



## Golden Rules and Key Considerations when Designing BWIC's

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To assist early MEP design & “Builders Work in Connection” planning for service penetration seals, with a particular focus on spacing, coordination, supports and overall aperture sizes.

## Introduction

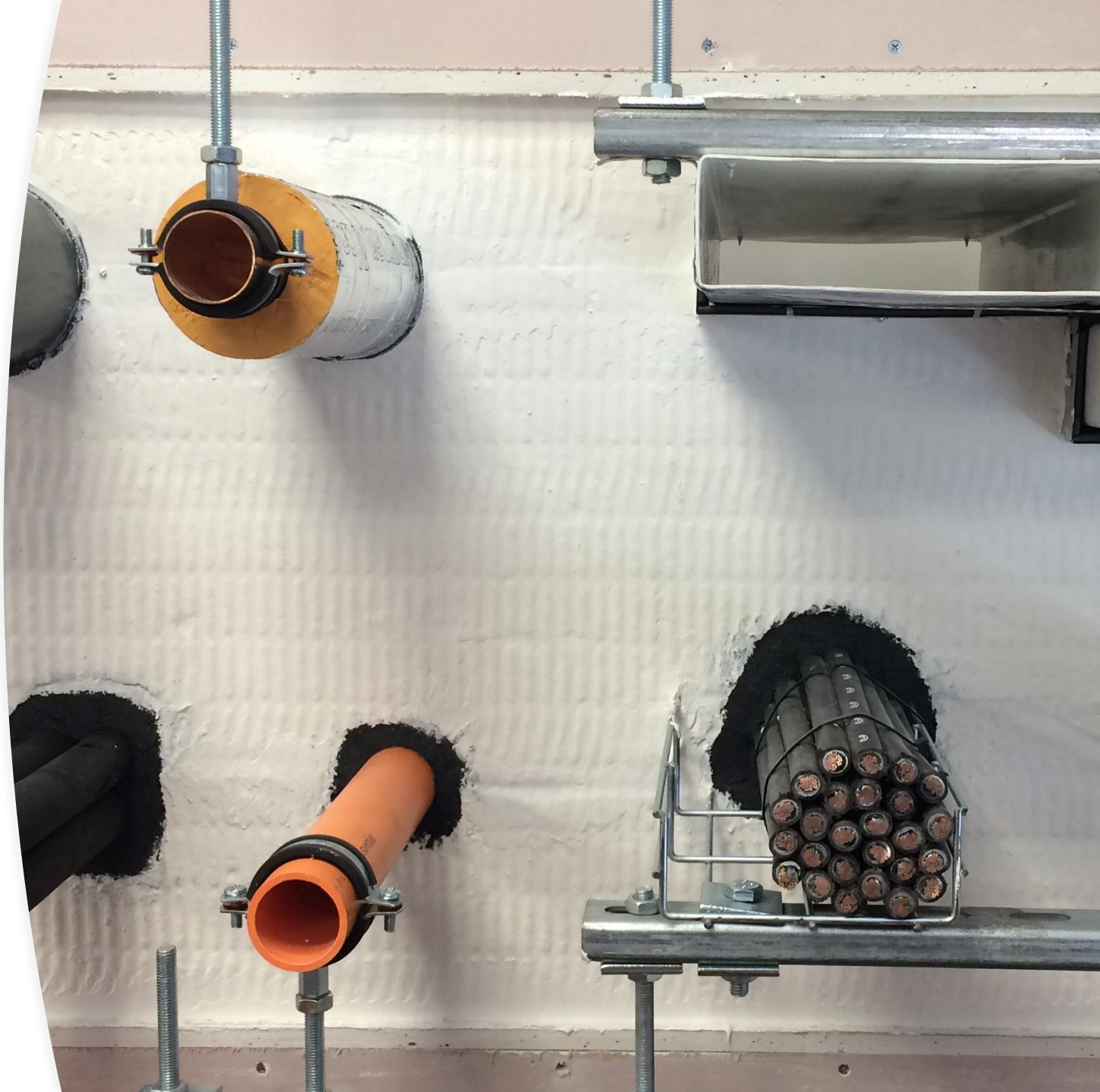
When coordinating a building's services, special consideration is required when these services penetrate through fire separating elements.

There are requirements and rules that dictate not only what can penetrate through the fire compartmentation depending on the actual supporting constructions / substrate, but also how they can penetrate.

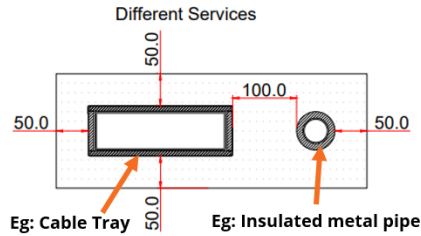
It is important to identify an appropriately tested standard detail for each application, however, this requires a full and accurate specification of the services etc which is not always available at an early stage of design and can prevent progression.

This document however, is intended to highlight **6 sets of Golden Rules or Considerations.**

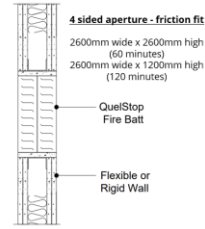
These provide some recommendations for typical service penetrations through BWIC openings with a particular focus on spatial coordination, based on using Quelfire products and their tested scope of application, whilst also taking into consideration practical aspects of the installation.



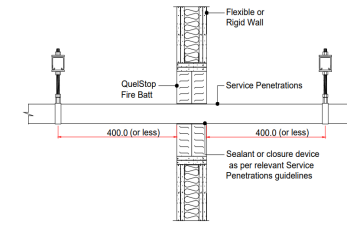
# 6 Sets of Golden Rules & Considerations



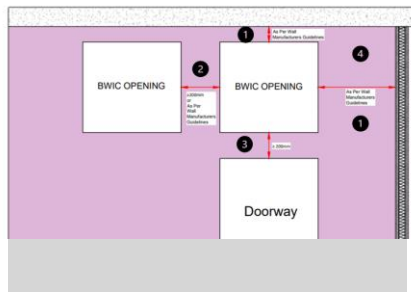
## 1 - Spacing of Services



## 3 - Max. Aperture Sizes



## 5 - Service Supports



## 2 - Spacing of Apertures

Application	Pipe Material	Pipe Size (Outside Diameter)	Pipe Installation (Support Type)	Thickness	Minimum Density	Quelfire Detail**	Section	Page	10	11	12	13	
Wall Penetration	Steel	150mm	Rivets	N/A	N/A	QB-FR108-02-08	1						
				13	20mm	N/A	QB-FR108-02-08	1					
		42	Rivets	13	20mm	N/A	QB-FR108-02-08	1					
				13	20mm	N/A	QB-FR108-02-08	1					
		42	Rivets	13	20mm	N/A	QB-FR108-02-08	2					
				13	20mm	N/A	QB-FR108-02-08	1					
	Copper / Stainless Steel	42	Rivets	20	20mm	N/A	QB-FR108-02-08	1					
				20	20mm	N/A	QB-FR108-02-08	1					
		42	Rivets	40	20mm	N/A	QB-FR108-02-08	1					
				40	20mm	N/A	QB-FR108-02-08	2					
		42	Rivets	20mm	10kg/m <sup>3</sup>	QB-FR108-02-08	2						
				20mm	10kg/m <sup>3</sup>	QB-FR108-02-08	1						
Wall Penetration	42	Rivets	Half Faced Grom	20mm	10kg/m <sup>3</sup>	QB-FR108-02-11	1						
				20mm	10kg/m <sup>3</sup>	QB-FR108-02-11	2						
	42	Rivets	Wood	20mm	10kg/m <sup>3</sup>	QB-FR108-02-11	1						
				20mm	10kg/m <sup>3</sup>	QB-FR108-02-11	2						
	42	Rivets	Half Faced Bush	20mm	10kg/m <sup>3</sup>	QB-FR108-02-11	1						
				20mm	10kg/m <sup>3</sup>	QB-FR108-02-11	2						
Steel / Cast Iron	150mm	Rivets	Rivets	20mm	10kg/m <sup>3</sup>	QB-FR108-02-11	1						
				20mm	10kg/m <sup>3</sup>	QB-FR108-02-11	2						
	42	Rivets	Rivets	20mm	10kg/m <sup>3</sup>	QB-FR108-02-11	1						
				20mm	10kg/m <sup>3</sup>	QB-FR108-02-11	2						
	42	Rivets	Rivets	20mm	10kg/m <sup>3</sup>	QB-FR108-02-11	1						
				20mm	10kg/m <sup>3</sup>	QB-FR108-02-11	2						
42	Rivets	Rivets	20mm	10kg/m <sup>3</sup>	QB-FR108-02-11	1							
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## Standard Installation Details

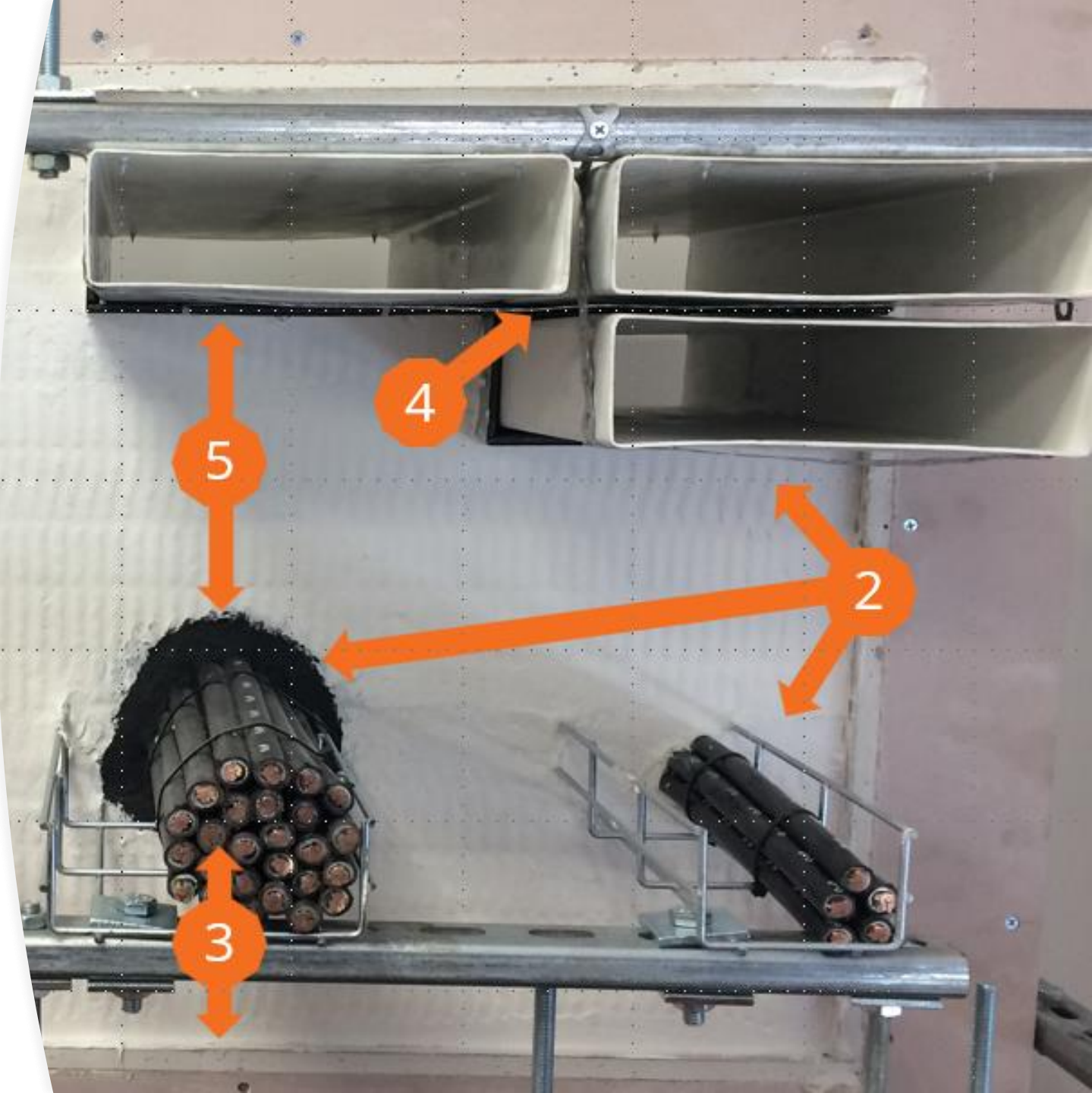
All Quelfire standard installation details follow a consistent format stating:

1. The size and specification of the services but also:
2. The size of the seal required,
3. The space that is required between the seal and the edge of the opening,
4. The space that is required between the seal and the neighbouring seal where the service is the same type,
5. The space that is required between the seal and the neighbouring seal where the service is a different type,

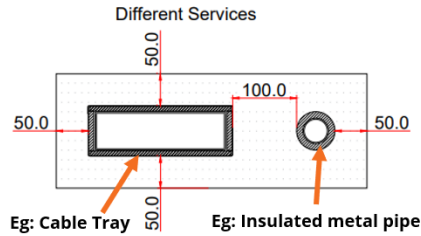
Standard installation details can be found [here](#) or in the [QuelSelector](#).

The selection of the appropriate detail is dependent on having accurate and specific information about the services.

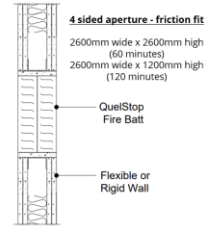
Likewise, spacing dimensions are from the seal to the edge of the opening, so until specific details are known it can be challenging to coordinate BWIC's at early stages of design. Hence, the Golden Rules and Considerations.



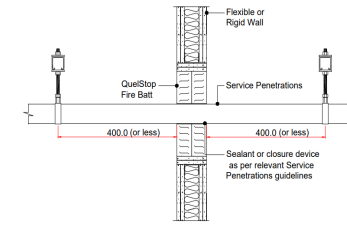
# 1/6 - Golden Rules & Considerations



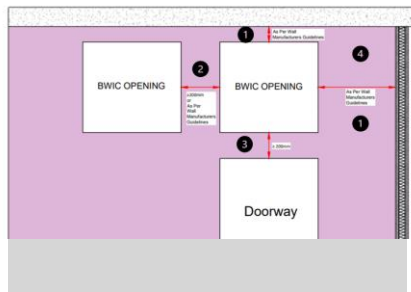
1 - Spacing of Services



3 - Max. Aperture Sizes



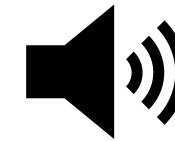
5 - Service Supports



2 - Spacing of Apertures

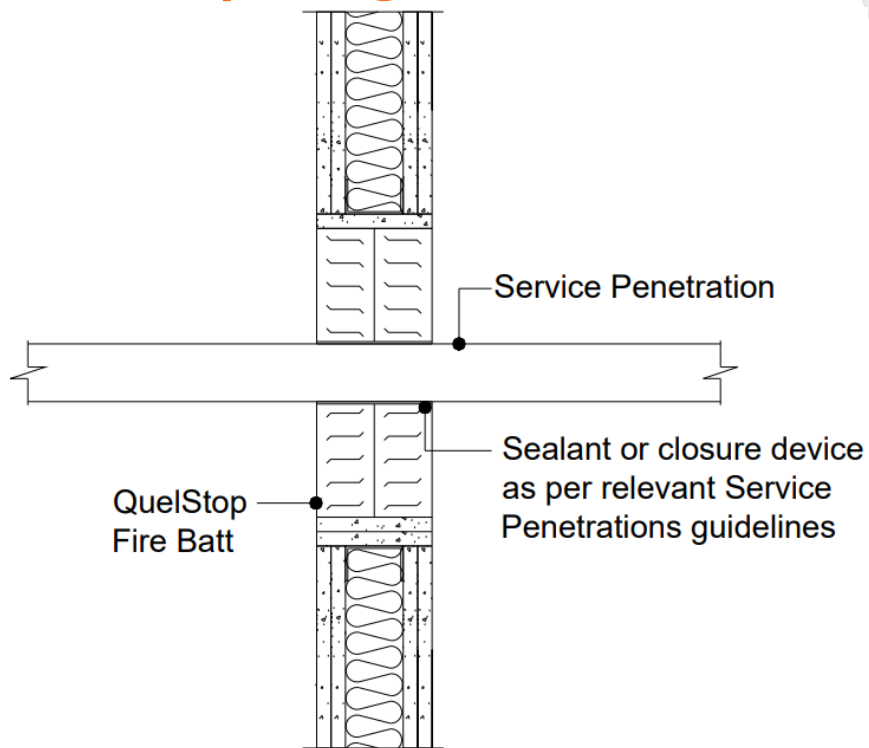
Application	Pipe Material	Pipe Size (Outside Diameter)	Pipe Insulation (Support Type)	Thickness	Minimum Density	Quelfire Detail**	Detail Page	10	11	12	13
Wall Penetration	Steel	150mm	None	25mm	N/A	QBF1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	15.25mm	N/A	QBF1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	15.25mm	N/A	QBF1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	15.25mm	N/A	QBF1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	15.25mm	N/A	QBF1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	15.25mm	N/A	QBF1008-01-08	1	✓	✓	✓	✓
	Copper / Stainless Steel	150mm	None	25mm	N/A	QBF1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	15.25mm	N/A	QBF1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	15.25mm	N/A	QBF1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	15.25mm	N/A	QBF1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	15.25mm	N/A	QBF1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	15.25mm	N/A	QBF1008-01-08	1	✓	✓	✓	✓
Wool	150mm	None	25mm	100kg/m <sup>3</sup>	QBF1008-01-08	2	✓	✓	✓	✓	
	150mm	None	25mm	100kg/m <sup>3</sup>	QBF1008-01-08	2	✓	✓	✓	✓	
	150mm	None	25mm	100kg/m <sup>3</sup>	QBF1008-01-08	2	✓	✓	✓	✓	
	150mm	None	25mm	100kg/m <sup>3</sup>	QBF1008-01-08	2	✓	✓	✓	✓	
	150mm	None	25mm	100kg/m <sup>3</sup>	QBF1008-01-08	2	✓	✓	✓	✓	
	150mm	None	25mm	100kg/m <sup>3</sup>	QBF1008-01-08	2	✓	✓	✓	✓	
Steel / Cast Iron	150mm	None	25mm	100kg/m <sup>3</sup>	QBF1008-01-08	2	✓	✓	✓	✓	
	150mm	None	25mm	100kg/m <sup>3</sup>	QBF1008-01-08	2	✓	✓	✓	✓	
	150mm	None	25mm	100kg/m <sup>3</sup>	QBF1008-01-08	2	✓	✓	✓	✓	
	150mm	None	25mm	100kg/m <sup>3</sup>	QBF1008-01-08	2	✓	✓	✓	✓	
	150mm	None	25mm	100kg/m <sup>3</sup>	QBF1008-01-08	2	✓	✓	✓	✓	
	150mm	None	25mm	100kg/m <sup>3</sup>	QBF1008-01-08	2	✓	✓	✓	✓	
PB-1	150mm	Armaflex*	15.25mm	N/A	QBF1008-01-08	1	✓	✓	✓	✓	
	150mm	Armaflex*	15.25mm	N/A	QBF1008-01-08	1	✓	✓	✓	✓	
	150mm	Armaflex*	15.25mm	N/A	QBF1008-01-08	1	✓	✓	✓	✓	
MIL (PB-1)	150mm	Armaflex*	15.25mm	N/A	QBF1008-01-08	1	✓	✓	✓	✓	
	150mm	Armaflex*	15.25mm	N/A	QBF1008-01-08	1	✓	✓	✓	✓	

4 - Insulation Types



6 - Acoustic

# Spacing of Services 4-Sided Openings

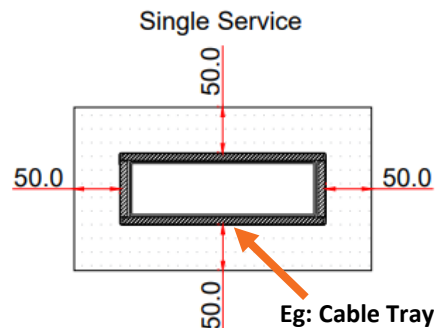


Apertures should be constructed in accordance with the wall system manufacturers recommendations and spacing measurements are from the lining.

**Any images shown are for illustration purposes only.  
Always check the tested scope of application.**

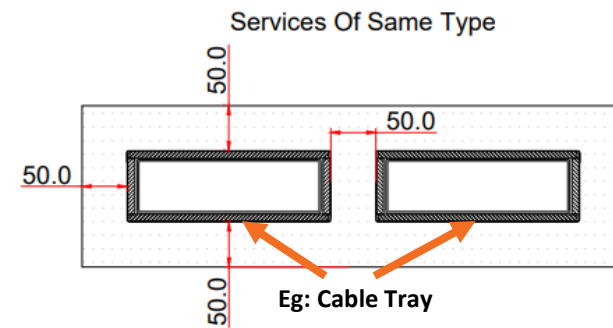
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**Single Service**

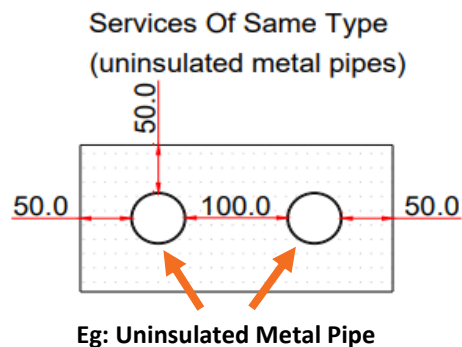
We advise a minimum of 50mm from edge of aperture around the service to allow enough room to install the Quelfire products correctly.



**Multiple Services of the same type  
(Excluding Uninsulated Metal Pipes)**

We advise a minimum of 50mm between services of the same type excluding uninsulated metal pipework.

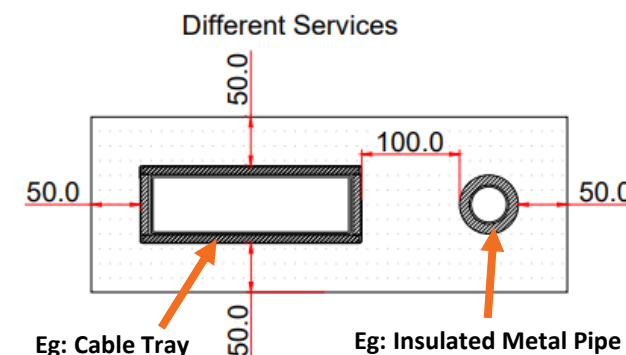
We advise a minimum of 50mm from edge of aperture around the service to allow enough room to install the Quelfire products correctly.



**Multiple Uninsulated Metal Pipes**

We advise a minimum of 100mm between uninsulated metal pipework. The reason is that locally interrupted foil faced rock fibre typically 40mm thick is required to achieve a fire resistance rating.

We advise a minimum of 50mm from edge of aperture around the service to allow enough room to install the Quelfire products.

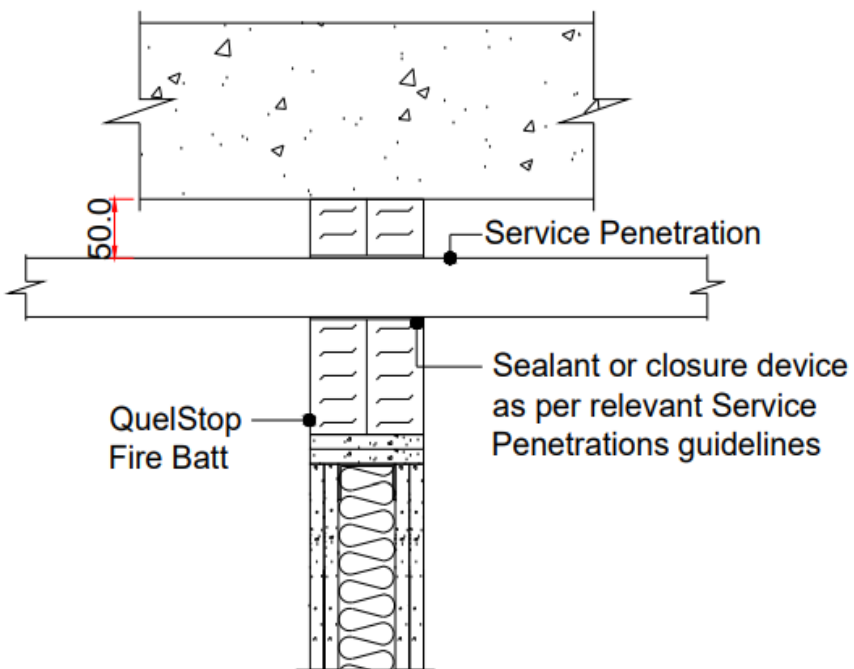


**Multiple Services of different types**

We advise a minimum of 100mm between services of a different type.

We advise a minimum of 50mm from edge of aperture around the service to allow enough room to install the Quelfire products.

## Spacing of Services Head of wall opening (where no movement is required)

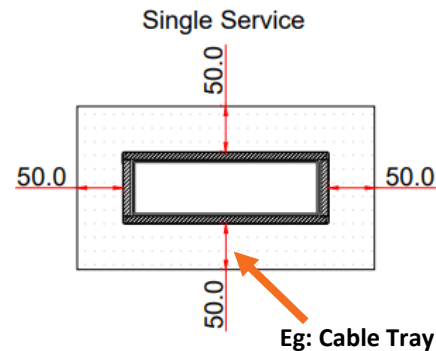


Apertures should be constructed in accordance with the wall system manufacturers recommendations and spacing measurements are from the lining.

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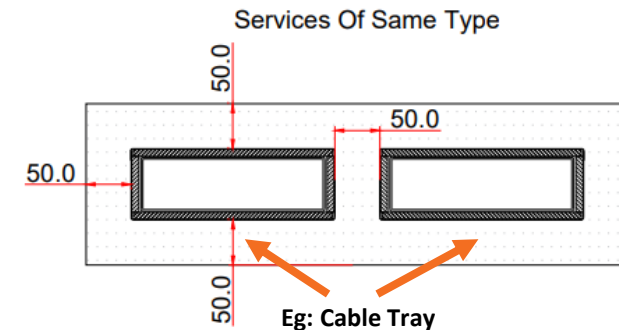
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### Single Service

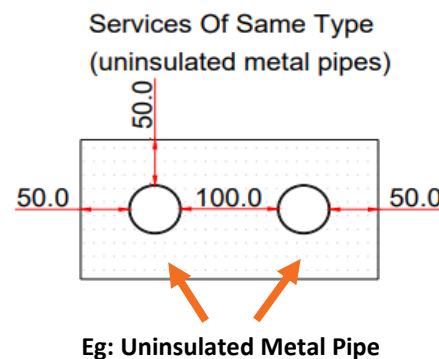
We advise a minimum of 50mm from edge of aperture around the service to allow enough room to install the Quelfire products.



### Multiple Services of the same type (Excluding Uninsulated Metal Pipes)

We advise a minimum of 50mm between services of the same type excluding uninsulated metal pipework.

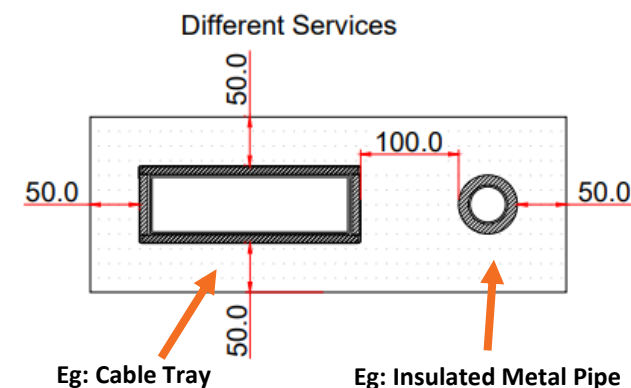
We advise a minimum of 50mm from edge of aperture around the service to allow enough room to install the Quelfire products.



### Multiple Uninsulated Metal Pipes

We advise a minimum of 100mm between uninsulated metal pipework. The reason is that locally interrupted foil faced rock fibre typically 40mm thick is required to achieve a fire resistance rating.

We advise a minimum of 50mm from edge of aperture around the service to allow enough room to install the Quelfire products.

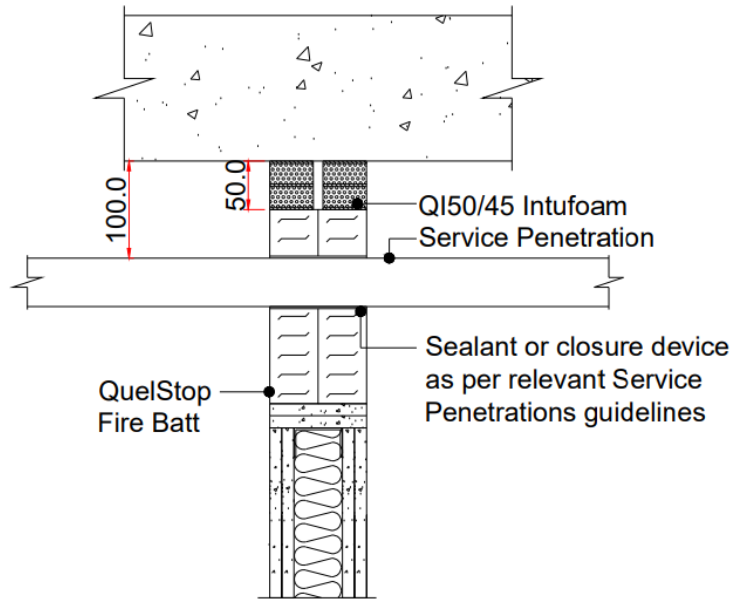


### Multiple Services of different types

We advise a minimum of 100mm between services of a different type.

We advise a minimum of 50mm from edge of aperture around the service to allow enough room to install the Quelfire products.

# Spacing of Services Head of wall opening (where movement is required) Up to 60 minute fire rating

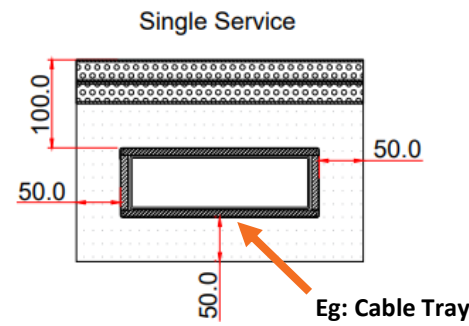


Apertures should be constructed in accordance with the wall system manufacturers recommendations and spacing measurements are from the lining.

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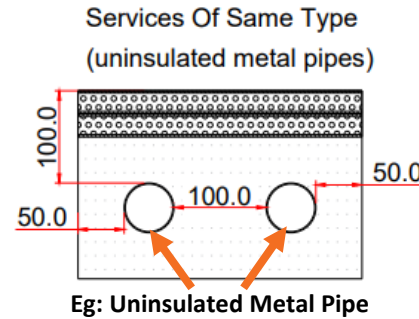
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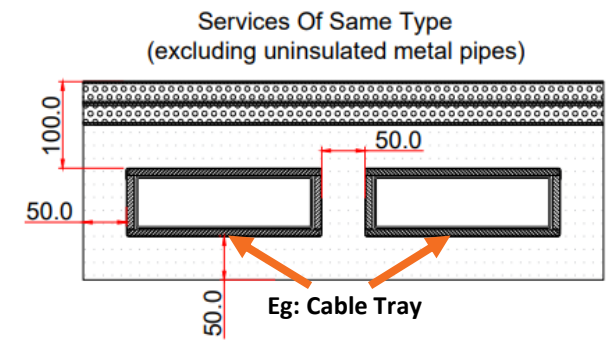
**Single Service**

We advise a minimum of 50mm from the side and bottom edge of the aperture around the service to allow enough room to install the Quelfire products.  
We advise a minimum of 100mm from the soffit to the service to allow enough room to install the QI Intufoam and QuelfStop System.



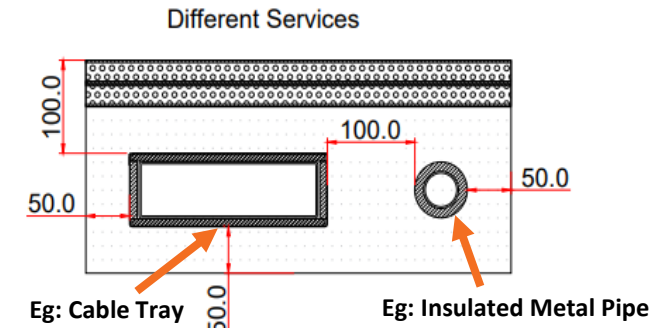
**Multiple Uninsulated Metal Pipes**

We advise a minimum of 100mm between uninsulated metal pipework. The reason is that locally interrupted foil faced rock fibre typically 40mm thick is required to achieve a fire resistance rating.  
We advise a minimum of 50mm from the side and bottom edge of the aperture around the service to allow enough room to install the Quelfire products.  
We advise a minimum of 100mm from the soffit to the service to allow enough room to install the QI Intufoam and QuelfStop System.



**Multiple Services of the same type (Excluding Uninsulated Metal Pipes)**

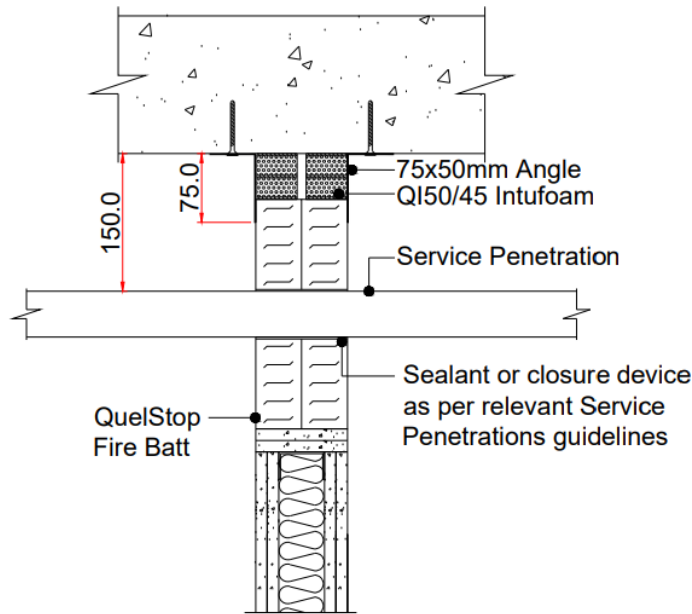
We advise a minimum of 50mm between services of the same type excluding uninsulated metal pipework.  
We advise a minimum of 50mm from the side and bottom edge of the aperture around the service to allow enough room to install the Quelfire products.  
We advise a minimum of 100mm from the soffit to the service to allow enough room to install the QI Intufoam and QuelfStop System.



**Multiple Services of different types**

We advise a minimum of 100mm between services of a different type.  
We advise a minimum of 50mm from the side and bottom edge of the aperture around the service to allow enough room to install the Quelfire products.  
We advise a minimum of 100mm from the soffit to the service to allow enough room to install the QI Intufoam and QuelfStop System.

# Spacing of Services Head of wall opening (where movement is required) Up to 120 minute fire rating

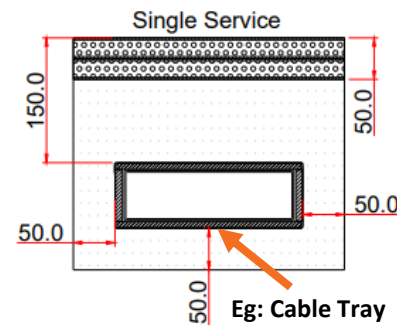


Apertures should be constructed in accordance with the wall system manufacturers recommendations and spacing measurements are from the lining.

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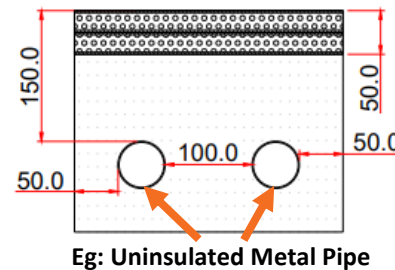


**Single Service**

We advise a minimum of 50mm from the side and bottom edge of the aperture around the service to allow enough room to install the Quelfire products.

We advise a minimum of 150mm from the soffit to the service to allow enough room to install the QI Intufoam, Quelfire System and steel angle.

**Services Of Same Type  
(uninsulated metal pipes)**

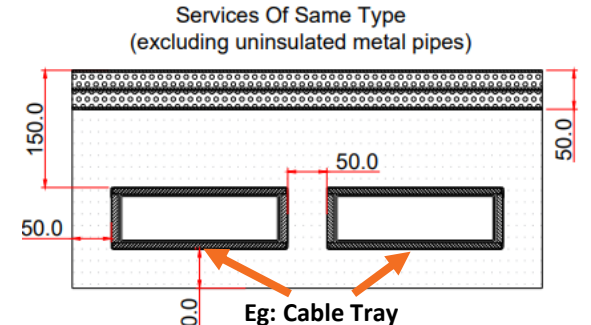


**Multiple Uninsulated Metal Pipes**

We advise a minimum of 100mm between uninsulated metal pipework. The reason is that locally interrupted foil faced rock fibre typically 40mm thick is required to achieve a fire resistance rating.

We advise a minimum of 50mm from the side and bottom edge of the aperture around the service to allow enough room to install the Quelfire products.

We advise a minimum of 150mm from the soffit to the service to allow enough room to install QI Intufoam, Quelfire Fire Batt and steel angle.



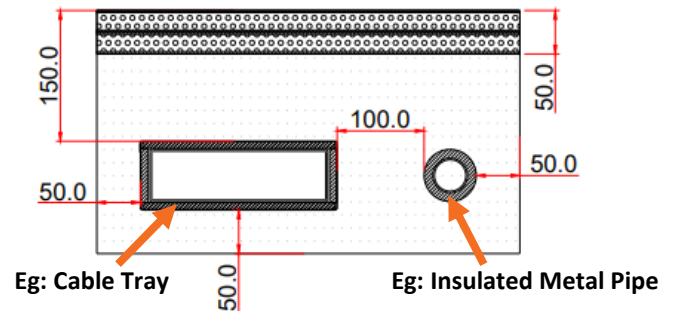
**Multiple Services of the same type  
(Excluding Uninsulated Metal Pipes)**

We advise a minimum of 50mm between services of the same type excluding uninsulated metal pipework.

We advise a minimum of 50mm from the side and bottom edge of the aperture around the service to allow enough room to install the Quelfire products.

We advise a minimum of 150mm from the soffit to the service to allow enough room to install the QI Intufoam, Quelfire System and steel angle.

**Different Services**



**Multiple Services of different types**

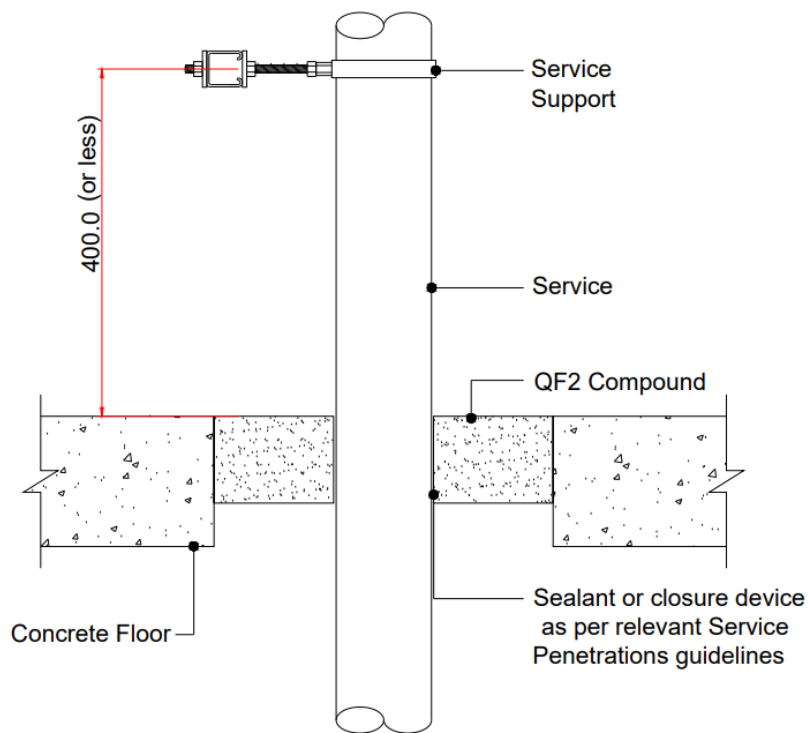
We advise a minimum of 100mm between services of a different type

We advise a minimum of 50mm from the side and bottom edge of the aperture around the service to allow enough room to install the Quelfire products.

We advise a minimum of 150mm from the soffit to the service to allow enough room to install QI Intufoam, Quelfire Fire Batt and steel angle.

# Spacing of Services

## 4-sided openings in floors

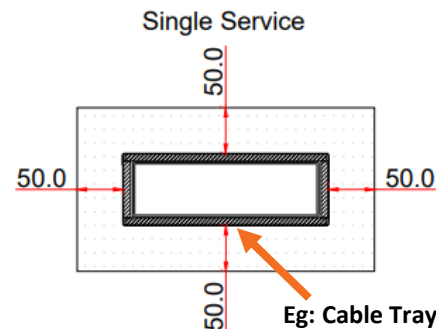


Apertures should be constructed in accordance with the floor system manufacturers recommendations.

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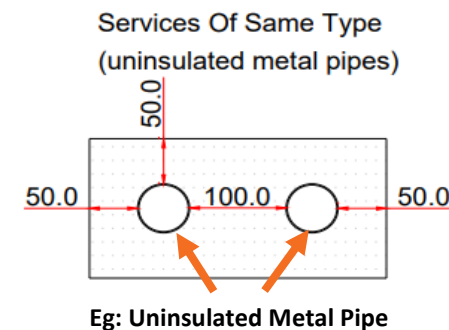
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**Single Service**

We advise a minimum of 50mm from edge of aperture around the service to allow enough room to install the Quelfire products.

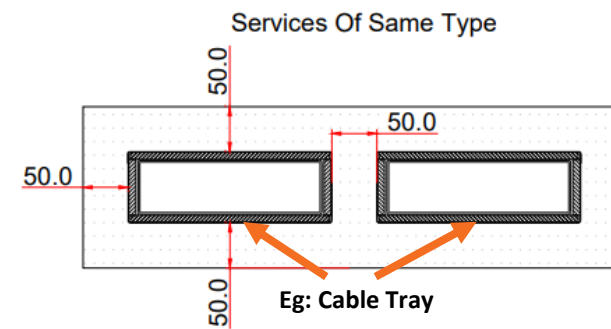


**Eg: Uninsulated Metal Pipe**

**Multiple Uninsulated and Combustible Insulated Metal Pipes**

We advise a minimum of 100mm between uninsulated metal pipework and combustible insulated metal pipes. The reason is that locally interrupted foil faced rock fibre typically 40mm thick is required to achieve a fire resistance rating for non lagged metal pipework. Combustible insulation such as phenolic and elastomeric have specific spacing requirements between them for floor penetrations.

We advise a minimum of 50mm from edge of aperture around the service to allow enough room to install the Quelfire products.

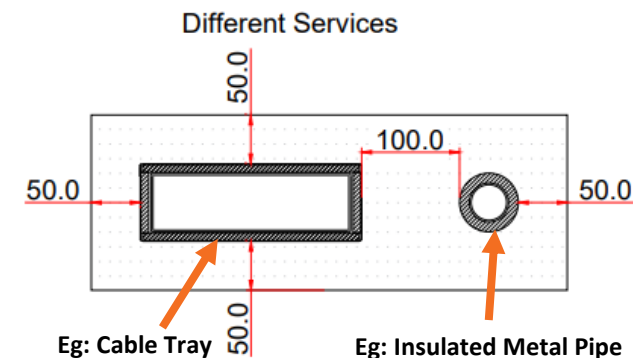


**Multiple Services of the same type**

**(Excluding Uninsulated Metal Pipes and Combustible Insulated Metal Pipes)**

We advise a minimum of 50mm between services of the same type excluding uninsulated metal pipework.

We advise a minimum of 50mm from edge of aperture around the service to allow enough room to install the Quelfire products.



**Eg: Cable Tray**      **Eg: Insulated Metal Pipe**

**Multiple Services of different types**

We advise a minimum of 100mm between services of a different type.

We advise a minimum of 50mm from edge of aperture around the service to allow enough room to install the Quelfire products.

## Spacing of Services

### How do the Golden Rules relate to Actual Data?

At early MEP planning stage it is not always clear what “size” or type the seal will be.

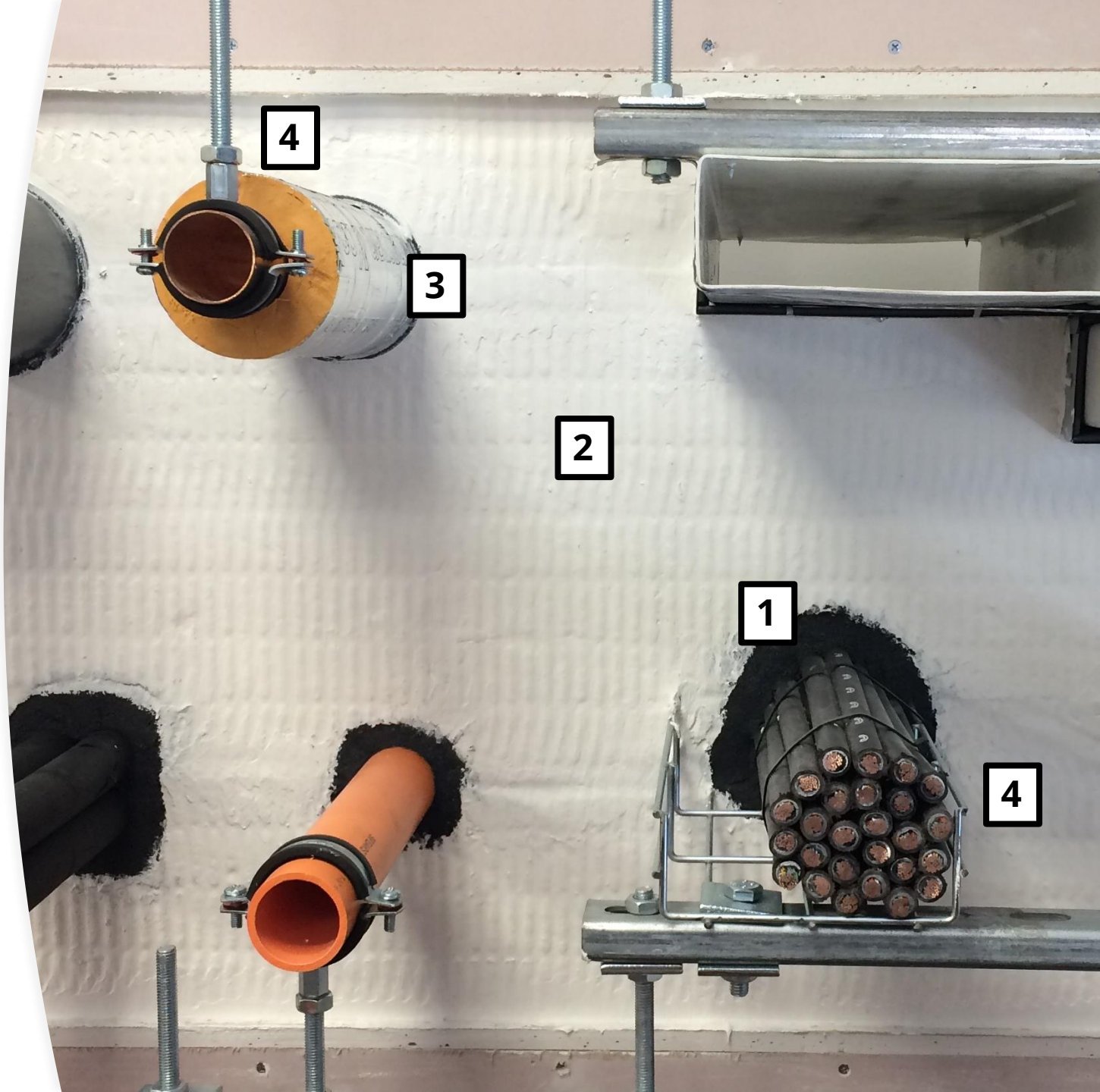
The idea of the Golden Rules is to allow the services to be spaced with enough space for the anticipated size of the seal, plus the required spacing between the seal and space to practically install the system.

For instance, where you allow 100mm between services, of different types, as an example it may be that a minimum of just 74mm is required when the appropriate standard installation details are identified:

- 1: 20mm annulus of HPE around service 1,
  - 2: 50mm spacing between the seals, plus
  - 3: 4mm (2x 2mm) QuelCoil Intuwrap around service 2.
- 20 + 50 + 4 = 74mm.      100 - 74 = 26mm extra.

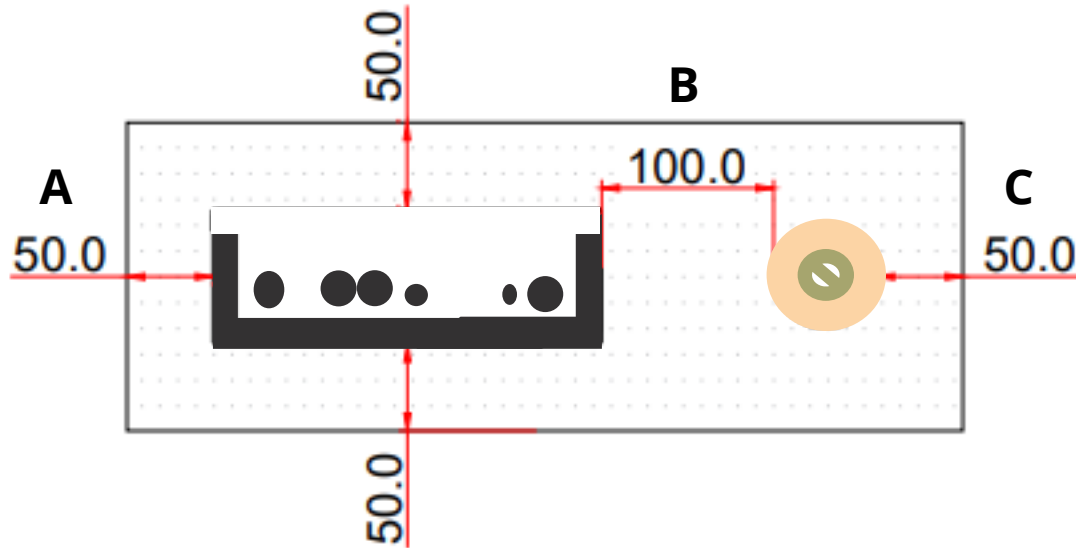
Similarly, 4, where 50mm to edge is allowed, this would allow for the size of the seal (20mm annulus or 4mm thick wrap for instance) plus some space to practically install the system.

Further example on the following page.

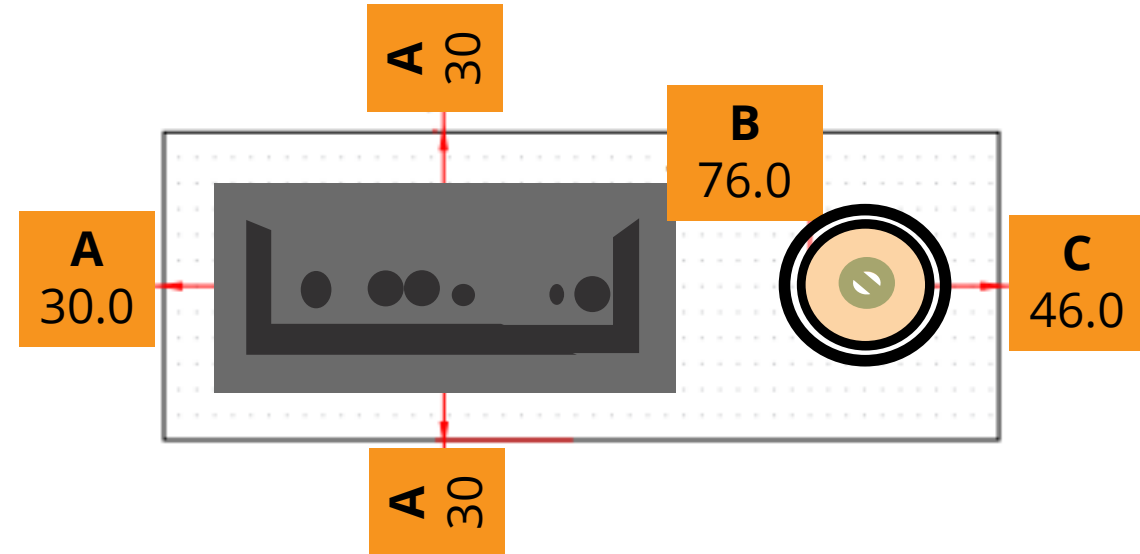


# Golden Rules – V – Actual Spacing

## Example: Golden Rule Spacing Between Different Services



## Example: Actual Spacing Between the Seals of Different Type Services



In this example:

**A:** 50mm from edge of opening to cable tray, less 20mm annulus of HPE = 30mm to edge

(0mm+ permitted)

**B:** 50mm from edge of opening to insulated pipe, less 2x 2mm QuelCoil = 46mm to edge

(0mm+ permitted)

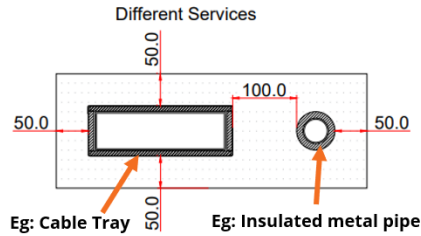
**C:** 100mm between 2 different services, less 20mm HPE, less 2x2mm QuelCoil = 76mm

(50mm+ permitted)

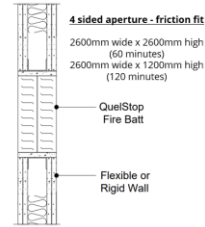
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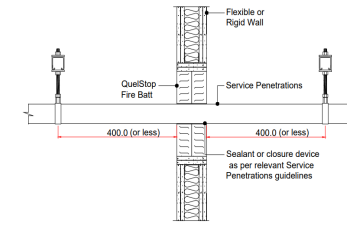
# 2/6 - Golden Rules & Considerations



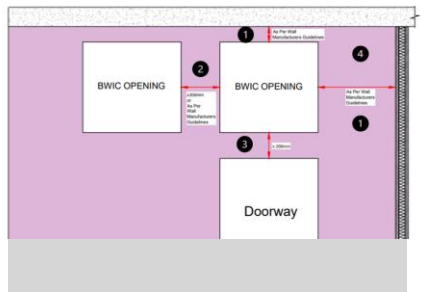
## 1 - Spacing of Services



## 3 - Max. Aperture Sizes



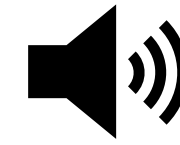
## 5 - Service Supports



## 2 - Spacing of Apertures

Application	Pipe Material	Pipe Size (Outside Diameter)	Fire Protection (Rating) Type	Thickness	Minimum Density	Quelfire Detail**	Detail Page	10	40	60	120	
Wall Penetration	Steel / Cast Iron	150mm	None	None	N/A	QBF100-0-00	1	✓	✓	✓	✓	
		150mm	Armaflex*	15	2000	N/A	QBF100-0-01	1	✓	✓	✓	✓
		150mm	Armaflex*	15	2000	N/A	QBF100-0-02	1	✓	✓	✓	✓
		150mm	Armaflex*	15	2000	N/A	QBF100-0-03	1	✓	✓	✓	✓
		150mm	Armaflex*	15	2000	N/A	QBF100-0-04	1	✓	✓	✓	✓
		150mm	Armaflex*	15	2000	N/A	QBF100-0-05	1	✓	✓	✓	✓
	Copper / Stainless Steel	150mm	None	None	None	N/A	QBF100-0-06	1	✓	✓	✓	✓
		150mm	Armaflex*	15	2000	N/A	QBF100-0-07	1	✓	✓	✓	✓
		150mm	Armaflex**	15	2000	N/A	QBF100-0-08	1	✓	✓	✓	✓
		150mm	Armaflex**	15	2000	N/A	QBF100-0-09	1	✓	✓	✓	✓
		150mm	Armaflex**	15	2000	N/A	QBF100-0-10	1	✓	✓	✓	✓
		150mm	Armaflex**	15	2000	N/A	QBF100-0-11	1	✓	✓	✓	✓
Wall Penetration	Steel / Cast Iron	150mm	Half Faced Glass	20mm	1000	QBF100-0-12	2	✓	✓	✓	✓	
		150mm	Wood	20mm	1000	QBF100-0-13	2	✓	✓	✓	✓	
		150mm	Wood	20mm	1000	QBF100-0-14	2	✓	✓	✓	✓	
	Steel / Cast Iron	150mm	Half Faced Rock	20mm	1000	QBF100-0-15	2	✓	✓	✓	✓	
		150mm	Rock	20mm	1000	QBF100-0-16	2	✓	✓	✓	✓	
		150mm	Rock	20mm	1000	QBF100-0-17	2	✓	✓	✓	✓	
Steel / Cast Iron	150mm	None	None	None	N/A	QBF100-0-18	1	✓	✓	✓	✓	
	150mm	Armaflex**	15	2000	N/A	QBF100-0-19	1	✓	✓	✓	✓	
	150mm	Armaflex**	15	2000	N/A	QBF100-0-20	1	✓	✓	✓	✓	
PB-1	150mm	Closed cell polyurethane foam	None	None	N/A	QBF100-0-21	1	✓	✓	✓	✓	
	150mm	Closed cell polyurethane foam	None	None	N/A	QBF100-0-22	1	✓	✓	✓	✓	
	150mm	Closed cell polyurethane foam	None	None	N/A	QBF100-0-23	1	✓	✓	✓	✓	

## 4 - Insulation Types



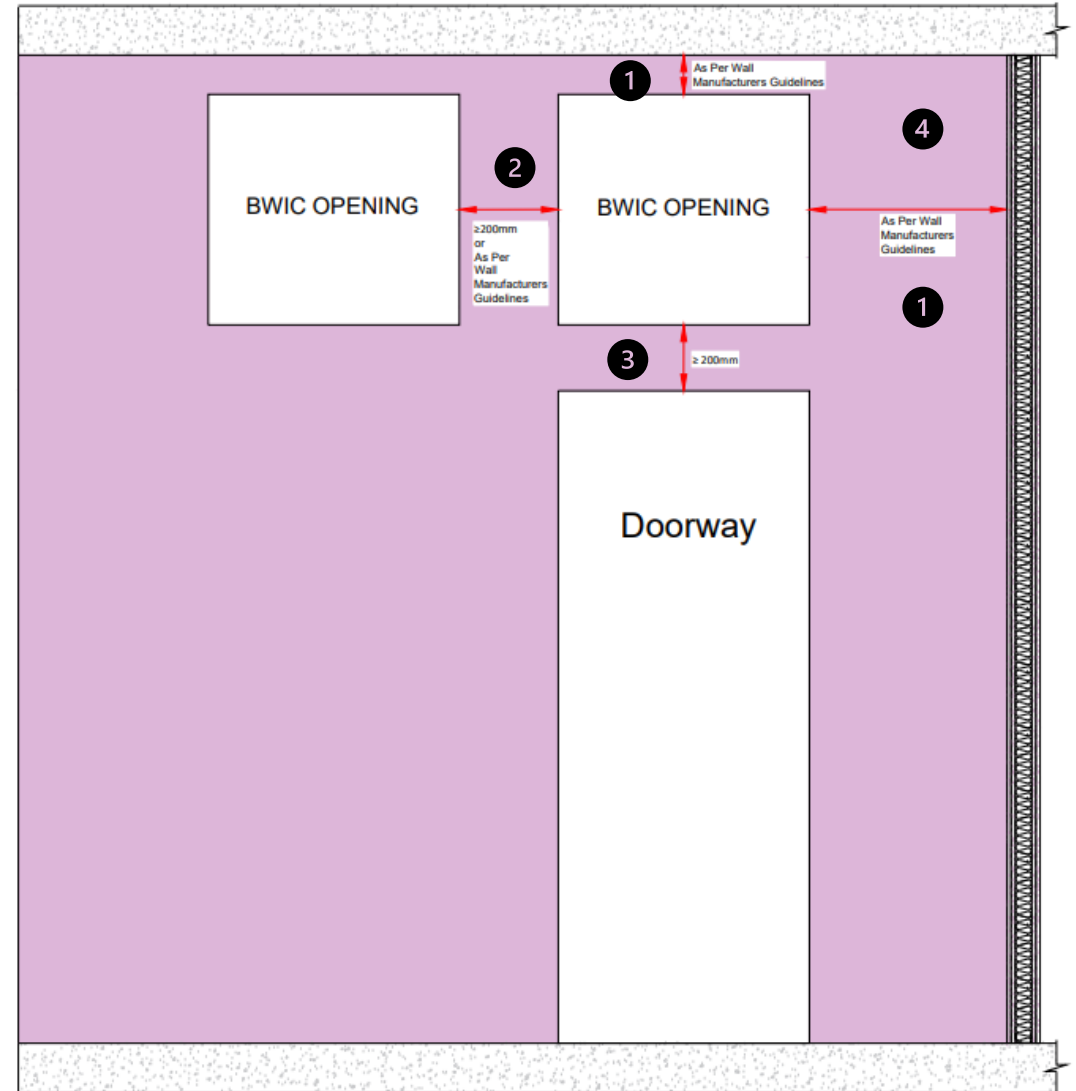
## 6 - Acoustic

## Spacing of Apertures

Apertures should be constructed in accordance with the wall system manufacturer's guidelines and must take into consideration the space required to physically construct the apertures

Spacing and sizing of apertures should also take into consideration the space that is required:

- 1 From the opening to other walls or floors
- 2 200mm - between openings where the seals are tested to the same standard, eg multiple BWIC's. Note that 100mm may technically be permitted but always check the wall manufacturers requirements and test evidence.
- 3 200mm - Between openings where the seals are tested to different standards eg
  - BWIC to Door
  - BWIC to Damper
  - Door to Damper
- 4 To physically construct the apertures etc.

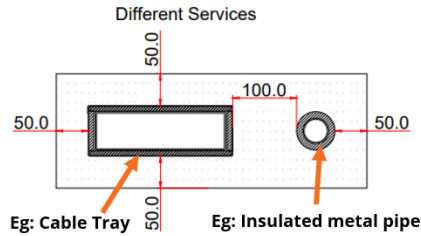


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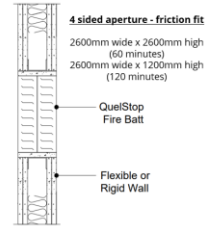
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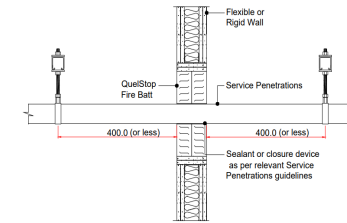
# 3/6 - Golden Rules & Considerationstions



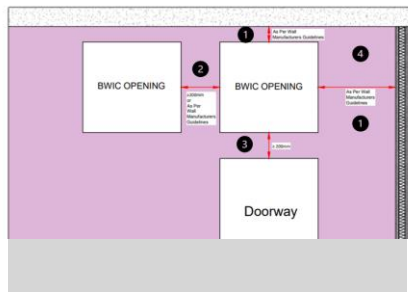
1 - Spacing of Services



3 - Max. Aperture Sizes



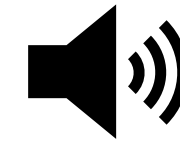
5 - Service Supports



2 - Spacing of Apertures

Application	Pipe Material	Pipe Size (Outside Diameter)	Fire Protection (Rating) Type	Thickness	Minimum Density	Quelfire Detail**	Support	Page	10	11	12	13	
Wall Penetration	Steel	150mm	None	N/A	N/A	QB-FW108-01-08	1						
		150mm	Armaflex*	15	200kg/m <sup>3</sup>	QB-FW108-01-09	1						
		150mm	Armaflex*	15	200kg/m <sup>3</sup>	QB-FW108-01-09	1						
		150mm	Armaflex*	15	200kg/m <sup>3</sup>	QB-FW108-01-09	1						
		150mm	Armaflex*	15	200kg/m <sup>3</sup>	QB-FW108-01-09	1						
		150mm	Armaflex*	15	200kg/m <sup>3</sup>	QB-FW108-01-09	1						
	Copper / Stainless Steel	150mm	None	N/A	N/A	QB-FW108-01-08	1						
		150mm	Armaflex*	15	200kg/m <sup>3</sup>	QB-FW108-01-09	1						
		150mm	Armaflex*	15	200kg/m <sup>3</sup>	QB-FW108-01-09	1						
		150mm	Armaflex*	15	200kg/m <sup>3</sup>	QB-FW108-01-09	1						
		150mm	Armaflex*	15	200kg/m <sup>3</sup>	QB-FW108-01-09	1						
		150mm	Armaflex*	15	200kg/m <sup>3</sup>	QB-FW108-01-09	1						
Wall Penetration	Steel	150mm	None	N/A	N/A	QB-FW108-01-08	1						
		150mm	Armaflex*	15	200kg/m <sup>3</sup>	QB-FW108-01-09	1						
		150mm	Armaflex*	15	200kg/m <sup>3</sup>	QB-FW108-01-09	1						
	Copper / Stainless Steel	150mm	None	N/A	N/A	QB-FW108-01-08	1						
		150mm	Armaflex*	15	200kg/m <sup>3</sup>	QB-FW108-01-09	1						
		150mm	Armaflex*	15	200kg/m <sup>3</sup>	QB-FW108-01-09	1						
Doorway	Steel	150mm	None	N/A	N/A	QB-FW108-01-08	1						
		150mm	Armaflex*	15	200kg/m <sup>3</sup>	QB-FW108-01-09	1						
		150mm	Armaflex*	15	200kg/m <sup>3</sup>	QB-FW108-01-09	1						
	Copper / Stainless Steel	150mm	None	N/A	N/A	QB-FW108-01-08	1						
		150mm	Armaflex*	15	200kg/m <sup>3</sup>	QB-FW108-01-09	1						
		150mm	Armaflex*	15	200kg/m <sup>3</sup>	QB-FW108-01-09	1						

4 - Insulation Types



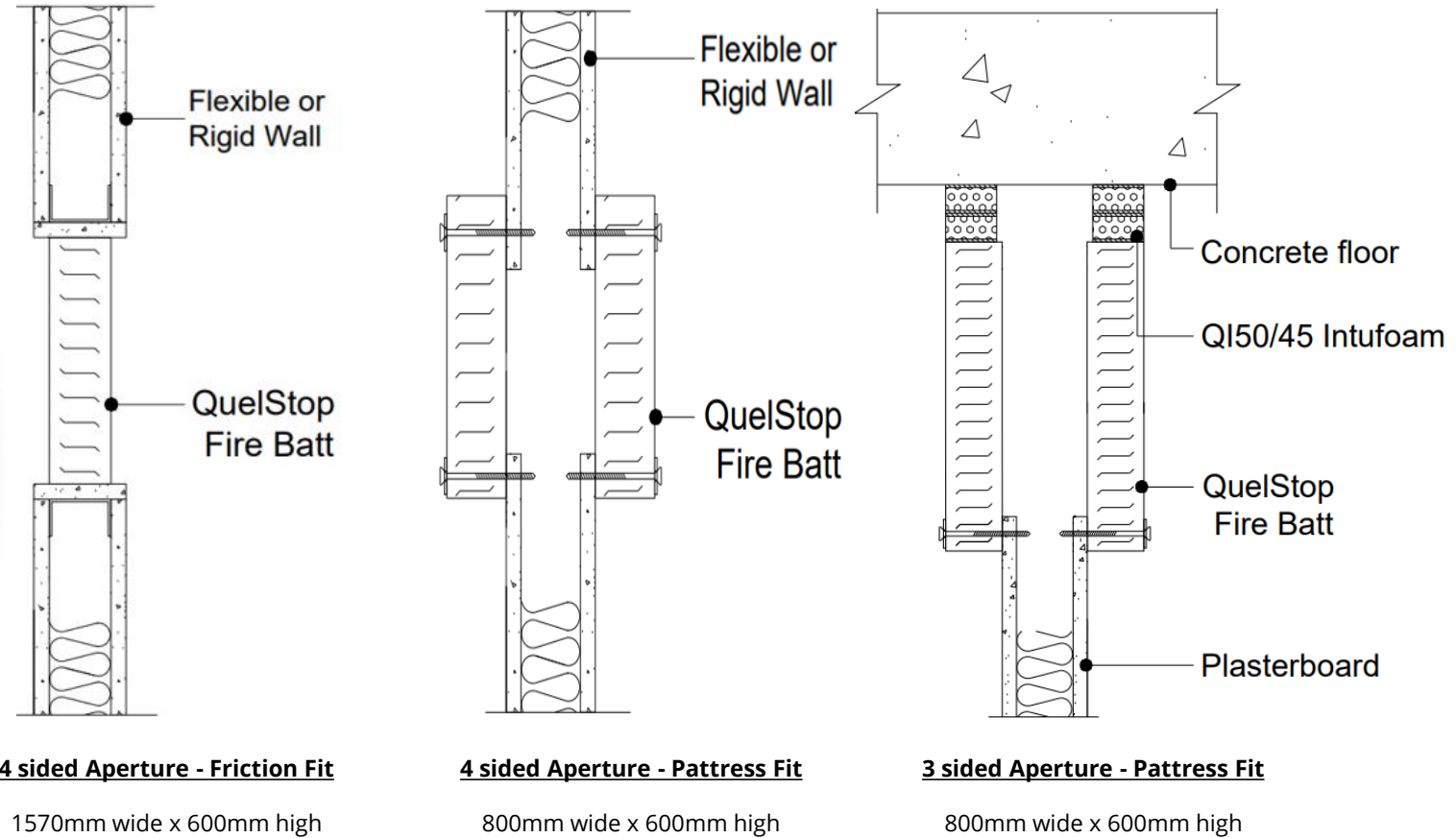
6 - Acoustic

## Maximum Aperture Sizes ≥ 75mm Flexible or Rigid Walls

Flexible walls are to be a minimum of 1 x 12.5mm plasterboard both sides of a minimum 50mm stud.  
Rigid walls to be a minimum of 75mm thickness and a minimum density of 350kg/m<sup>3</sup>.

The maximum aperture dimensions shown have been tested by Quelfire.

Apertures should be constructed in accordance with the wall system manufacturer's guidelines and care taken to ensure the BWIC opening does not exceed the requirements of both manufacturer's.



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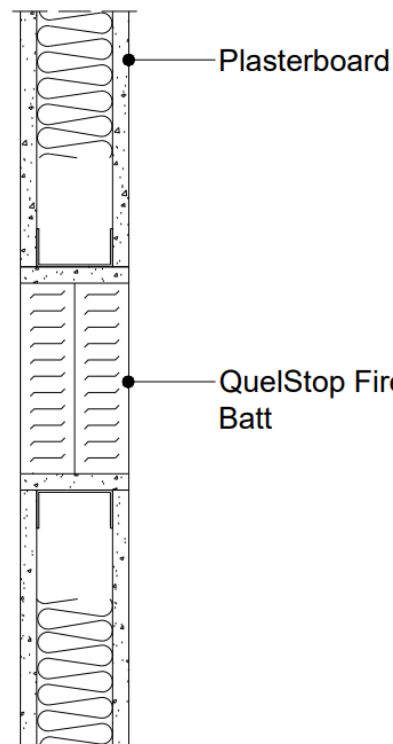
## Maximum Aperture Sizes ≥ 100mm Flexible or Rigid Walls

Flexible walls are to be a minimum of 1 x 15mm plasterboard both sides of a minimum 70mm stud.

Rigid walls to be a minimum of 100mm thickness and a minimum density of 350kg/m<sup>3</sup>.

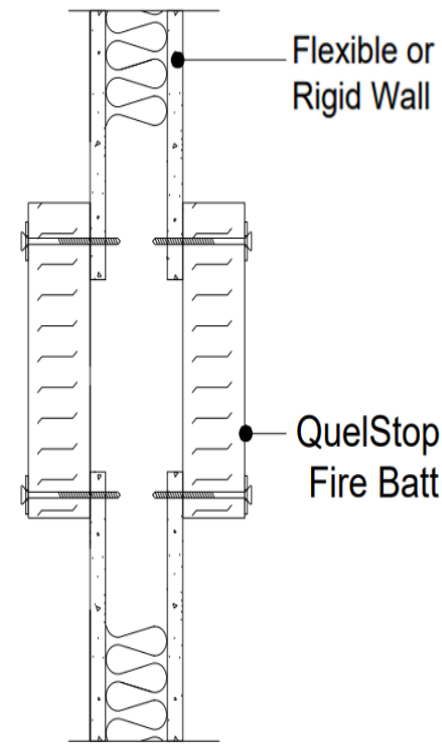
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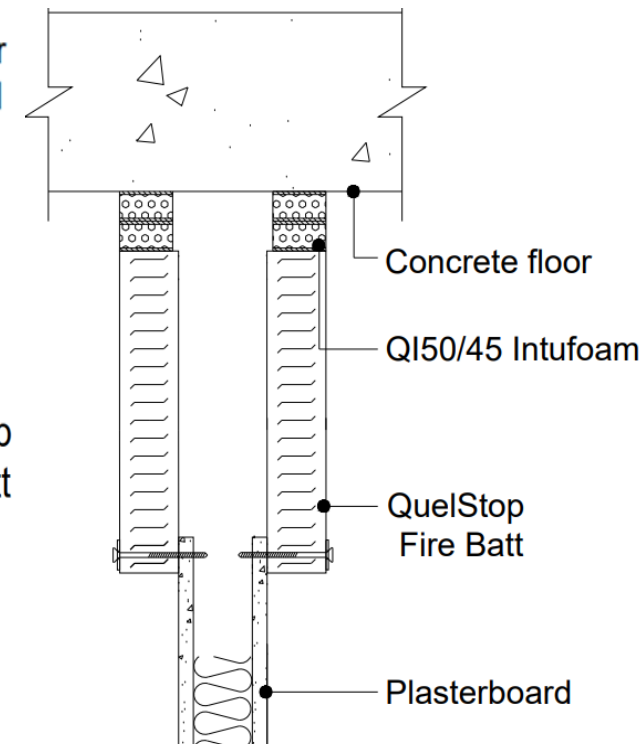
**4 sided Aperture - Friction Fit**

1400mm wide x 1200mm high  
1200mm wide x 1400mm high



**4 sided Aperture - Pattress Fit**

800mm wide x 600mm high



**3 sided Aperture - Pattress Fit**

800mm wide x 600mm high

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## Maximum Aperture Sizes

### ≥ 100mm Flexible or Rigid Walls

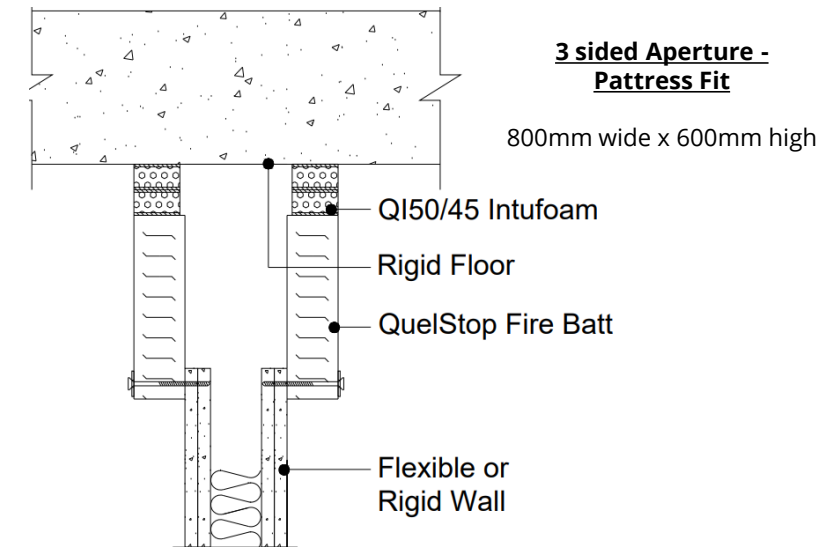
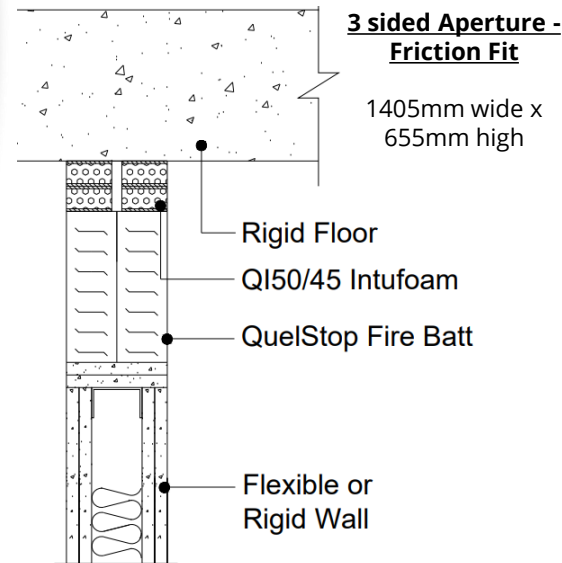
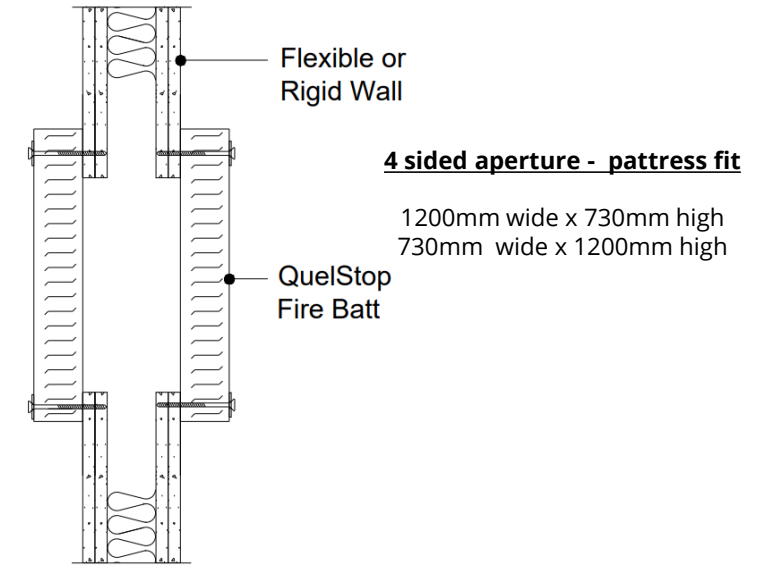
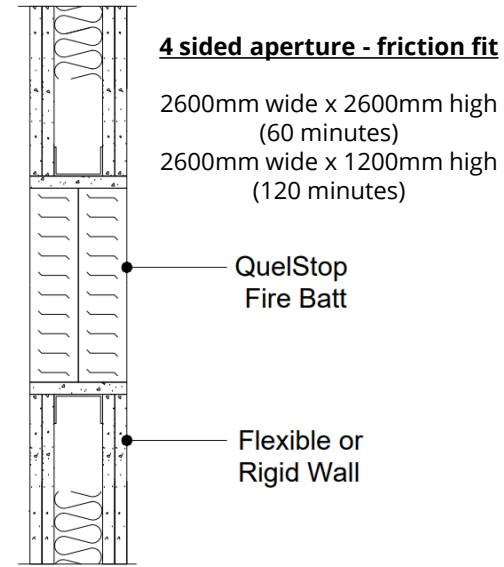
Flexible walls are to be a minimum of 2 x 12.5mm plasterboard both sides of a minimum 50mm stud.

Rigid walls to be a minimum of 100mm thickness and a minimum density of 350kg/m<sup>3</sup>.

The maximum aperture dimensions shown have been tested by Quelfire.

Apertures should be constructed in accordance with the wall system manufacturer's guidelines and care taken to ensure the BWIC opening does not exceed the requirements of both manufacturer's.

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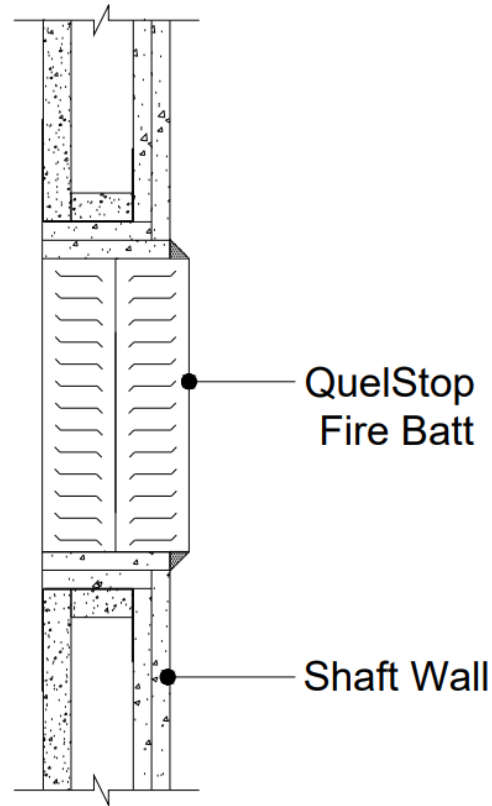
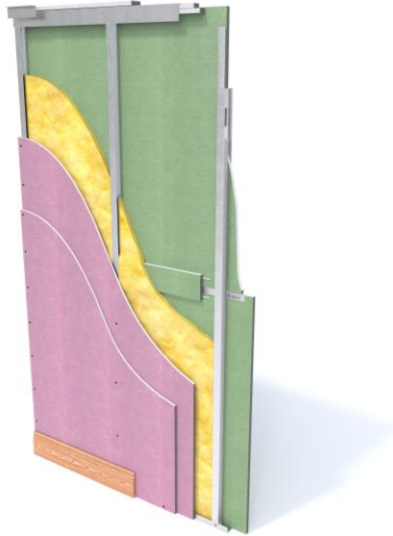
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## Maximum Aperture Sizes Shaft Walls

The maximum aperture dimensions shown have been tested by Quelfire.

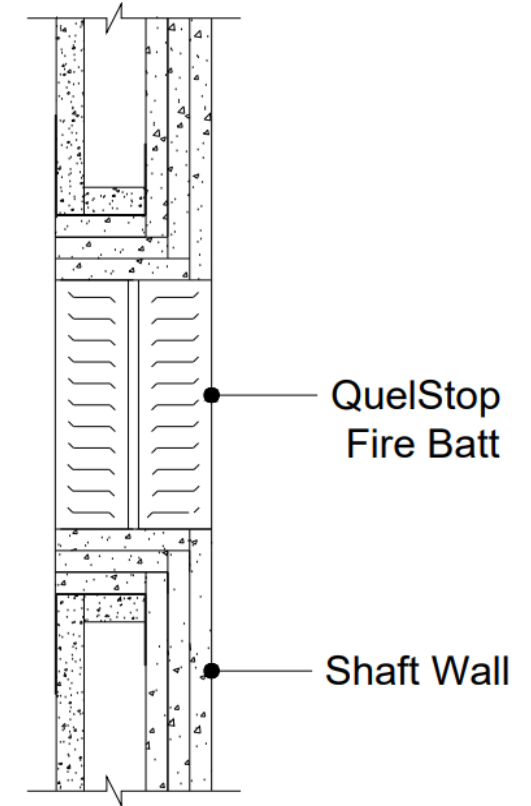
Apertures should be constructed in accordance with the wall system manufacturer's guidelines and care taken to ensure the BWIC opening does not exceed the requirements of both manufacturer's.



**4 sided Aperture - Friction Fit**

Shaft walls to have a minimum 60mm wide stud and minimum 2no. layers of 12.5mm plasterboard on one side of the stud and a minimum 19mm thick core board on the other side, either inside or outside of the stud.

1400mm wide x 800mm high  
800mm wide x 1400mm high



**4 sided Aperture - Friction Fit**

Shaft walls to have a minimum 60mm wide stud and minimum 3no. layers of 15mm plasterboard on one side of the stud and a minimum 19mm thick core board on the other side, either inside or outside of the stud.

1390mm wide x 903mm high  
903mm wide x 1390mm high

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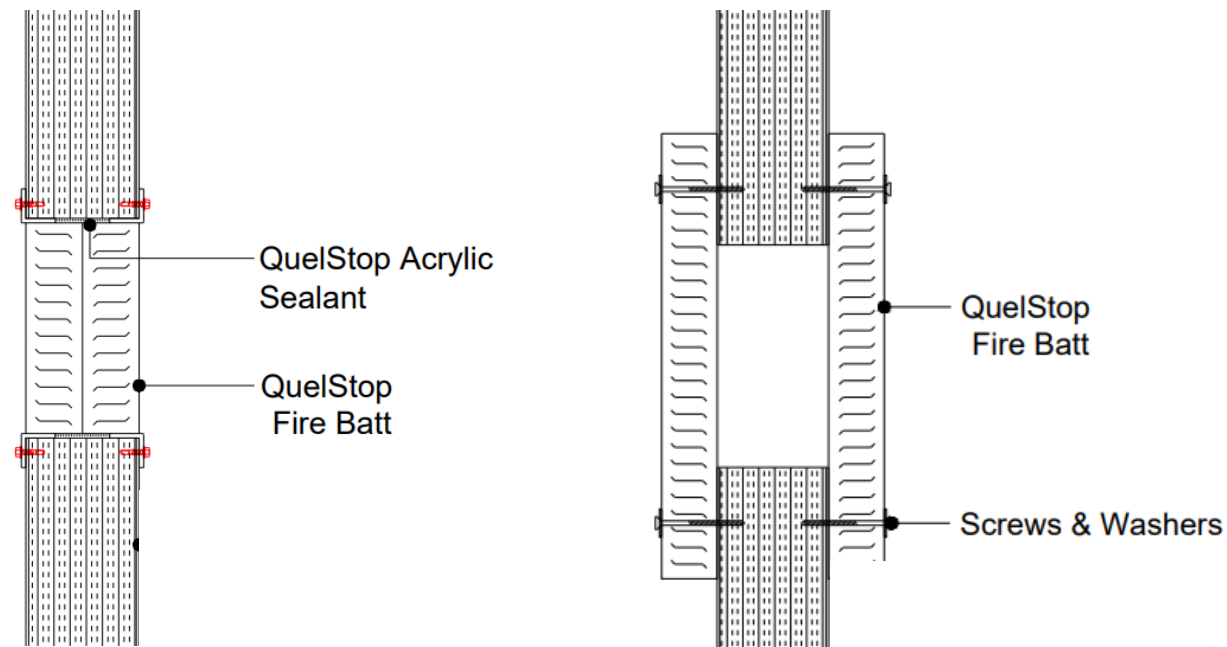
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## Maximum Aperture Sizes ≥ 100mm White Walls

The maximum aperture dimensions shown have been tested by Quelfire.

Apertures should be constructed in accordance with the wall system manufacturer's guidelines and care taken to ensure the BWIC opening does not exceed the requirements of both manufacturer's.



### **4 sided Aperture - Friction Fit**

Euroclad 'Firemaster Extra' walls  
1000mm wide x 1000mm high

### **4 sided Aperture - Friction Fit**

Paroc's AST-F, AST-F+ & AST-L walls  
1500mm wide x 1000mm high  
1000mm wide x 1500mm high

### **4 sided Aperture - Pattress Fit**

Euroclad 'Firemaster Extra' walls  
1000mm wide x 1000mm high

### **4 sided Aperture - Pattress Fit**

Paroc's AST-F, AST-F+ & AST-L walls  
1000mm wide x 1000mm high

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## Maximum Aperture Sizes Other Wall Systems

Quelfire have tested other wall systems such as:

- Porotherm and
- Specwall

Please refer to the specific installation details for full information and specification.

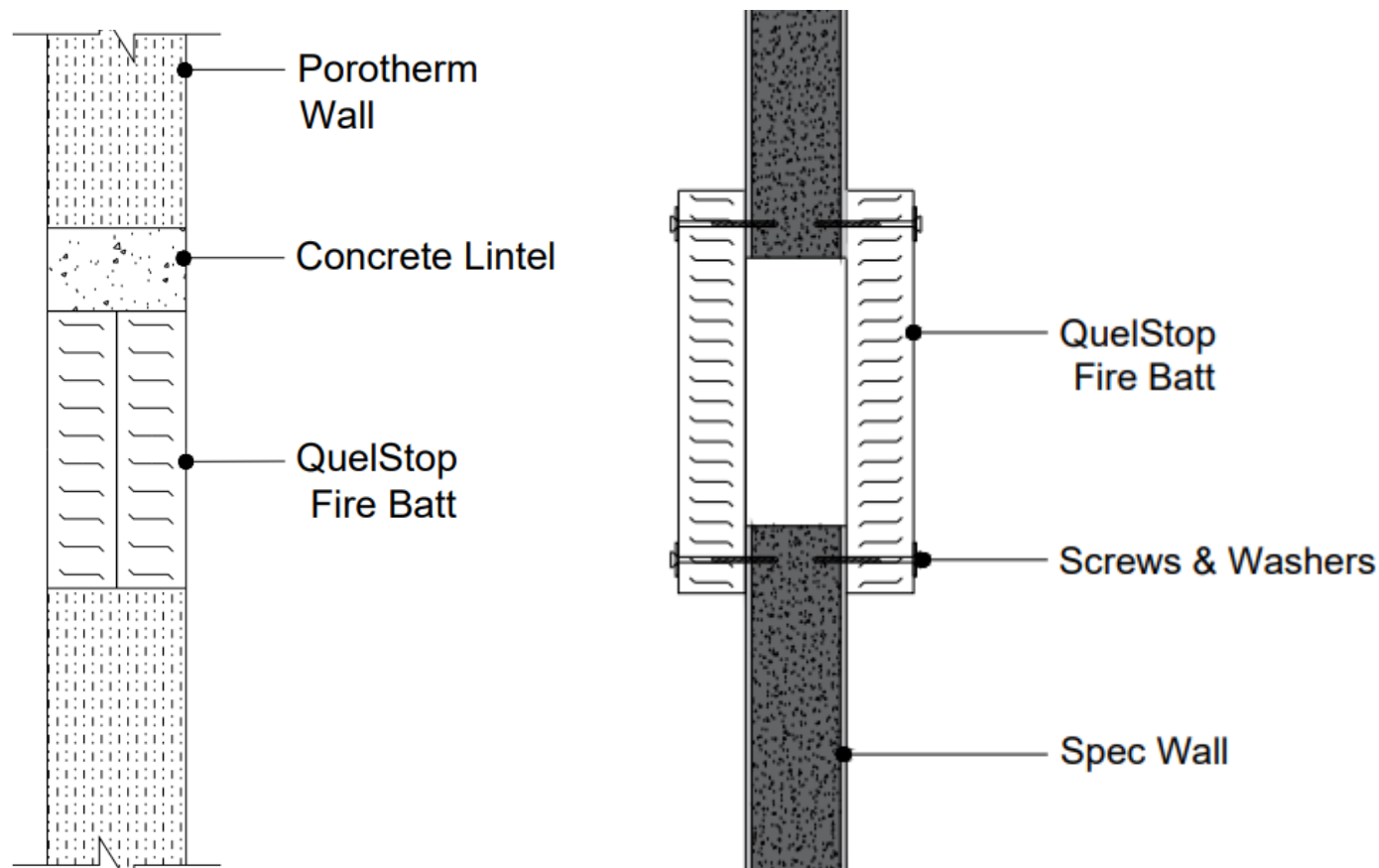


The maximum aperture dimensions shown have been tested by Quelfire.

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**Porotherm**

**4 sided Aperture - Friction Fit**

2600mm wide x 1200mm high

**Specwall**

**4 sided Aperture Pattress Fit**

600mm wide x 600mm high

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## Maximum Aperture Sizes ≥ 150mm thick Concrete Slabs Up to 120 minutes – seal within

Apertures should be constructed in accordance with the floor system manufacturer's guidelines and/or structural engineers.

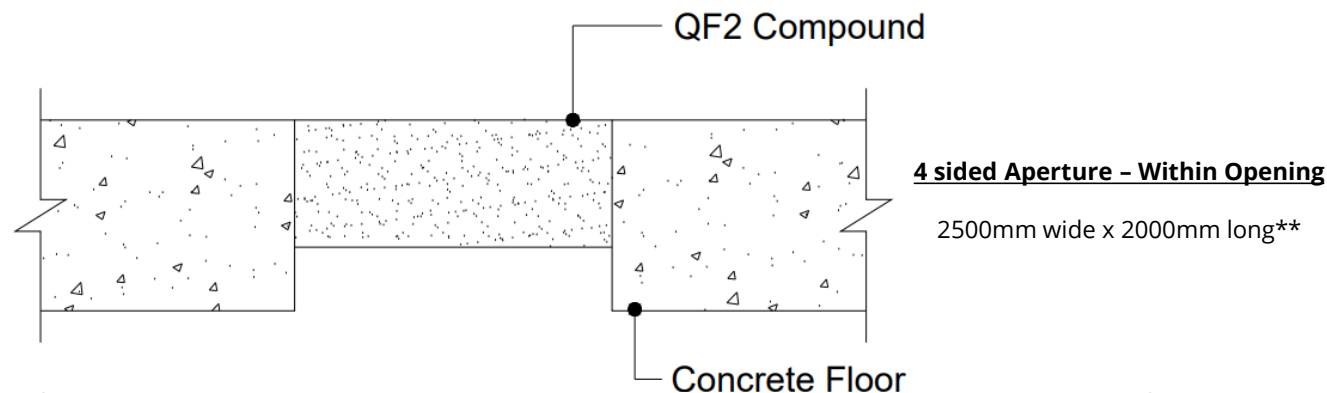
The maximum aperture dimensions shown have been tested by Quelfire.

However, as per section H.8.8 in BS EN 1366-3:2021 Fire Resistance Test Standard, values for an extended length and the related allowed width is calculated by the formula:

$$\text{Length (intended)} = \text{Width (Allowed)} / (((C_{\text{tested}}/2) * \text{width(allowed)} - 1)$$

Please contact the Quelfire technical team for calculations on specific seals.

Indicative typical dimensions are however shown:



Length (mm)	Width (mm)	Perimeter (mm)	Area (mm <sup>2</sup> )
2500.00	2000	9000	5000000.00
2582.78	1950	9065.562914	5036423.841
2676.06	1900	9152.112676	5084507.042
2781.95	1850	9263.909774	5146616.541
2903.23	1800	9406.451613	5225806.452
3043.48	1750	9586.956522	5326086.957
3207.55	1700	9815.09434	5452830.189
3402.06	1650	10104.12371	5613402.062
3636.36	1600	10472.72727	5818181.818
3924.05	1550	10948.10127	6082278.481
4285.71	1500	11571.42857	6428571.429
4754.10	1450	12408.19672	6893442.623
5384.62	1400	13569.23077	7538461.538
6279.07	1350	15258.13953	8476744.186
7647.06	1300	17894.11765	9941176.471
10000.00	1250	22500	12500000
11951.22	1225	26352.43902	14640243.9
15000.00	1200	32400	18000000

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## Maximum Aperture Sizes ≥ 150mm thick Concrete Slabs Up to 240 minutes – seal within

Apertures should be constructed in accordance with the floor system manufacturer's guidelines and/or structural engineers.

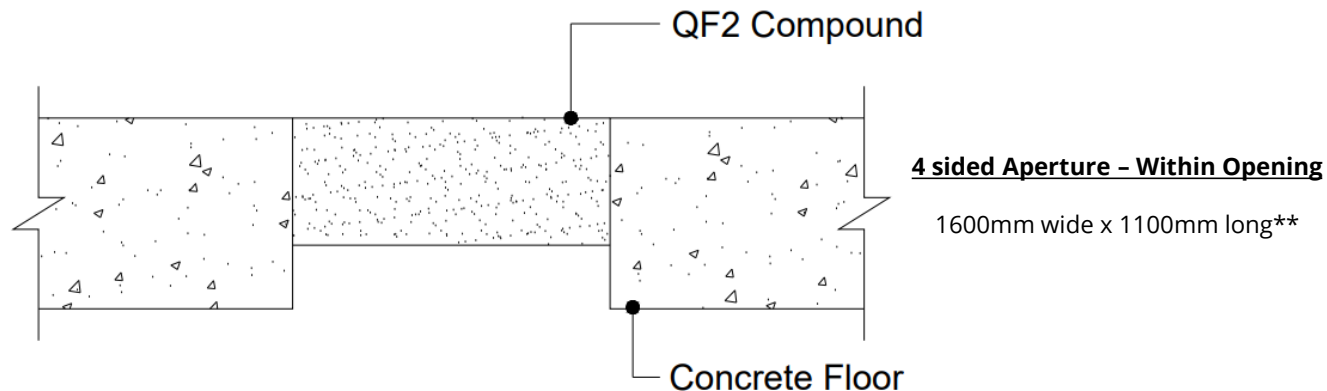
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Indicative typical dimensions are however shown:



Length (mm)	Width (mm)	Perimeter (mm)	Area (mm <sup>2</sup> )
1600.00	1100	5400	1760000.00
1656.02	1075	5462.035011	1780218.818
1719.07	1050	5538.139535	1805023.256
1790.57	1025	5631.141439	1835334.988
1966.76	975	5883.524355	1917593.123
2077.02	950	6054.037267	1973167.702
2207.46	925	6264.915254	2041898.305
2364.18	900	6528.358209	2127761.194
2556.02	875	6862.033195	2236514.523
2796.26	850	7292.523364	2376822.43
3105.88	825	7861.764706	2562352.941
3520.00	800	8640	2816000
4102.26	775	9754.511278	3179248.12
4981.13	750	11462.26415	3735849.057
5472.27	740	12424.53782	4049478.992
6089.10	730	13638.19905	4445042.654
6886.96	720	15213.91304	4958608.696
9476.92	700	20353.84615	6633846.154

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## Maximum Aperture Sizes

### ≥ 150mm thick Concrete Slabs

### Up to 240 minutes – seal on top

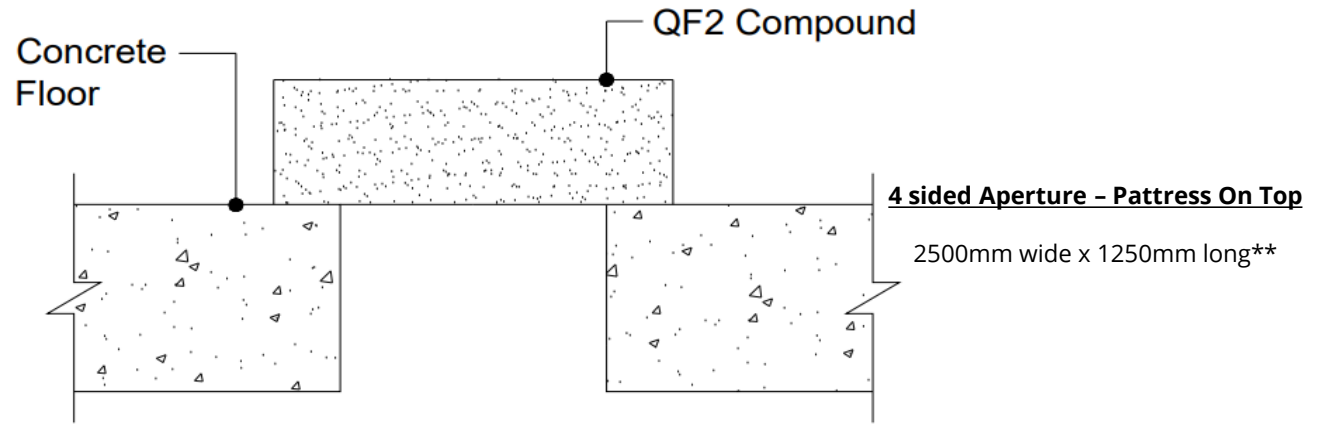
Apertures should be constructed in accordance with the floor system manufacturer's guidelines and/or structural engineers.

The maximum aperture dimensions shown have been tested by Quelfire.

However, as per section H.8.8 in BS EN 1366-3:2021 Fire Resistance Test Standard, values for an extended length and the related allowed width is calculated by the formula:

$$\text{Length (intended)} = \text{Width (Allowed)} / (((C_{\text{tested}}/2) * \text{width(allowed)} - 1)$$

Indicative typical dimensions are shown:



Length (mm)	Width (mm)	Perimeter (mm)	Area (mm <sup>2</sup> )
2500.00	1250	7500	3125000.00
2727.27	1200	7854.545455	3272727.273
3026.32	1150	8352.631579	3480263.158
3437.50	1100	9075	3781250
4038.46	1050	10176.92308	4240384.615
5000.00	1000	12000	5000000
6785.71	950	15471.42857	6446428.571
7343.75	940	16567.5	6903125
8017.24	930	17894.48276	7456034.483
8846.15	920	19532.30769	8138461.538
9891.30	910	21602.6087	9001086.957
11250.00	900	24300	10125000

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## Maximum Aperture Sizes ≥ 150mm thick Concrete Slabs Using Deck Joint Box

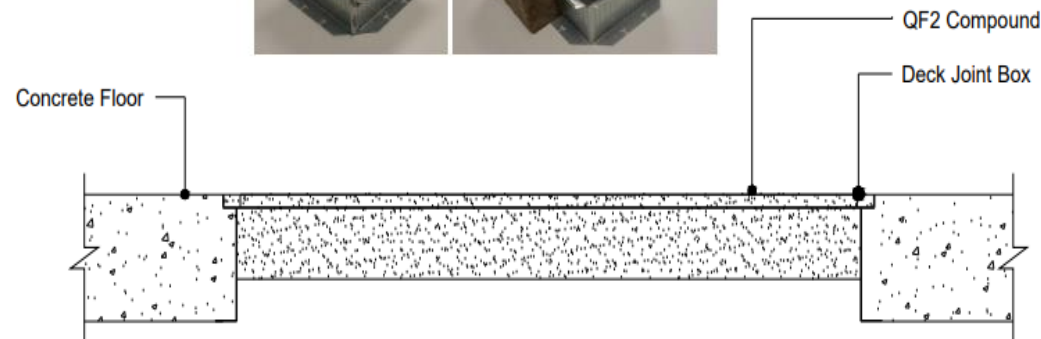
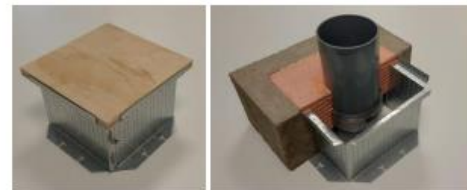
QF2 Fire Protection Compound is suitable for use within the Deck Box by First Fix Formwork. Apertures should be constructed in accordance with the system manufacturer's guidelines and/or structural engineers.

The maximum aperture dimensions shown have been tested by Quelfire.

However, as per section H.8.8 in BS EN 1366-3:2021 Fire Resistance Test Standard, values for an extended length and the related allowed width is calculated by the formula:

$$\text{Length (intended)} = \text{Width (Allowed)} / (((C_{\text{tested}}/2) * \text{width(allowed)} - 1)$$

Indicative typical dimensions are shown:



**4 sided Aperture - Within Opening of Deck Joint Box**

900mm wide x 300mm long\*\*

Length (mm)	Width (mm)	Perimeter (mm)	Area (mm <sup>2</sup> )
900.00	300	2400	270000.00
948.21	295	2486.428571	279723.2143
1003.85	290	2587.692308	291115.3846
1068.75	285	2707.5	304593.75
1145.45	280	2850.909091	320727.2727
1237.50	275	3025	340312.5
1350.00	270	3240	364500
1490.63	265	3511.25	395015.625
1671.43	260	3862.857143	434571.4286
1912.50	255	4335	487687.5
2250.00	250	5000	562500
2756.25	245	6002.5	675281.25
3600.00	240	7680	864000

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## Maximum Aperture Sizes ≥ 250mm thick Concrete Slabs Using Alpha Riser (GRP) Grating

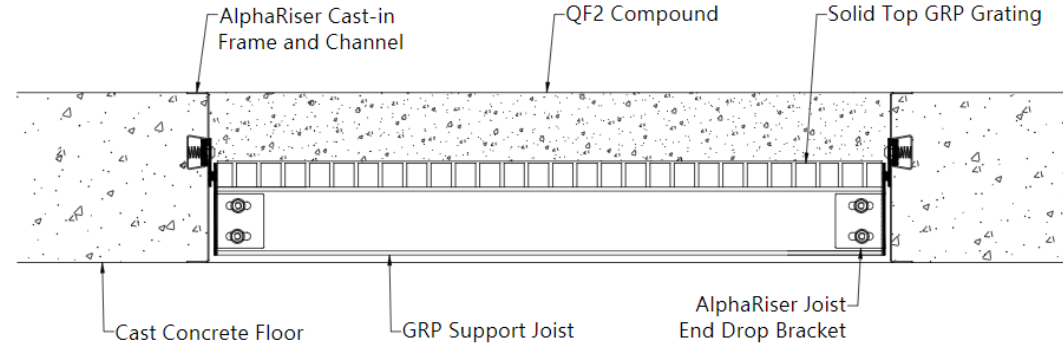
QF2 Fire Protection Compound is suitable for use within the AlphaRiser FR Unit by Comtec. Apertures should be constructed in accordance with the system manufacturer's guidelines and/or structural engineers.

The maximum aperture dimensions shown have been tested by Quelfire.

However, as per section H.8.8 in BS EN 1366-3:2021 Fire Resistance Test Standard, values for an extended length and the related allowed width is calculated by the formula:

$$\text{Length (intended)} = \text{Width (Allowed)} / (((C_{\text{tested}}/2) * \text{width(allowed)} - 1)$$

Indicative typical dimensions are shown:



**4 sided Aperture - Within Opening of Alpha Riser FR**

1600mm wide x 1100mm long\*\*

Length (mm)	Width (mm)	Perimeter (mm)	Area (mm <sup>2</sup> )
1600.00	1100	5400	1760000.00
1656.02	1075	5462.035011	1780218.818
1719.07	1050	5538.139535	1805023.256
1790.57	1025	5631.141439	1835334.988
1966.76	975	5883.524355	1917593.123
2077.02	950	6054.037267	1973167.702
2207.46	925	6264.915254	2041898.305
2364.18	900	6528.358209	2127761.194
2556.02	875	6862.033195	2236514.523
2796.26	850	7292.523364	2376822.43
3105.88	825	7861.764706	2562352.941
3520.00	800	8640	2816000
4102.26	775	9754.511278	3179248.12
4981.13	750	11462.26415	3735849.057
5472.27	740	12424.53782	4049478.992
6089.10	730	13638.19905	4445042.654
6886.96	720	15213.91304	4958608.696
9476.92	700	20353.84615	6633846.154

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## Maximum Aperture Sizes

### ≥ 45mm thick Steel Profiled Deck QF2 within the depth of the slab

Apertures should be constructed in accordance with the floor system manufacturer's guidelines and/or structural engineers recommendations.

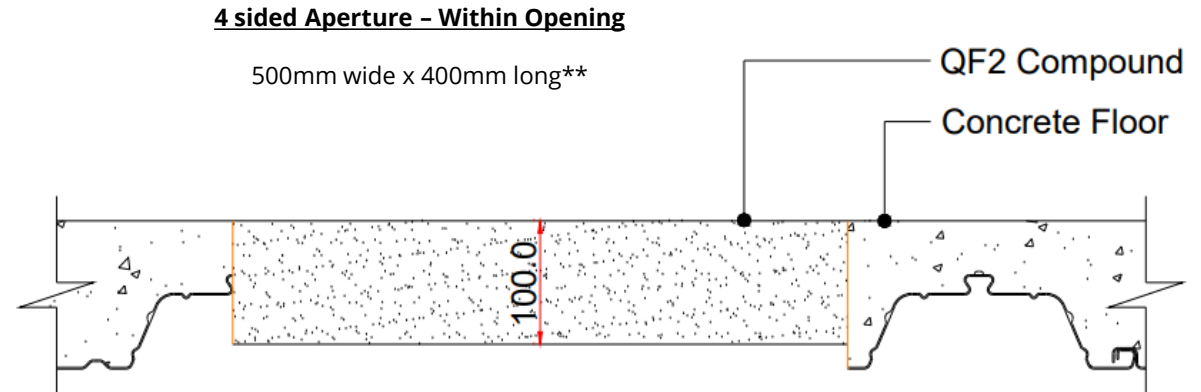
The maximum aperture dimensions shown have been tested by Quelfire.

However, as per section H.8.8 in BS EN 1366-3:2021 Fire Resistance Test Standard, values for an extended length and the related allowed width is calculated by the formula:

$$\text{Length (intended)} = \text{Width (Allowed)} / (((C_{\text{tested}}/2) * \text{width(allowed)} - 1)$$

Consideration should be given as to how to practically shutter the aperture to ensure the minimum 100mm depth of QF2 Fire Protection Compound can be achieved.

Indicative typical dimensions are shown:



Length (mm)	Width (mm)	Perimeter (mm)	Area (mm <sup>2</sup> )
500.00	400	1800	200000.00
516.56	390	1813.112583	201456.9536
535.21	380	1830.422535	203380.2817
556.39	370	1852.781955	205864.6617
580.65	360	1881.290323	209032.2581
608.70	350	1917.391304	213043.4783
641.51	340	1963.018868	218113.2075
680.41	330	2020.824742	224536.0825
727.27	320	2094.545455	232727.2727
784.81	310	2189.620253	243291.1392
857.14	300	2314.285714	257142.8571
950.82	290	2481.639344	275737.7049

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## Maximum Aperture Sizes

≥ 45mm thick Steel Profiled Deck

## QF2 on top of the slab

Apertures should be constructed in accordance with the floor system manufacturer's guidelines and/or structural engineers recommendations.

The maximum aperture dimensions shown have been tested by Quelfire.

However, as per section H.8.8 in BS EN 1366-3:2021 Fire Resistance Test Standard, values for an extended length and the related allowed width is calculated by the formula:

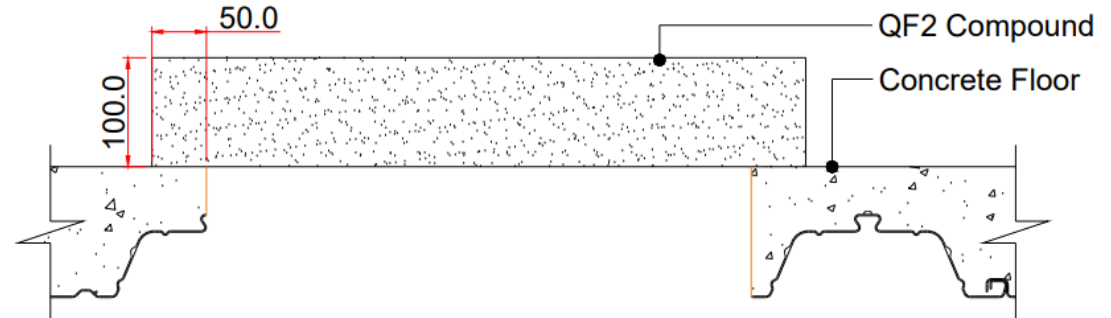
$$\text{Length (intended)} = \text{Width (Allowed)} / (((C_{\text{tested}}/2) * \text{width(allowed)} - 1)$$

Consideration should be given as to how to practically shutter the aperture to ensure the minimum 100mm depth of QF2 Fire Protection Compound can be achieved.

Indicative typical dimensions are shown:

### 4 sided Aperture - On top of Steel Profiled Deck

500mm wide x 400mm long\*\*



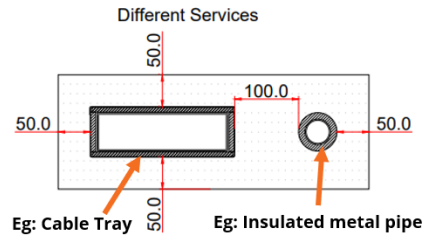
Length (mm)	Width (mm)	Perimeter (mm)	Area (mm <sup>2</sup> )
500.00	400	1800	200000.00
516.56	390	1813.112583	201456.9536
535.21	380	1830.422535	203380.2817
556.39	370	1852.781955	205864.6617
580.65	360	1881.290323	209032.2581
608.70	350	1917.391304	213043.4783
641.51	340	1963.018868	218113.2075
680.41	330	2020.824742	224536.0825
727.27	320	2094.545455	232727.2727
784.81	310	2189.620253	243291.1392
857.14	300	2314.285714	257142.8571
950.82	290	2481.639344	275737.7049

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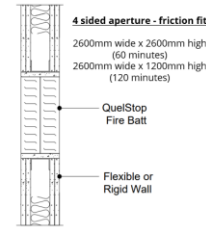
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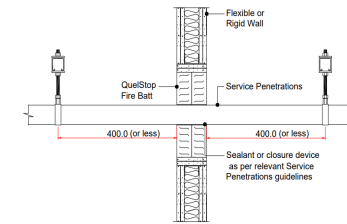
# 4/6 - Golden Rules & Considerations



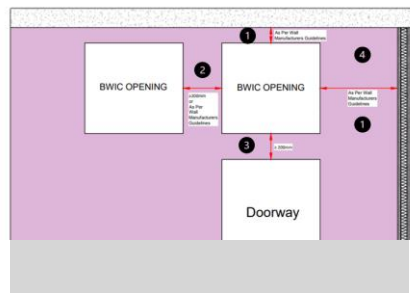
## 1 - Spacing of Services



## 3 - Max. Aperture Sizes



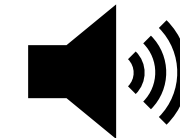
## 5 - Service Supports



## 2 - Spacing of Apertures

Application	Pipe Material	Pipe Size (Outside Diameter)	Pipe Insulation (Firestop Type)	Thickness	Minimum Density	Quelfire Detail**	Detail Page	10	11	12	13
Wall Penetration	Steel	150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
	Copper / Stainless Steel	150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
Wall Penetration	Steel / Cast Iron	150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
	Cast Iron	150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
Steel / Cast Iron	Steel / Cast Iron	150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
	Cast Iron	150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
Steel / Cast Iron	Steel / Cast Iron	150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
	Cast Iron	150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
Steel / Cast Iron	Steel / Cast Iron	150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
	Cast Iron	150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓
		150mm	Armaflex*	25mm	N/A	QBF 1008-01-08	1	✓	✓	✓	✓

## 4 - Insulation Types



## 6 - Acoustic

# Insulation Type & Thickness

## Wall penetrations

It should be noted that different pipe insulations may require a different type, and therefore different size, seal (QuelCoil Intuwrap, HPE, QSS Sealant for instance) and may provide different fire ratings.

Always check the specific Standard Installation Detail for full details.

This table provides an overview of the types and thicknesses of insulation that are tested on different pipes, however if your application differs please contact the Quelfire Technical Team for further advice.

Application	Pipe Material	Pipe OD (Outside Diameter)	Pipe Insulation (lagging) Type	Thickness	Minimum Density	Quelfire Detail***	Detail Page Number	Fire Rating (EI)					
								30	60	90	120		
Wall Penetration	Copper / Steel / Cast Iron	≤15mm	Armaflex*	9mm	N/A	<a href="#">QB-FW100-D-03</a>	1	✓	✓	✓	✓		
				13 - 25mm	N/A	<a href="#">QB-FW100-D-25</a>	1	✓	✓	✓	✓		
		≤22mm			9 - 25mm	N/A	<a href="#">QB-FW100-D-03</a>	1	✓	✓	✓		
		≤42mm			13 - 25mm	N/A	<a href="#">QB-FW100-D-04</a>	1	✓	✓			
					25mm	N/A	<a href="#">QB-FW100-D-04</a>	1	✓	✓	✓	✓	
					13 - 25mm	N/A	<a href="#">QB-FW100-D-04</a>	2	✓				
				42 - 159mm	Kingspan Kooltherm**	25 - 40mm	N/A	<a href="#">QB-FW100-D-03</a>	1	✓	✓	✓	✓
		≤15mm		25 - 40mm		N/A	<a href="#">QB-FW100-D-04</a>	1	✓	✓			
		≤42mm		40mm		N/A	<a href="#">QB-FW100-D-04</a>	1	✓	✓	✓	✓	
				40 - 75mm		N/A	<a href="#">QB-FW100-D-04</a>	1	✓	✓	✓		
				42 - 108mm		25 - 40mm	N/A	<a href="#">QB-FW100-D-04</a>	2	✓			
				≤40mm	Foil Faced Glass Wool	20mm	≥80kg/m <sup>3</sup>	<a href="#">QB-FW100-D-03</a>	2	✓	✓		
		≤42mm		25mm		≥30kg/m <sup>3</sup>	<a href="#">QB-FW100-D-11</a>	1	✓	✓	✓		
		40 - 159mm		30mm		≥80kg/m <sup>3</sup>	<a href="#">QB-FW100-D-03</a>	2	✓	✓			
	42 - 159mm		25mm	≥30kg/m <sup>3</sup>		<a href="#">QB-FW100-D-11</a>	1	✓					
			≤42mm	Foil Faced Rock Fibre	≥20mm	≥90kg/m <sup>3</sup>	<a href="#">QB-FW100-D-11</a>	1	✓	✓	✓	✓	
	≤108mm		≥25mm		≥90kg/m <sup>3</sup>	<a href="#">QB-FW100-D-11</a>	1	✓	✓	✓	✓		
	≤159mm		50mm		≥120kg/m <sup>3</sup>	<a href="#">QB-FW100-D-04</a>	2	✓					
			≥50mm		≥90kg/m <sup>3</sup>	<a href="#">QB-FW100-D-11</a>	1	✓	✓	✓	✓		
		Steel / Cast	≤323.9mm				<a href="#">QB-FW100-D-11</a>	1	✓	✓	✓	✓	
	PE-X	≤22mm	Armaflex*	9 - 25mm	N/A	<a href="#">QB-FW100-D-20</a>	1	✓	✓	✓	✓		
	PB-1	≤16mm	Closed cell polyethylene foam	13mm	N/A	<a href="#">QB-FW100-D-20</a>	1	✓	✓	✓	✓		
		≤28mm				<a href="#">QB-FW100-D-20</a>	2	✓	✓	✓			
	MLC (PE-RT / ALU / PE-RT)	≤25mm	Closed cell polyethylene foam	13mm	N/A	<a href="#">QB-FW100-D-20</a>	1	✓	✓	✓	✓		

\* Or equivalent elastomeric pipe insulation classified BL-s2, d0 or better to EN13501-1.

\*\* Or equivalent phenolic pipe insulation classified BL-s1, d0 or better to EN13501-1.

\*\*\* Quelfire detail example provided is for flexible or rigid walls, other supporting construction type details can be located in the QuelSelector.

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## Insulation Type & Thickness

### Floor penetrations

It should be noted that different pipe insulations may require a different type, and therefore different size seal (QuelCoil Intuwrap, HPE, QSS Sealant for instance) and may provide different fire ratings. Always check the specific Standard Installation Detail for full details.

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Application	Pipe Material	Pipe OD (Outside Diameter)	Pipe Insulation (lagging) Type	Thickness	Minimum Density	Quelfire Detail***	Detail Page Number	Fire Rating (EI)						
								30	60	90	120	180	240	
Floor Penetration	Copper / Steel / Cast Iron	≤42mm	Armaflex*	13 - 25mm	N/A	<a href="#">QF2-CF150-04</a>	1	✓	✓					
				25mm	N/A	<a href="#">QF2-CF150-04</a>	1	✓	✓	✓	✓	✓		
		42 - 159mm		25mm	N/A	<a href="#">QF2-CF150-04</a>	1	✓	✓					
		≤42mm	Kingspan Kooltherm**	25 - 40mm	N/A	<a href="#">QF2-CF150-04</a>	1	✓	✓	✓				
				40mm	N/A	<a href="#">QF2-CF150-04</a>	1	✓	✓	✓	✓			
		≤108mm		40mm	N/A	<a href="#">QF2-CF150-04</a>	1	✓						
	Steel / Cast Iron	Foil Faced Rock Fibre	≤42mm	≥25mm	≥90kg/m <sup>3</sup>	<a href="#">QF2-CF150-11</a>	1	✓	✓	✓	✓	✓		
				≥25mm	≥90kg/m <sup>3</sup>	<a href="#">QF2-CF150-11</a>	1	✓	✓	✓	✓			
			≤108mm		≥50mm	≥120kg/m <sup>3</sup>	<a href="#">QF2-CF150-11</a>	1	✓	✓	✓	✓		
			≤159mm		≥25mm	≥90kg/m <sup>3</sup>	<a href="#">QF2-CF150-11</a>	1	✓	✓	✓	✓		
			≤169mm		≥50mm	≥120kg/m <sup>3</sup>	<a href="#">QF2-CF150-11</a>	1	✓	✓	✓	✓	✓	
			≤324mm		≥50mm	≥120kg/m <sup>3</sup>	<a href="#">QF2-CF150-11</a>	1	✓	✓	✓	✓	✓	✓

\* Or equivalent elastomeric pipe insulation classified BL-s2, d0 or better to EN13501-1.

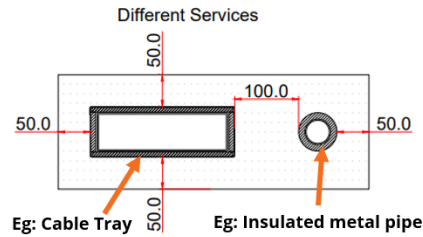
\*\* Or equivalent phenolic pipe insulation classified BL-s1, d0 or better to EN13501-1.

\*\*\* Quelfire detail provided is for concrete floors, other supporting construction type details can be located in the QuelSelector.

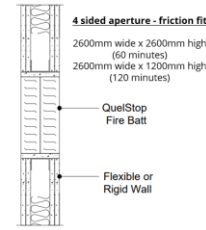
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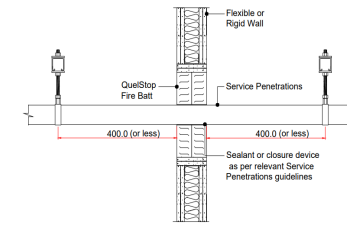
# 5/6 - Golden Rules & Considerations



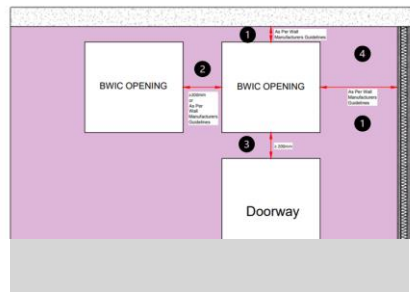
## 1 - Spacing of Services



## 3 - Max. Aperture Sizes



## 5 - Service Supports

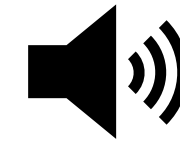


## 2 - Spacing of Apertures

Application	Pipe Material	Pipe Size (Outside Diameter)	Aperture Size (Type)	Thickness	Minimum Density	Quelfire Detail**	Detail Page	Fire Rating (E, I, S)
Wall Penetration	Steel	150mm	150mm	150mm	N/A	Q8-FR108-01-08	1	✓
			150mm	150mm	N/A	Q8-FR108-01-08	1	✓
			150mm	150mm	N/A	Q8-FR108-01-08	1	✓
		42-150mm	42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓
			42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓
			42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓
	Copper / Stainless Steel	42-150mm	42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓
			42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓
			42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓
		42-150mm	42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓
			42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓
			42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓
Wall Penetration	42-150mm	42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓	
		42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓	
		42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓	
	42-150mm	42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓	
		42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓	
		42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓	
Steel / Cast Iron	150mm	150mm	150mm	N/A	Q8-FR108-01-08	1	✓	
		150mm	150mm	N/A	Q8-FR108-01-08	1	✓	
		150mm	150mm	N/A	Q8-FR108-01-08	1	✓	
	42-150mm	42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓	
		42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓	
		42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓	
PB-1	150mm	150mm	150mm	N/A	Q8-FR108-01-08	1	✓	
		150mm	150mm	N/A	Q8-FR108-01-08	1	✓	
		150mm	150mm	N/A	Q8-FR108-01-08	1	✓	
	42-150mm	42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓	
		42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓	
		42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓	
MIL (P&AT) / MIL (P&AT)	150mm	150mm	150mm	N/A	Q8-FR108-01-08	1	✓	
		150mm	150mm	N/A	Q8-FR108-01-08	1	✓	
		150mm	150mm	N/A	Q8-FR108-01-08	1	✓	
	42-150mm	42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓	
		42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓	
		42-150mm	150mm	N/A	Q8-FR108-01-08	1	✓	

\*\* For equivalent alternative pipe insulation classified B1, B2 or better to EN13501-1.  
 \*\*\* For equivalent generic pipe insulation classified B1, B2 or better to EN13501-1.  
 \*\*\*\* Quelfire detail example provided is for flexible or rigid walls, other supporting construction type details can be located in the Quelfirelectra.

## 4 - Insulation Types



## 6 - Acoustic

## First Service Supports For wall penetrations

### What distance does the first service support need to be?

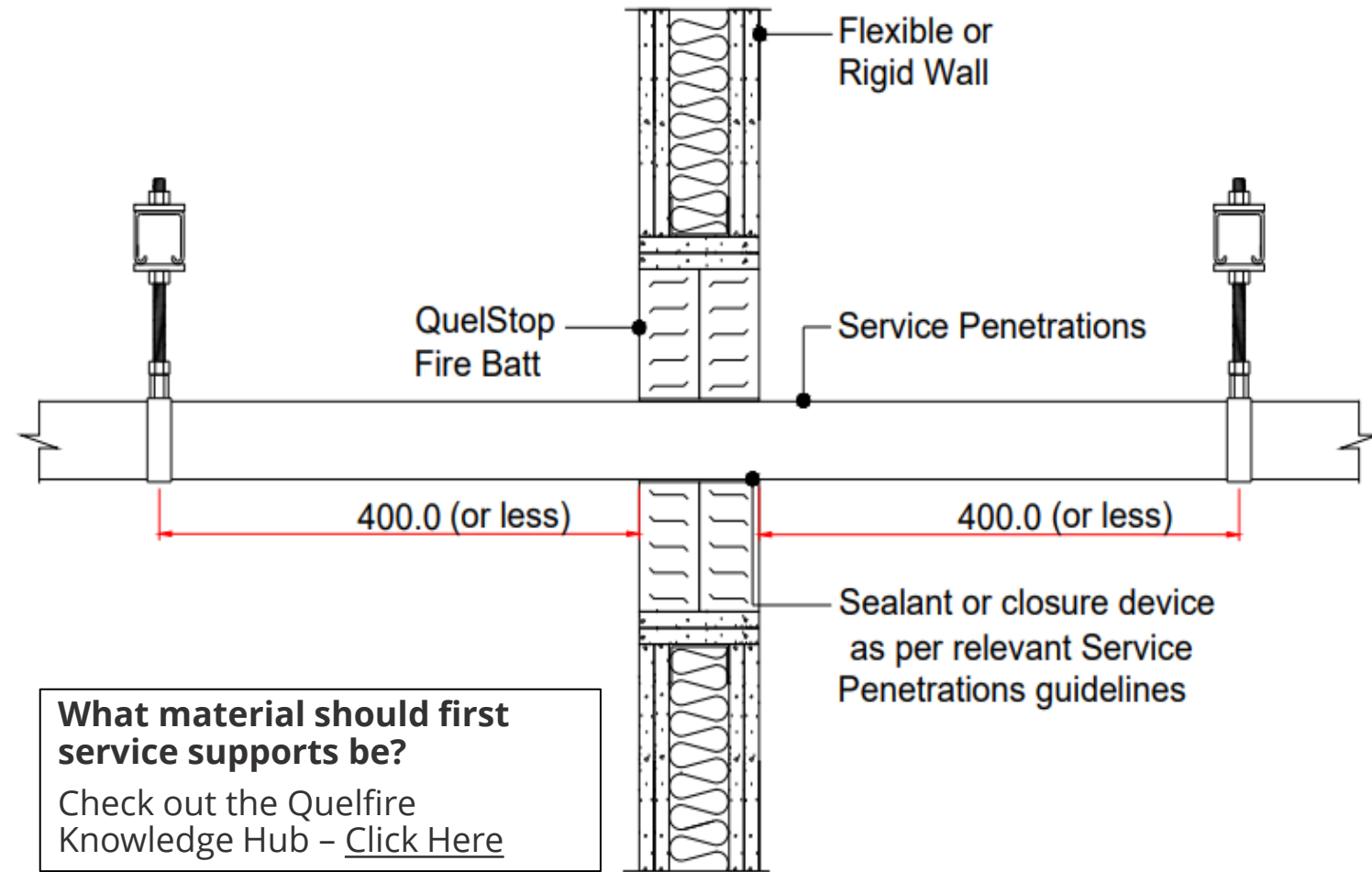
As always it is important to check the specific tested standard installation detail taking into consideration the specific service and scenario.

The measurement referred to is the maximum distance that is permitted between the service support and the face of the seal.

Typically, many of the Quelfire standard details refer to **400mm from the face of the seal** on both sides of the seal.

There are, however, a few exceptions to that rule, such as for larger busbars and trunking that require specific first service support distances less than 400mm, so it is important to check the specific detail.

Supports can be installed closer than that stated, so long as there is enough space for the fire stop seal to be otherwise installed in accordance with the installation details.



**Any images shown are for illustration purposes only.  
Always check the tested scope of application.**

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## First Service Supports For floor penetrations

### What distance does the first service support need to be?

As always it is important to check the specific tested standard installation detail.

The measurement referred to is the maximum distance that is permitted between the first service support and the face of the seal.

Typically, many Quelfire standard details refer to **400mm from the face of the seal** on the topside of the supporting construction.

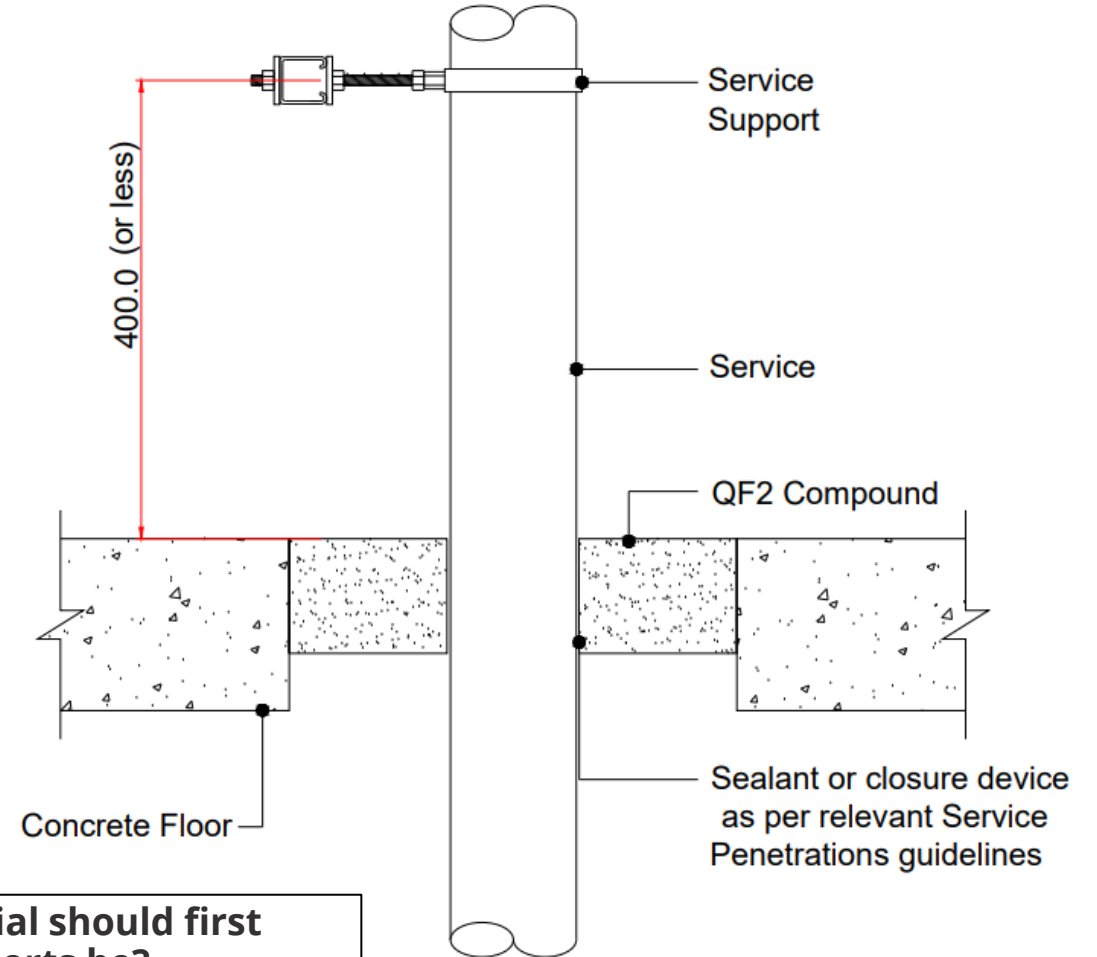
We recommend the underside matches this too, but there is some flexibility due to the way floors are tested, contact [Quelfire Technical Team](#) if needs be.

There are, however, a few exceptions to the rule, such as for larger busbars that require specific first service support distances less than 400mm.

Supports can be installed closer than that stated, so long as there is enough space for the fire stop seal to be otherwise installed in accordance with the details.

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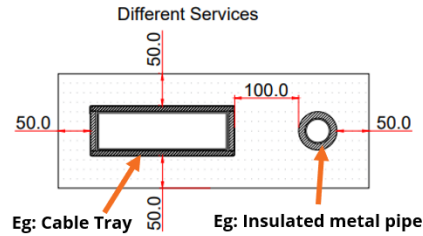


### What material should first service supports be?

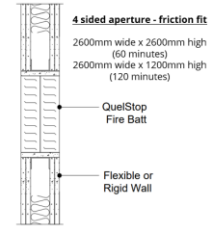
Check out the Quelfire Knowledge Hub - [Click Here](#)

**Any images shown are for illustration purposes only.  
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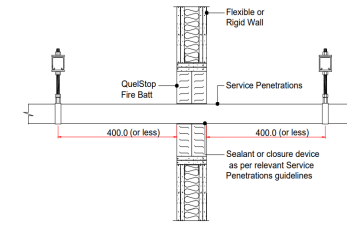
# 6/6 - Golden Rules & Considerations



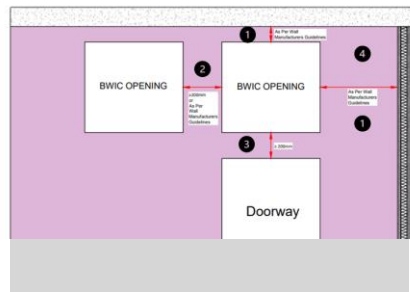
## 1 - Spacing of Services



## 3 - Max. Aperture Sizes



## 5 - Service Supports

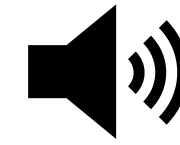


## 2 - Spacing of Apertures

Application	Pipe Material	Pipe Size (Outside Diameter)	Aperture Size (Aperture Type)	Thickness	Minimum Density	Quelfire Detail**	Detail Page	10	40	80	120
Wall Penetration	Steel	457mm	457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓
			457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓
			457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓
			457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓
			457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓
			457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓
	Copper / Stainless Steel	457mm	457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓
			457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓
			457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓
			457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓
			457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓
			457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓
Aluminum	457mm	457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓	
		457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓	
		457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓	
		457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓	
		457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓	
		457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓	
Steel / Cast Iron	457mm	457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓	
		457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓	
		457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓	
		457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓	
		457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓	
		457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓	
PB-1	457mm	457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓	
		457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓	
		457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓	
		457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓	
		457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓	
		457mm	457mm	N/A	QBF 1008-02-08	1	✓	✓	✓	✓	

\* Or equivalent aluminum pipe insulation classified Block 45 or better as EN13501-1.  
 \*\* Or equivalent generic pipe insulation classified as: 1. 45 or better as EN13501-1.  
 \*\*\* Quelfire detail example provided is for flexible or rigid walls, other supporting construction type details can be located in the Quelfirelect.

## 4 - Insulation Types



## 6 - Acoustic

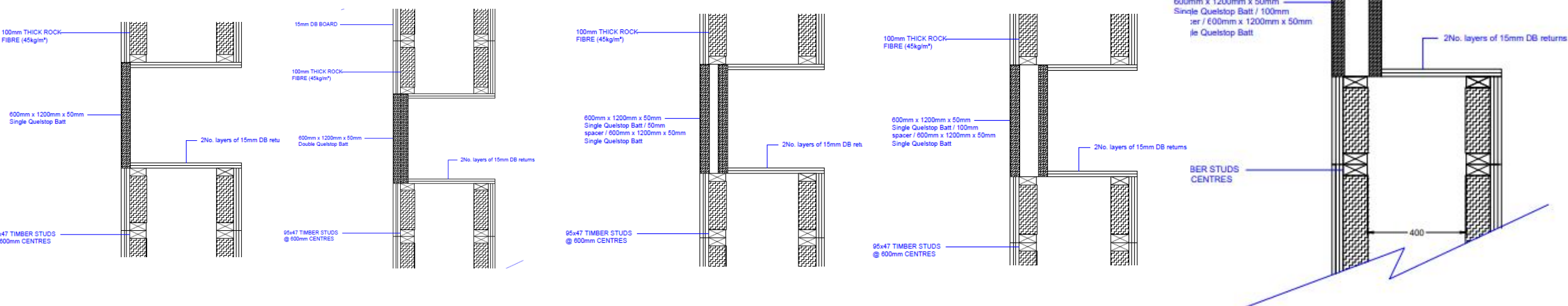
## Acoustic Information

The project acoustic requirements may determine the type of QuelStop System seals that can be considered, so may even be regarded as one of the primary considerations.

The QuelStop Fire Stop System Acoustic Report can be requested from the Quelfire technical team and we recommend this is passed to a qualified acoustician for accurate interpretation and consultation.

As Quelfire are not experts in the field of acoustics, and the testing method does not exactly replicate on-site conditions, the results must be extrapolated in order to determine the actual performance of any given situation.

The information provided here is a summary of the data:



Single Batt  
= **36 (-2;-4) dB**

Double Batt  
= **38 (0;-3) dB**

Batt / 50mm spacing / Batt  
= **50 (-3;-7) dB**

Batt / 100mm spacing / Batt  
= **53 (-4;-8) dB**

Batt / 100mm insulation\* / Batt  
= **60 (-2;-8) dB**

(\* 100mm thick 45kg/m<sup>3</sup> rock fibre insulation)

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## Conclusion

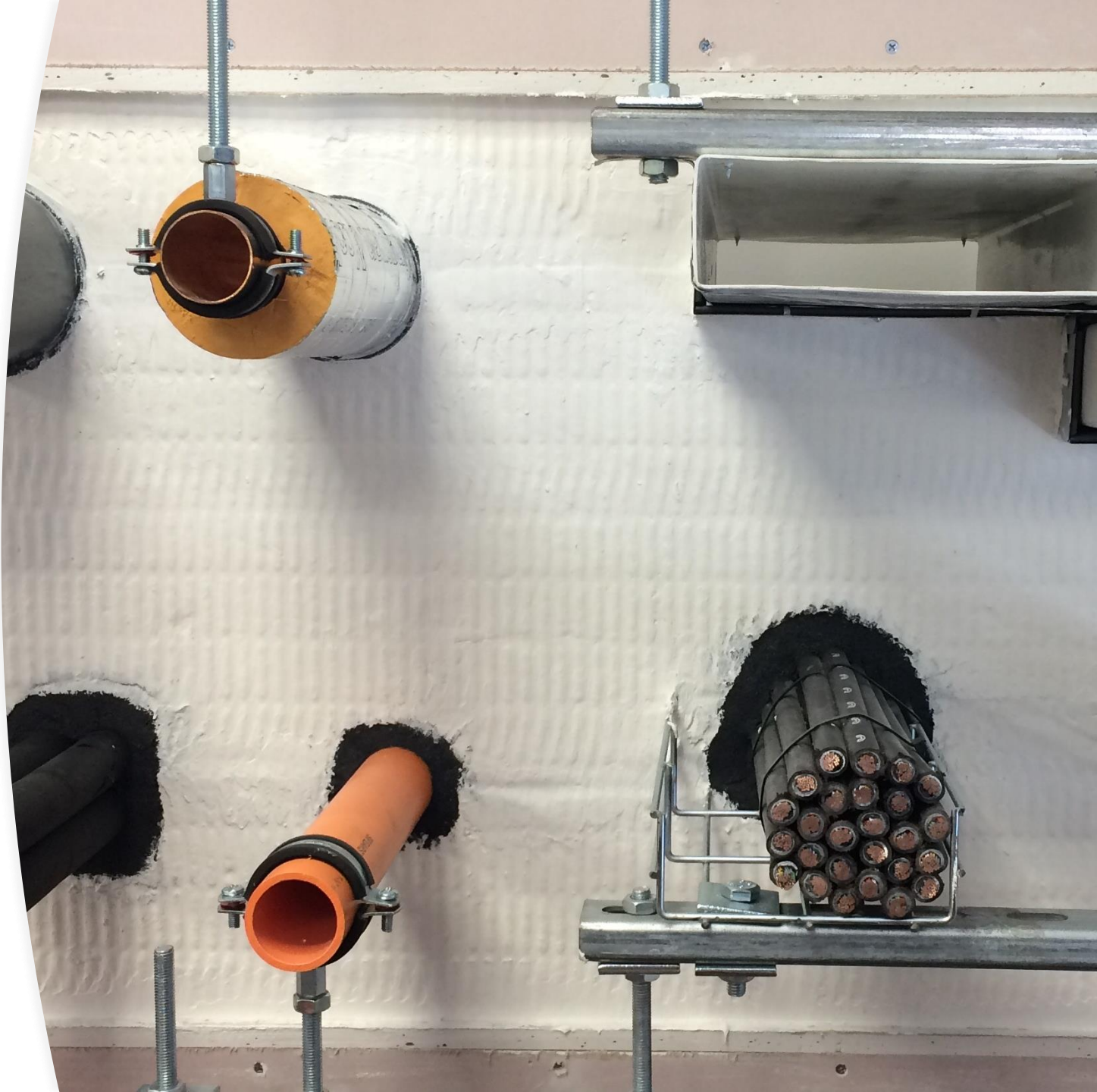
When coordinating a building's services, special consideration is required when these services penetrate through fire separating elements.

There are requirements and rules that dictate not only what can penetrate through the fire compartmentation depending on the actual supporting constructions / substrate, but also how they can penetrate.

It is important to identify an appropriately tested standard detail for each application, however, this requires a full and accurate specification of the services etc which is not always available at an early stage of design and can prevent progression.

This document however, is intended to highlight **6 sets of Golden Rules or Considerations** that are worthy of consideration at an early stage.

These provide some recommendations for typical service penetrations through BWIC openings based on using Quelfire products and the tested scope of application, whilst taking into consideration practical aspects of the installation.

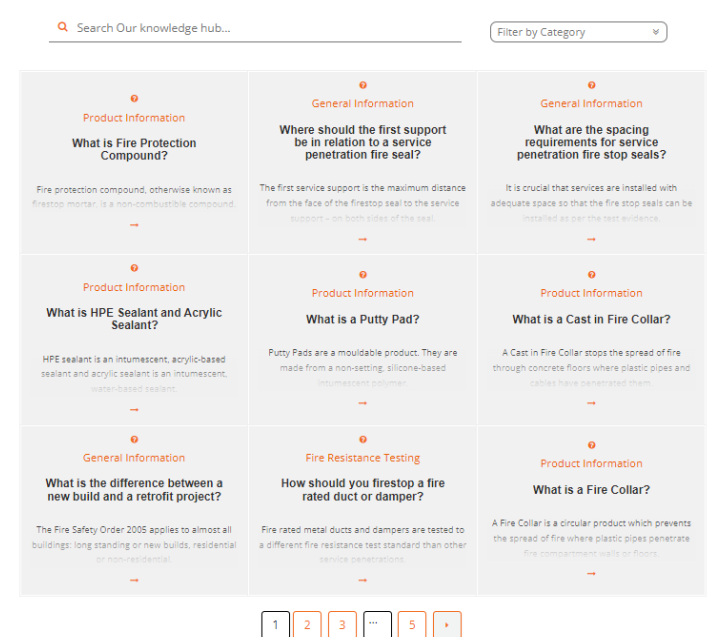
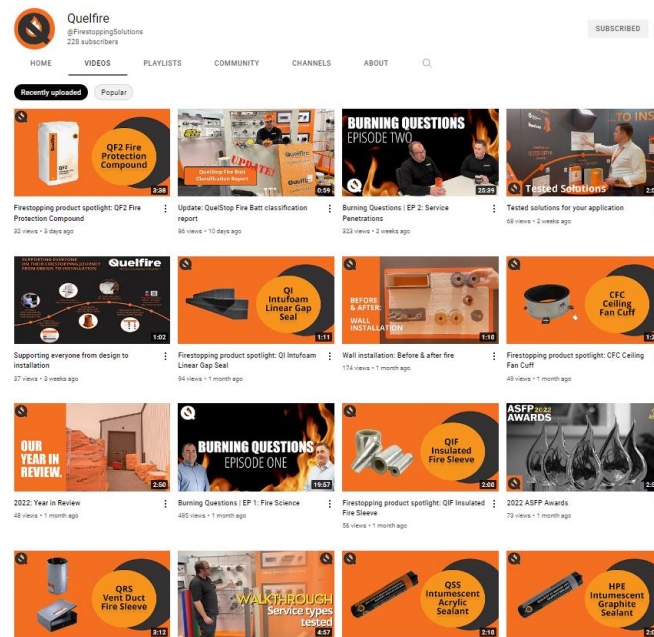
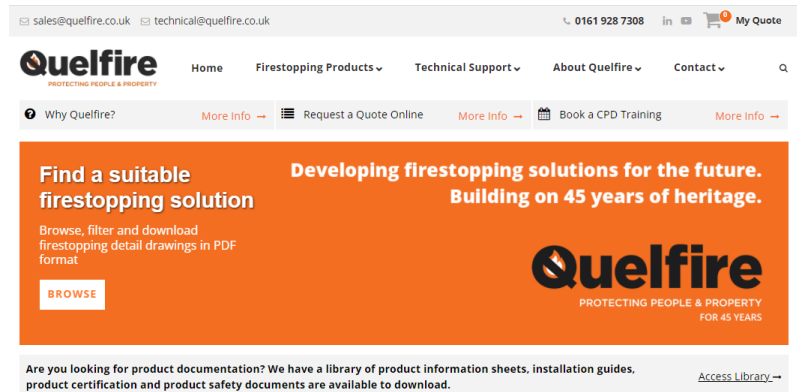


# Still got questions? Check out these additional resources:

**Quelfire Website**  
[www.quelfire.co.uk](http://www.quelfire.co.uk)

**Quelfire YouTube Channel**  
[www.youtube.com/c/FirestoppingSolutions](http://www.youtube.com/c/FirestoppingSolutions)

**Quelfire Knowledge Hub**  
[quelfire.co.uk/knowledge-advice/](http://quelfire.co.uk/knowledge-advice/)



And if in doubt, send an email to: [technical@quelfire.co.uk](mailto:technical@quelfire.co.uk)