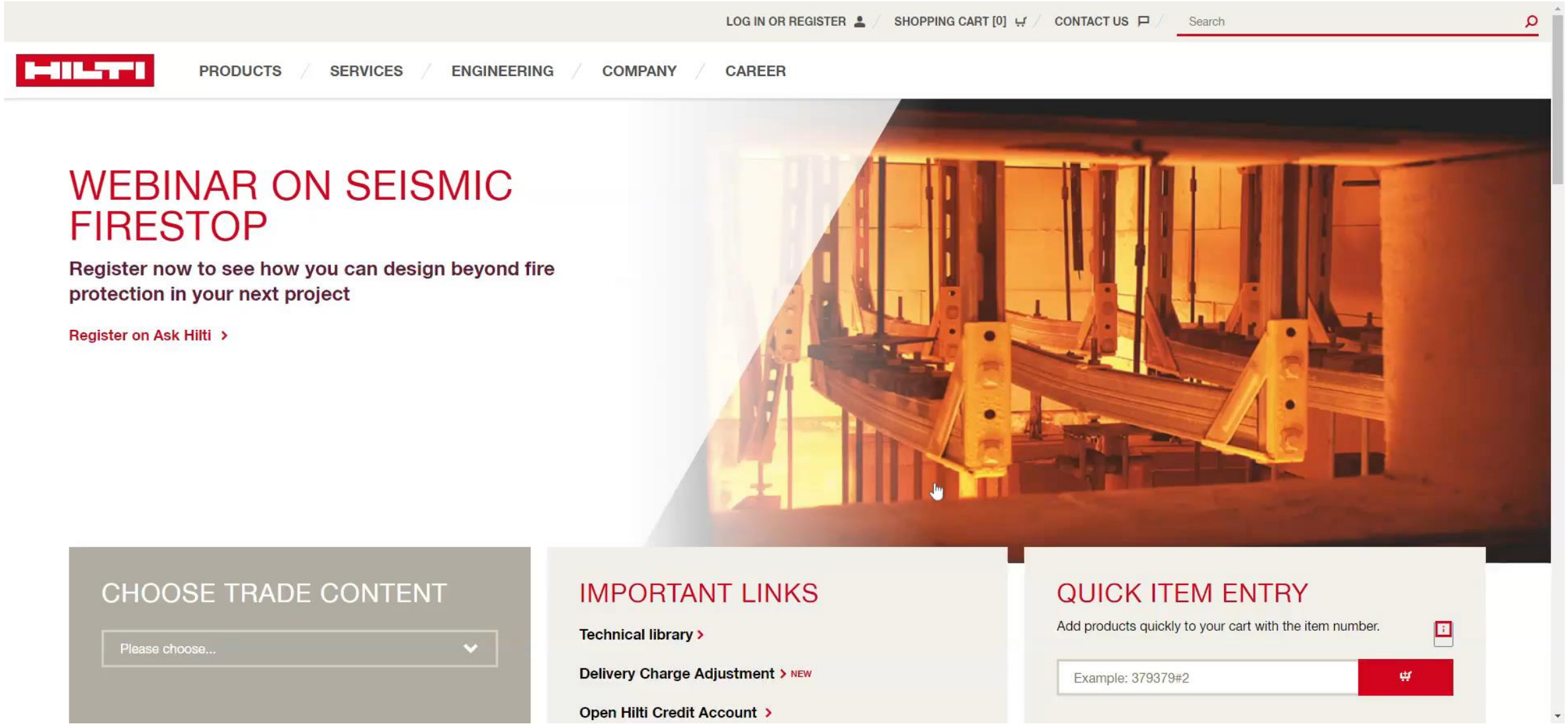
Application			Hilti Firestop Product										
Type	Application	Joint / Penetration Limitations	Hilti CP606	Hilti CFS-SP	Hilti CP611a	Hilti CFS-F FX	Hilti CFS-CC	Hilti CFS-SL	Hilti CFS-PL	Hilti CFS-BL	Hilti CFS-B	Hilti CP 648-E	Hilti CFS-C P
													
Construction Joints	Small Expansion Joints	Max Width 30mm	■										
	Curtain Wall Joints	Max Width 150mm		■									
Electrical Penetrations	Single Cables	Ø ≤ 16mm			■	■	■	■	■	■			
	Small Cable Bundles	Ø ≤ 20mm			■	■	■	■	■	■			
	Large Cable Bundles	Ø ≤ 86mm				■	■	■	■	■			
	Single Conduits	16mm ≤ Ø ≤ 32mm			■	■	■		■	■			
	Single Conduits	Bundled, Ø ≤ 80mm				■	■		■	■			
	Cable Trays	Max Opening 400mm x 400mm				■							
		Max Opening 1000mm x 1000mm								■			
Plumbing Penetrations	Water & Gas Supply Pipes	16mm ≤ Ø ≤ 32mm			■								■
	Flammable Pipes	32mm ≤ Ø ≤ 150mm										■	■
		32mm ≤ Ø ≤ 250mm											■
	Insulated Flammable Pipes	26mm ≤ Ø ≤ 60mm											■
	Metal Pipes	15mm ≤ Ø ≤ 150mm	■										
	Insulated Metal Pipes										■		
Mixed Penetrations	Electrical Cables & Conduits	Max Opening 400mm x 400mm				■							
		Max Opening 1000mm x 1000mm								■			

Note: This document is a guide only. Contact your local Hilti representative on 0800 444 584 for the full range of up to date third party approvals and related FRL or visit www.hilti.co.nz
v27/03/2019

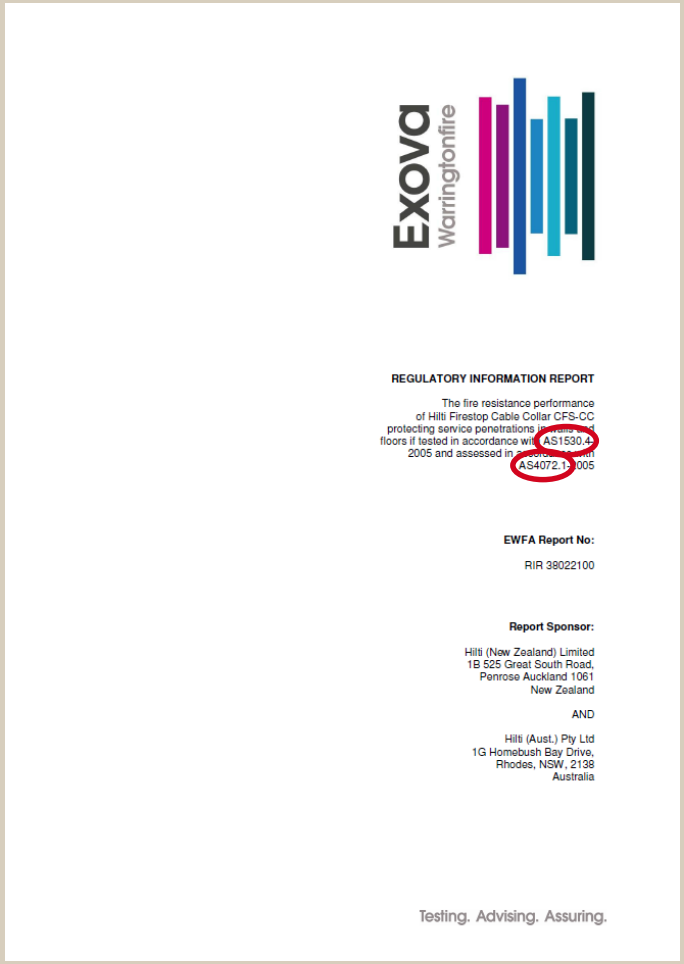
FINDING A RIR THROUGH THE MENUS



FINDING A RIR THROUGH THE SEARCH FUNCTION



EXOVA RIR (REGULATORY INFORMATION REPORT) DOCUMENTS



Exova Warringtonfire

REGULATORY INFORMATION REPORT

The fire resistance performance of Hilti Firestop Cable Collar CFS-CC protecting service penetrations in [illegible] floors if tested in accordance with AS1530.4-2005 and assessed in accordance with AS4072.1-2005

EWFA Report No:

RIR 38022100

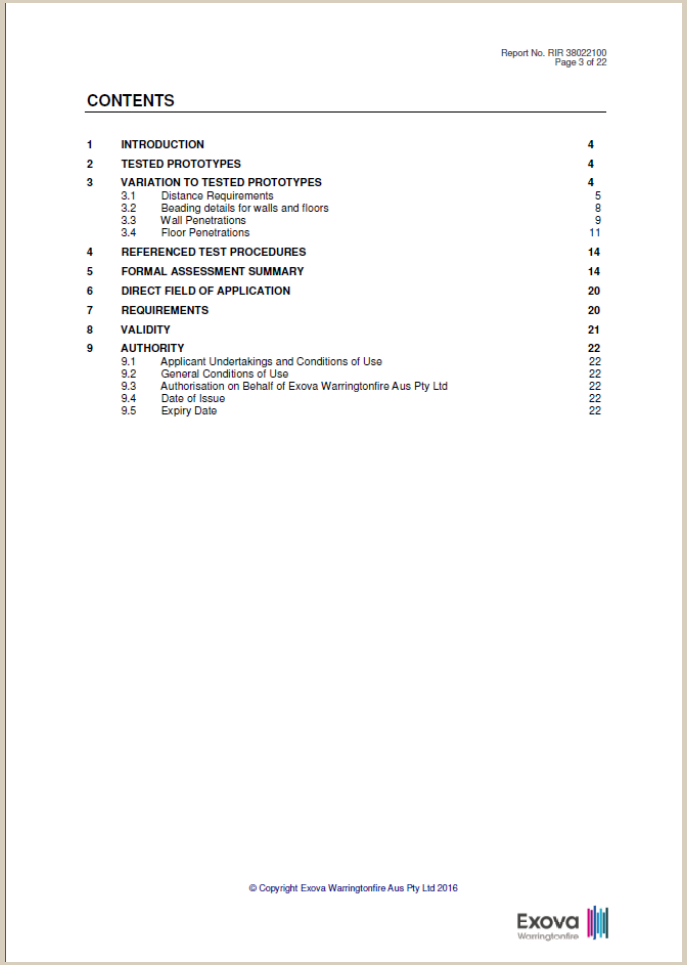
Report Sponsor:

Hilti (New Zealand) Limited
1B 525 Great South Road,
Penrose Auckland 1061
New Zealand

AND

Hilti (Aust.) Pty Ltd
1G Homebush Bay Drive,
Rhodes, NSW, 2138
Australia

Testing. Advising. Assuring.



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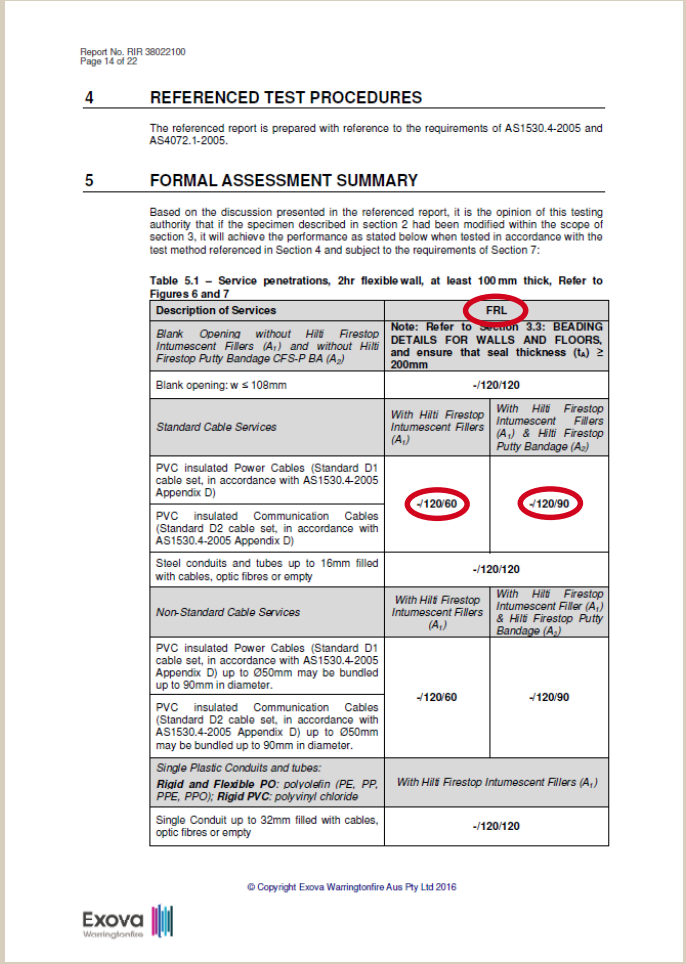


4 REFERENCED TEST PROCEDURES

The referenced report is prepared with reference to the requirements of AS1530.4-2005 and AS4072.1-2005.

5 FORMAL ASSESSMENT SUMMARY

Based on the discussion presented in the referenced report, it is the opinion of this testing authority that if the specimen described in section 2 had been modified within the scope of section 3, it will achieve the performance as stated below when tested in accordance with the test method referenced in Section 4 and subject to the requirements of Section 7:

Table 5.1 – Service penetrations, 2hr flexible wall, at least 100 mm thick, Refer to Figures 6 and 7

Description of Services	FRL	
Blank Opening without Hilti Firestop Intumescent Fillers (A_1) and without Hilti Firestop Putty Bandage CFS-P BA (A_2)	**Note: Refer to Section 3.3: BEADING DETAILS FOR WALLS AND FLOORS, and ensure that seal thickness (t_s) ≥ 200mm**	
Blank opening: w ≤ 108mm	-/120/120	
Standard Cable Services	*With Hilti Firestop Intumescent Fillers (A_1)*	*With Hilti Firestop Intumescent Fillers (A_1) & Hilti Firestop Putty Bandage (A_2)*
PVC insulated Power Cables (Standard D1 cable set, in accordance with AS1530.4-2005 Appendix D)	-/120/60	-/120/90
PVC insulated Communication Cables (Standard D2 cable set, in accordance with AS1530.4-2005 Appendix D)		
Steel conduits and tubes up to 16mm filled with cables, optic fibres or empty	-/120/120	
Non-Standard Cable Services	*With Hilti Firestop Intumescent Fillers (A_1)*	*With Hilti Firestop Intumescent Filler (A_1) & Hilti Firestop Putty Bandage (A_2)*
PVC insulated Power Cables (Standard D1 cable set, in accordance with AS1530.4-2005 Appendix D) up to Ø50mm may be bundled up to 90mm in diameter.	-/120/60	-/120/90
PVC insulated Communication Cables (Standard D2 cable set, in accordance with AS1530.4-2005 Appendix D) up to Ø50mm may be bundled up to 90mm in diameter.		
Single Plastic Conduits and tubes: ***Rigid and Flexible PO**: polyolefin (PE, PP, PPE, PPO); **Rigid PVC**: polyvinyl chloride*	*With Hilti Firestop Intumescent Fillers (A_1)*	
Single Conduit up to 32mm filled with cables, optic fibres or empty	-/120/120	

WHERE NO APPROVAL IS AVAILABLE HILTI CAN PROVIDE AN ENGINEERING JUDGEMENT

ENGINEERING JUDGMENT / FIRESTOP DETAIL

Hilti Entwicklungsgesellschaft mbH
Business Unit Fire Protection
Hiltistrasse 6
D-86916 Kaufering

e-mail: KFG Team FS EJ

PROJECT: [redacted]
CUSTOMER: [redacted]
HILTI MO: New Zealand
CONTACT PARTNER: [redacted]
Tel:
Page: 1 / 2
Inq. number: 19020148-2
Date: 11.03.2019
Name: [redacted]

Firestop seals according to : Fire resista

Rating : FRR -/120

Details:

1. PROPOSAL

This engineering judgement report has been
firestop electrical cables through hollow sect

This Engineering Judgment represents a fire
tested utilising the general principles and pe

2. BASIC TEST EVIDENCE

The following test evidence has been taken
- Report No. RIR 38022100, EWFA, in ac
- European approval no. ETA-13/0704, C

3. NOTES

- This judgement is to be seen as an
- All products must be installed in acc
- All services must be rigidly supporte
- Dimensions shown are in millimeter

[redacted]

Note:
Hilti Corporation ("Hilti") has provided this specification on the ba
information and the existing level of technical knowledge (state o
the proposed detail be subjected to the standardised fire resistan
The accuracy of this specification is guaranteed provided that:
1. only original Hilti products as defined in this specification are u
2. these specific products are used and installed only by a comp
obeying the calculations and conditions mentioned in this spe
and the installation manual and other data sheets of Hilti.
3. the proposed performance, the listed prerequisites and criteri
agreed by the user.

ENGINEERING JUDGMENT / FIRESTOP DETAIL

Hilti Entwicklungsgesellschaft mbH
Business Unit Fire Protection
Hiltistrasse 6
D-86916 Kaufering

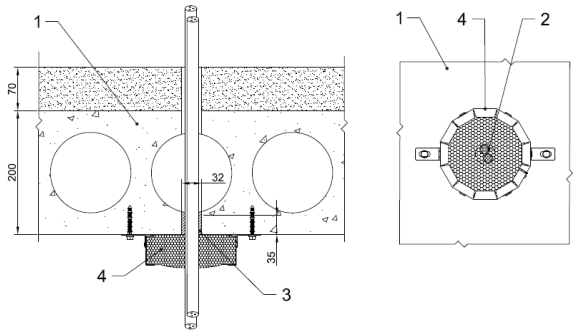
e-mail: KFG Team FS EJ

PROJECT: [redacted]
CUSTOMER: [redacted]
HILTI MO: New Zealand
CONTACT PARTNER: [redacted]
Tel:
Page: 2 / 2
Inq. number: 19020148-2
Date: 11.03.2019
Name: [redacted]

Firestop seals according to : Fire resistance of the Hilti CFS-CC Firestop Cable Collar

Rating : FRR -/120/60

Details:



1. Floor Assembly - 200 mm hollow core floor slab with 70 mm concrete topping. min.FRR -/120/60.
2. Electrical cables - TPS power cables 2 x 5 mm.
3. Hilti Firestop Mastic CP 611A or FS-One applied in a depth of 35 mm
4. Hilti Cable Collar CFS-CC - installed on bottom side of floor according installation instructions.

Notes:
- Cables must be rigidly supported on both sides of the seal.
- Opening size: max. Ø 32 mm

Note:
Hilti Corporation ("Hilti") has provided this specification on the basis of the data and information given to Hilti by "the customer" the respective Hilti product information and the existing level of technical knowledge (state of the art). This specification relates to the expected level of fire resistance performance, should the proposed detail be subjected to the standardised fire resistance test against which the judgement was made.
The accuracy of this specification is guaranteed provided that:
1. only original Hilti products as defined in this specification are used.
2. these specific products are used and installed only by a competent and experienced user in a manner which represents the state of the art and by strictly obeying the calculations and conditions mentioned in this specification as well as all relevant technical instructions, the operating manual, the setting manual and the installation manual and other data sheets of Hilti.
3. the proposed performance, the listed prerequisites and criteria conform with the conditions actually existing on the jobsite and have been checked and agreed by the user.

2011-01-17

ENGINEERING JUDGMENT / FIRESTOP DETAIL

Hilti Entwicklungsgesellschaft mbH
Business Unit Fire Protection
Hiltistrasse 6
D-86916 Kaufering

e-mail: KFG Team FS EJ

PROJECT: [redacted]
CUSTOMER: [redacted]
HILTI MO: New Zealand
CONTACT PARTNER: [redacted]
Tel:
Page: 1 / 2
Inq. number: 19030253
Date: 06.03.2019
Name: [redacted]

Firestop seals according to : fire resista

Rating : FRR -/60/6

Details:

1. PROPOSAL

This engineering judgement report has b
The content is to firestop PVC conduits i

This Engineering Judgment represents a
ratings if tested utilising the general princ

2. BASIC TEST EVIDENCE

The following test evidence has been tak
- Report No. RIR 37571100.1, EWFA
- European approval no. ETA-10/010
- Test report no. 3010/417/11, IBMB

3. NOTES

- This judgement is to be seen as an
- All products must be installed in ac
- All services must be rigidly supporte
- Dimensions shown are in millimeter

[redacted]

Note:
Hilti Corporation ("Hilti") has provided this specification on the ba
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and the installation manual and other data sheets of Hilti.
3. the proposed performance, the listed prerequisites and criteri
agreed by the user.

ENGINEERING JUDGMENT / FIRESTOP DETAIL

Hilti Entwicklungsgesellschaft mbH
Business Unit Fire Protection
Hiltistrasse 6
D-86916 Kaufering

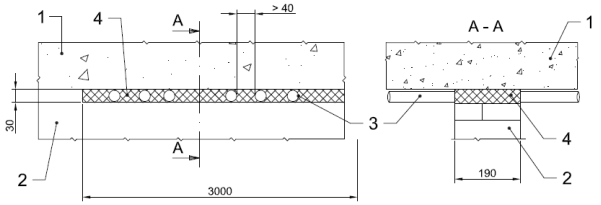
e-mail: KFG Team FS EJ

PROJECT: [redacted]
CUSTOMER: [redacted]
HILTI MO: New Zealand
CONTACT PARTNER: [redacted]
Tel:
Page: 2 / 2
Inq. number: 19030253
Date: 06.03.2019
Name: [redacted]

Firestop seals according to : fire resistance of the Hilti Firestop Foam CFS-F FX

Rating : FRR -/60/60

Details:



1. Concrete floor - thickness min. 150 mm
2. Wall assembly - concrete or masonry, thickness 195 mm, classified as min. FRR -/60/60.
3. Plastic conduit - PVC, diameter up to 25 mm.
4. Hilti Firestop Foam CFS-F FX - gap between pipes/cables and wall filled in full depth of wall.

Note:
- Plastic conduits must be rigidly supported on both sides of the seal.
- distance between conduits min. 40 mm
- opening size: max. 30 x 3000 mm

Note:
Hilti Corporation ("Hilti") has provided this specification on the basis of the data and information given to Hilti by "the customer" the respective Hilti product information and the existing level of technical knowledge (state of the art). This specification relates to the expected level of fire resistance performance, should the proposed detail be subjected to the standardised fire resistance test against which the judgement was made.
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3. the proposed performance, the listed prerequisites and criteria conform with the conditions actually existing on the jobsite and have been checked and agreed by the user.

SUMMARY

- The standard ASTM E3037 exists to test the performance of firestop systems after being subjected to axial movement cycles.

- Certain firestop system types will perform better than other after being subjected to Movement/seismic displacements, ie, foam systems do not crack like board systems.

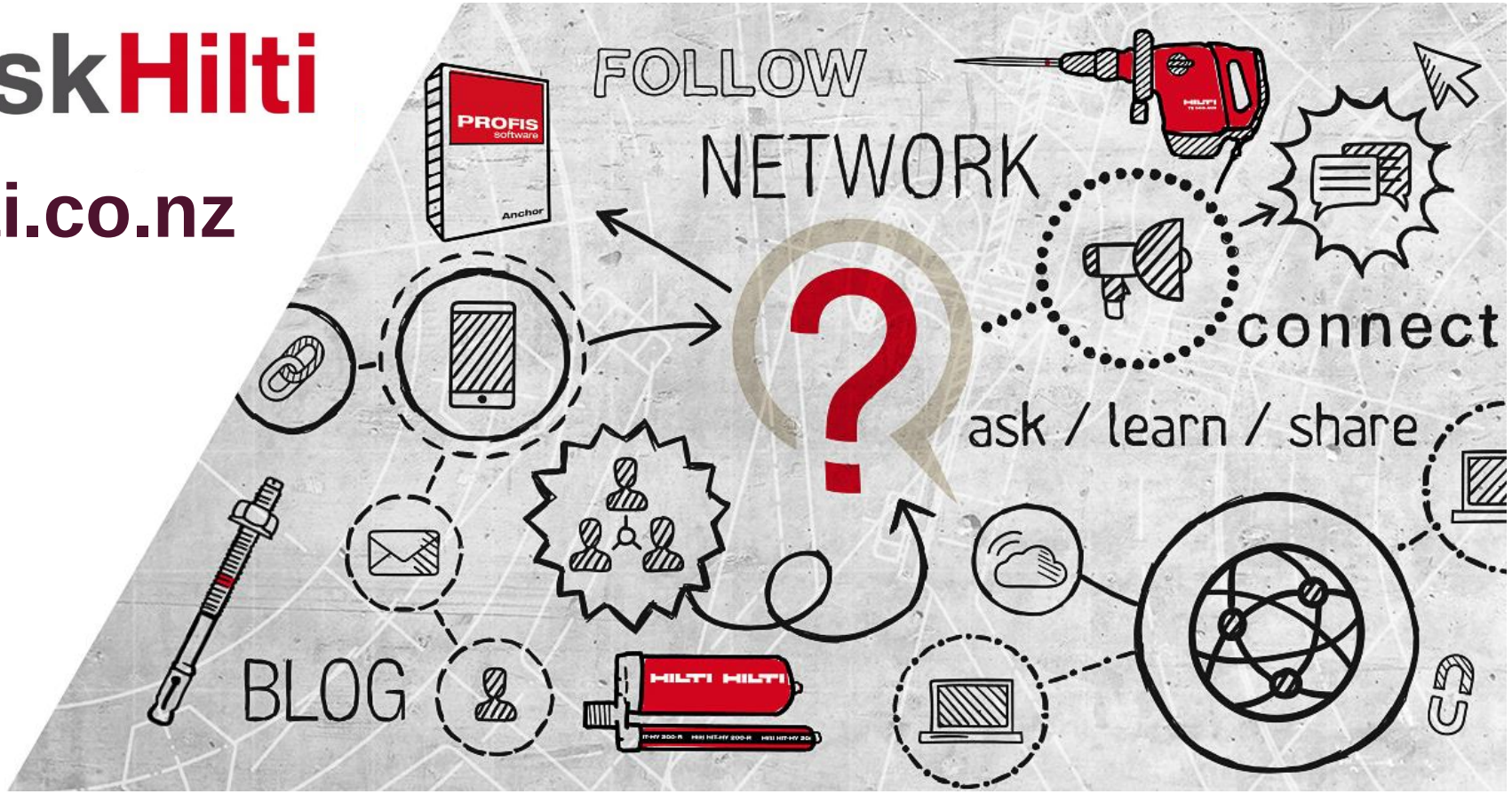
- Additional attributes beyond movement ,such as airflow, acoustic performance and ability to easily repenetrate, can be considered in your firestop specifications allowing you to design to the full system. Ask for certifications of performance from your supplier.

DISCUSSION AND Q&A

DO YOU HAVE ANY FURTHER QUESTIONS? ASK HILTI!

askHilti

Ask.hilti.co.nz



THANK YOU

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