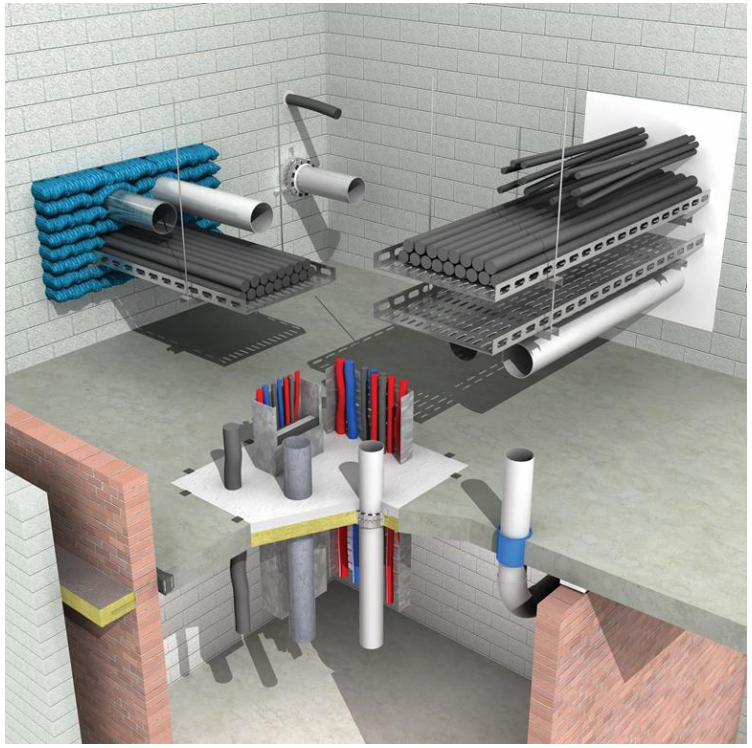
The Regulatory Reform (Fire Safety) Order and Passive Fire Protection – Getting it Right

Niall Rowan - Chief Executive Officer

Association for Specialist Fire Protection

Contents

- Who is the ASFP?
- What is Passive Fire Protection?
- Assessing for Means of Escape
- What needs to be done for modern and older buildings (different approach needed)
- Assessing each type of PFP
- Examples, checklist.



Who is the ASFP?

- Associates 30
- Contractors 74
- Distributors 9
- Manufacturers 57
- Individuals 12
- International 12
- Total 194
- 171 in 2018, 13.5% increase

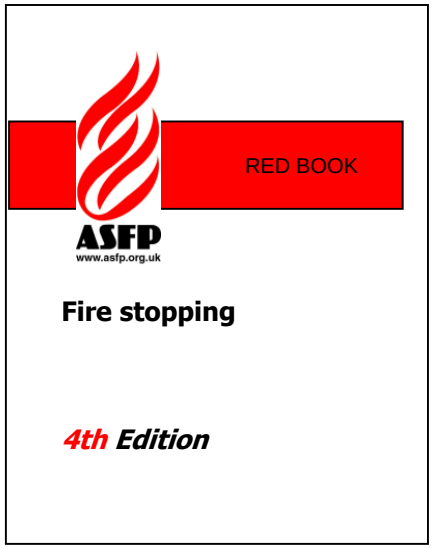
Who is the ASFP?

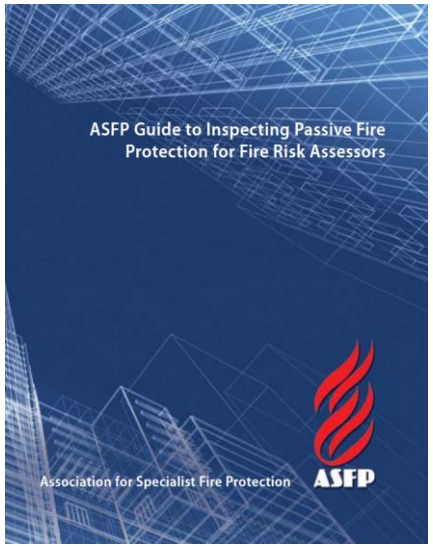
Originally formed in 1975 in recognition of a need to bring together Passive Fire Protection:

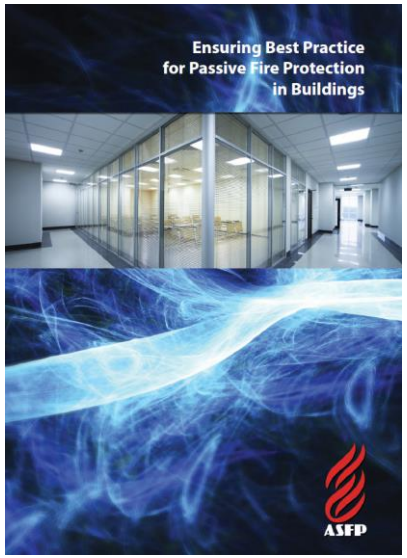
- Manufacturers
- Installation contractors
- Testing/certification bodies
- To encourage, develop and give guidance on essential standards in PFP.

ASFP Resources

1. ‘Colour’ Books – referred to in Approved Documents
2. Guide to Passive Fire Protection for Fire Risk Assessors
3. Best Practice Guide to Passive Fire Protection
4. On-site Guide to fire-stopping







5. ASFP Library of YouTube videos

Firestopping

13,672 views

ASFP FOUNDATION COURSE IN PASSIVE FIRE PROTECTION

LEVEL 3 CERTIFICATE IN PASSIVE FIRE PROTECTION
LEVEL 2 CERTIFICATE IN PASSIVE FIRE PROTECTION

Level 3 Course

Target audience:

- Managers/supervisors/Technical sales staff
- Designers
- Fire risk assessors/Site inspectors

Format:

- 7 days spread over several weeks
- Additional reading up to 300 hrs
- 3 hours examination (IFE)
- ~ 'A' level or NVQ at Level 3
- **Leads to TiFireE IFE qualification**

Level 2 Course

Target Audience:

- Senior site operatives
- Team leaders
- Site supervisors

Format:

- 4 days of classroom style
- Additional UP TO 180 hours
- 1.5 hours examination (IFE)

ASFP Introductory Level Course

Target Audience:

- Site operatives
- New entrants to industry

Format:

- On-line video content 3hrs total
- 13 short videos
- Introduction to each type of PFP
- Role of Passive Fire Protection in the totality of fire safety
- On-line test at end of course.

Passive Fire Protection

What is it?

"Built-in measures that protect the structure of the building and subdivide it into areas to limit the spread of fire and smoke."

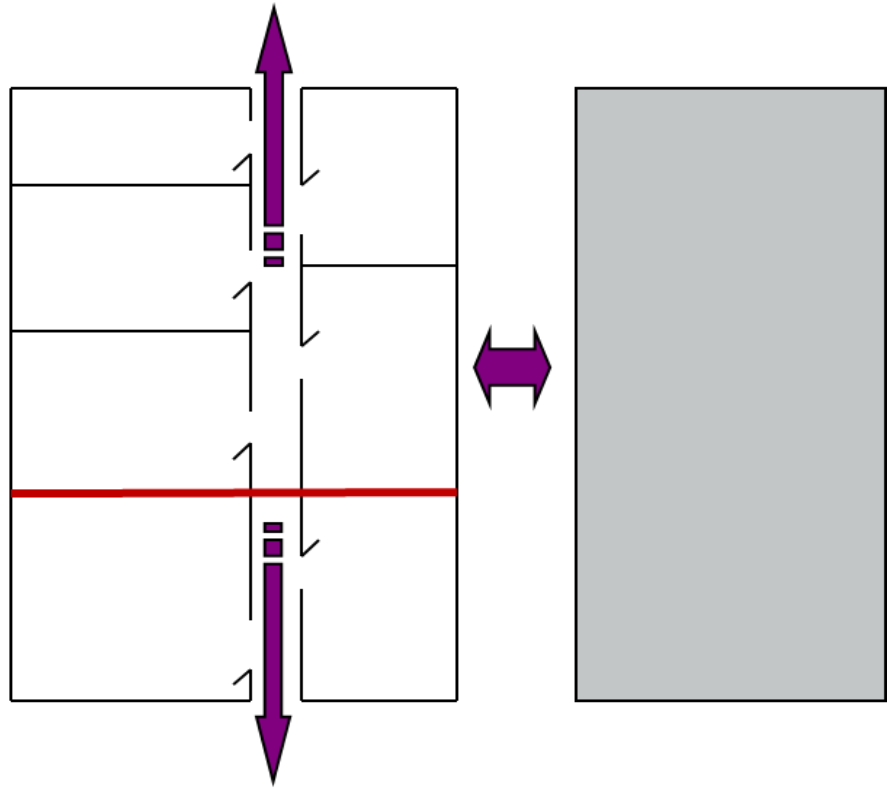
Structural Fire Protection

To maintain the stability of the structure during the period of the fire and ensure that it does not collapse

Compartmentation

The purpose of compartmentation is to:

- Subdivide buildings into areas of manageable risk
- Provide adequate means of escape
- Provide fire separation between adjacent/adjoining buildings
- Provide access and protection for fire-fighters



PFP – what is it?

PFP Works

Fire in Birmingham UK high rise tower

- 1st July 2017
- Suspected arson
- 22nd storey of 32 storey block
- 4 pumps
- 20 fire-fighters

Fire in Birmingham UK high rise tower

- No injuries
- 30 - 40 left the building voluntarily
- Area Commander Ben Brook of WMFRS said:

“We understand that around 750 people live in the tower block, but that no-one was injured”

Fire in Birmingham UK high rise tower

- No injuries
- 30 - 40 left the building voluntarily
- Area Commander Ben Brook of WMFRS said:

“The building’s design, which includes compartmentalisation of individual flats, performed as expected”.

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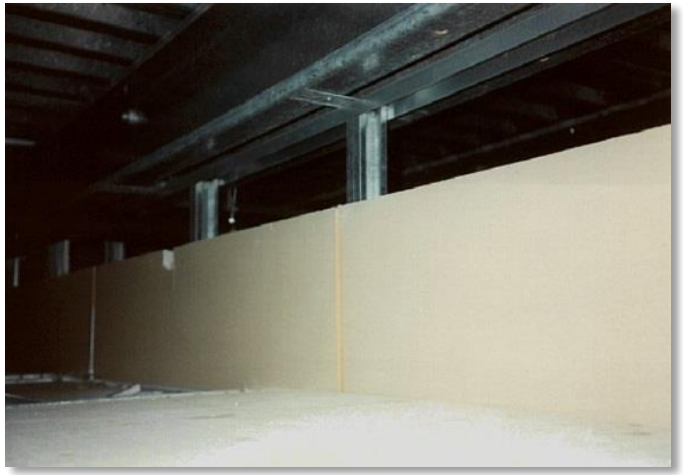
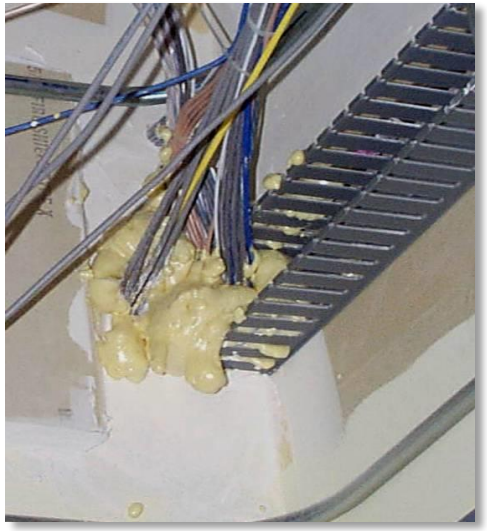
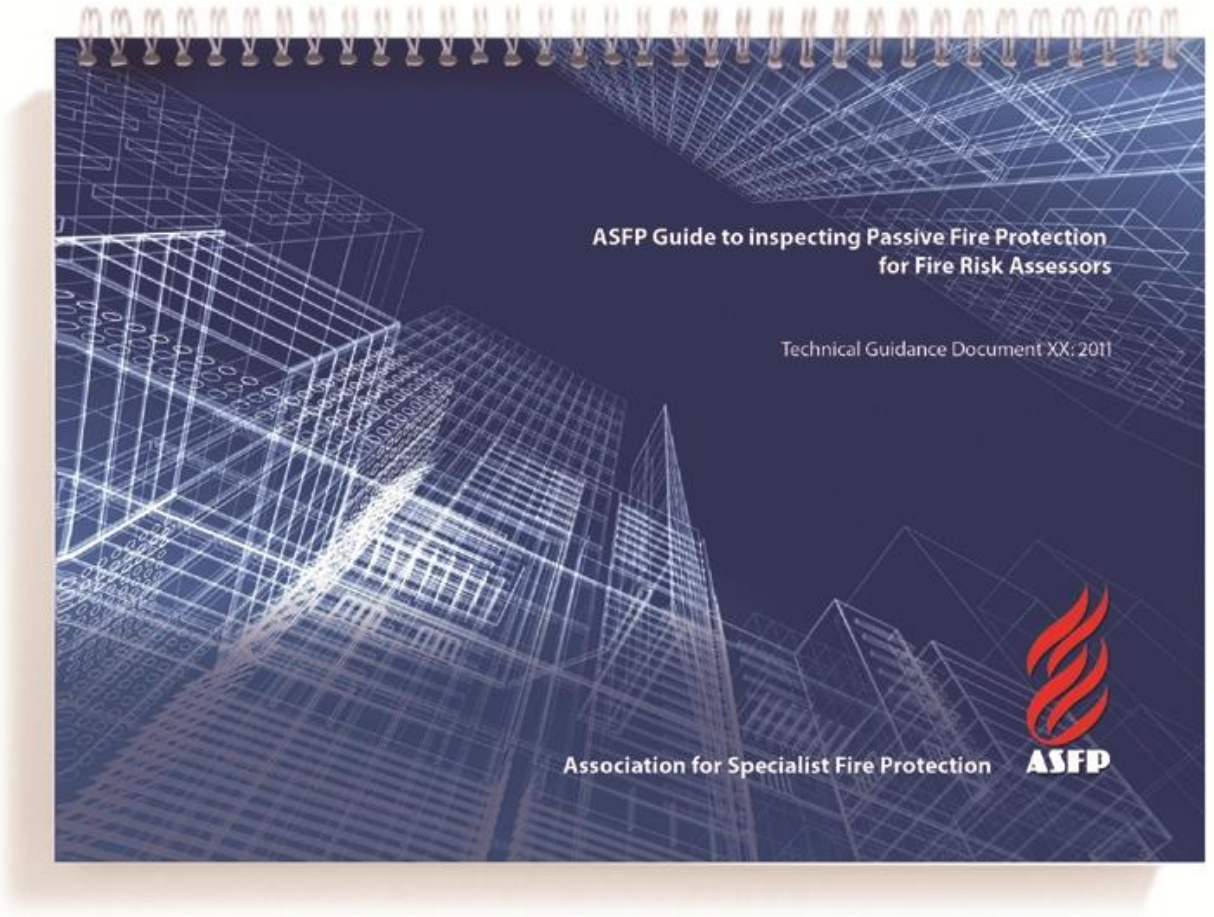


Do you see poorly installed Passive Fire Protection?



Do you see poorly installed Passive Fire Protection?

ASFP has published a guide on what to look for when undertaking a Fire Risk Assessment of the PFP



Statutory guidance documents

- Statutory guidance documents
  - England & Wales – Approved Document B 2006 (2019 imminent)
  - Scotland – Technical Handbook B 2015
  - Northern Ireland – Technical Booklet E 2012
  - Republic of Ireland – Technical Guidance Document B 2017
  - Wales – Approved Document 2016

- Other codes of practice
  - BS 9999: Fire safety in the design management & use of buildings
  - BS 9991: for residential buildings
  - BS 7974: fire safety engineering for the design of buildings
  - Department of education BB 100 Design for fire safety in schools
  - HTM 05 – 01, 05 – 02A, , 05 – 02B, 05 – 03

PFP for Means of Escape

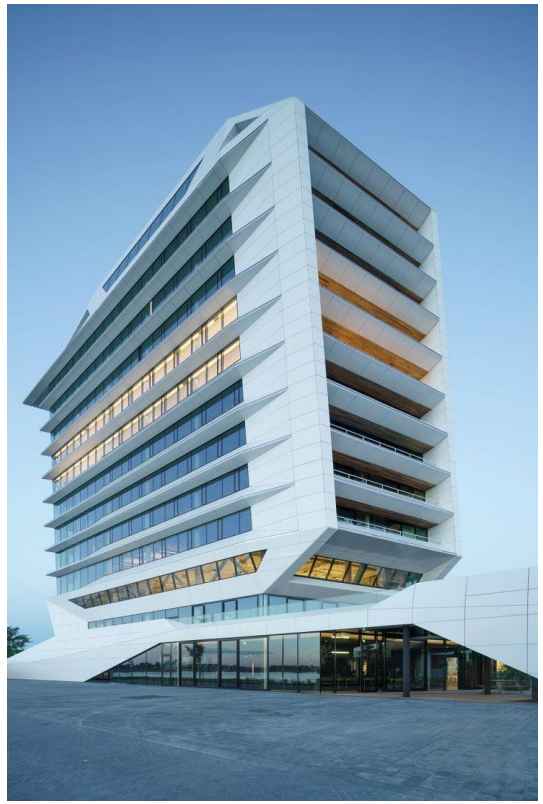
- Structured reasoned approach
  - Not full compliance with Statutory Guidance Documents
  - Not possible to do all within a Type 1 Fire Risk Assessment
    - Not enough time
    - Invasive inspections (Type 2 & 4) may not be tolerated
    - Fire Risk Assessors don't have the expertise (GP analogy)
    - Significant problems should lead to more invasive inspections e.g. Type 2 & 4) further investigation by specialists
- Appropriate to building type and occupancy

Types of FRA

1. Common part – non-invasive
2. Common parts – Invasive
3. Common parts & flats – non-invasive
4. Common parts & flats – Invasive

What needs to be done – Modern buildings

- DETERMINE BUILDING LAYOUT
  - 1994 on - Construction (Design & Management) Regulations RP should have this
  - 2007 onwards – Regulation 38 of Building Regulations applies RP should have this
  - Fire Services Act 1981 & 2003 fire safety design & fire safety certificate – Ask the RP
  - If the assessor can check the building against the appropriate info and all is well – that is enough
- Statutory guidance documents provide info for all Passive Fire Protection measures.



What needs to be done – Older Buildings

- DETERMINE BUILDING LAYOUT
  - Information required probably not be readily available
  - Assessor will need to undertake compartmentation audit
  - Assessor will have to decide what level of PFP is appropriate
    - HMO? Hotel? Offices? Block of flats?
- <u>Create a document that lists the compartmentation and fire resisting construction serving escape routes as a basis for checking PFP as part of the Fire Risk Assessment</u>

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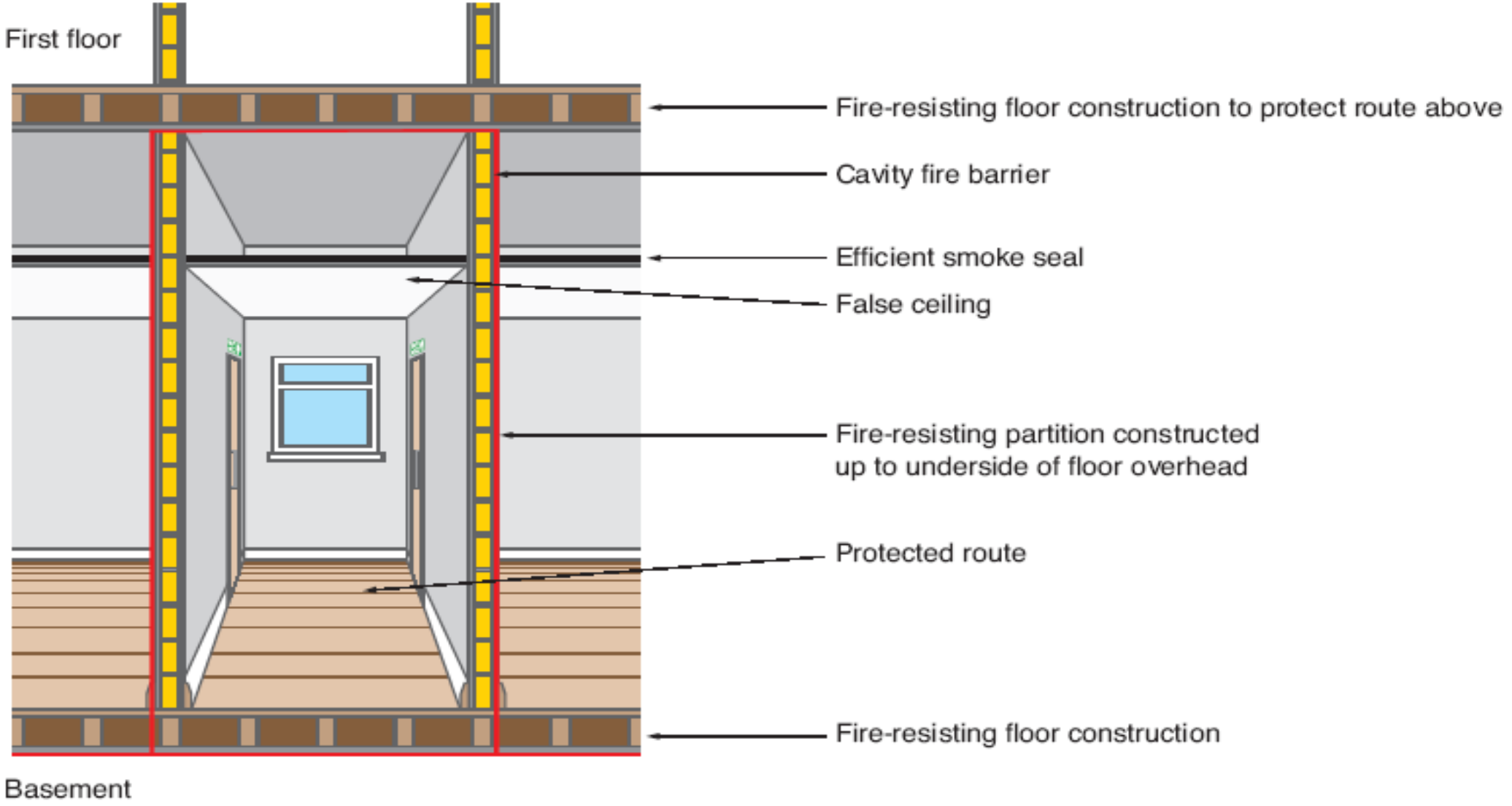


What needs to be done – all buildings

- Check the following:
- Lining materials for walls and ceilings on ALL escape routes
- ALL Fire doors on escape routes
- Compartment walls and ceilings on ALL escape routes (especially above corridor ends)
- Penetrating services in compartment walls, ceilings and floors on ALL escape routes (especially above corridor ends)
- Sandwich panel constructions (in critical areas and where repaired)
- Other items of PFP, but only while examining items above
  - No detailed inspection of e.g. structural fire protection
  - Significant deficiencies to be reported and a call for inspection by a third party should be recommended

How does one inspect it? – 1

- Remove e.g. 1 or 2 suspended ceiling tiles adjacent to compartment walls and along each side of the escape corridors and inspect any penetrating services
- Use of remote camera/video equipment facilitates this
- Check other PFP measures while they are at it
- If all is well – record it.
- If not – assessor needs to get the Responsible person to get a proper survey carried out and repairs made.
- Assessor needs to know enough to know something is wrong

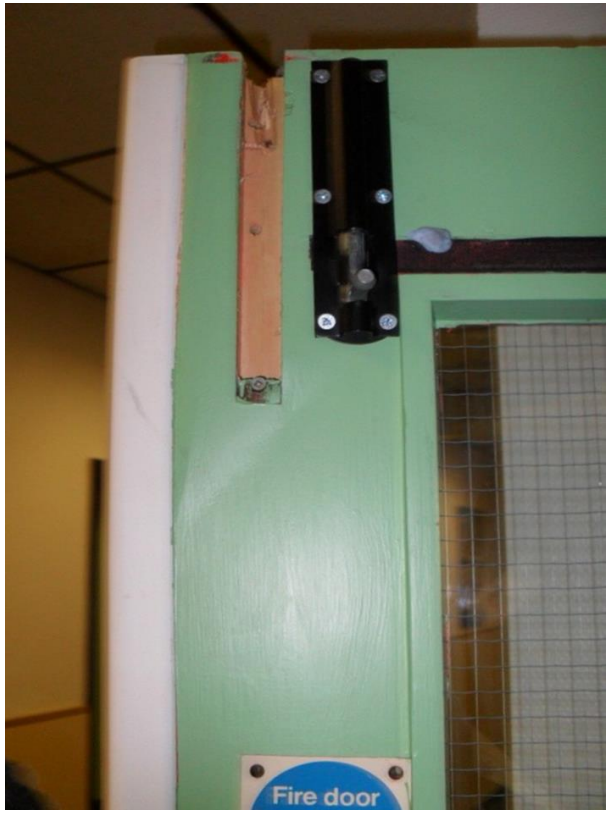
1. Wall and ceiling linings

1. Extensive overpainting
   - Flammable when thick/poorly adhered
   - Management issue to keep escape routes cleare from items e.g. furniture
2. Addition of materials on surfaces
   - Carpets, posters, notices etc
   - Significant amounts should be removed – management issue again
   - Fabrics can be flame retarded – evidence

2. Fire Doors - 1

- Look at ALL fire doors on escape routes
- Is it a fire door? – Are there voids – are there labels/plugs?
- Correct door gaps around edges?
  - ~3-4mm
- Frame fixed/sealed to opening?
- Suitable Ironmongery?
  - 3 hinges
  - Operation of lock/latch/striker
  - Presence of self-closing device
  - Secure knobs, handles etc

2. Fire Doors



Voids at top of door

Unprotected foam sealing

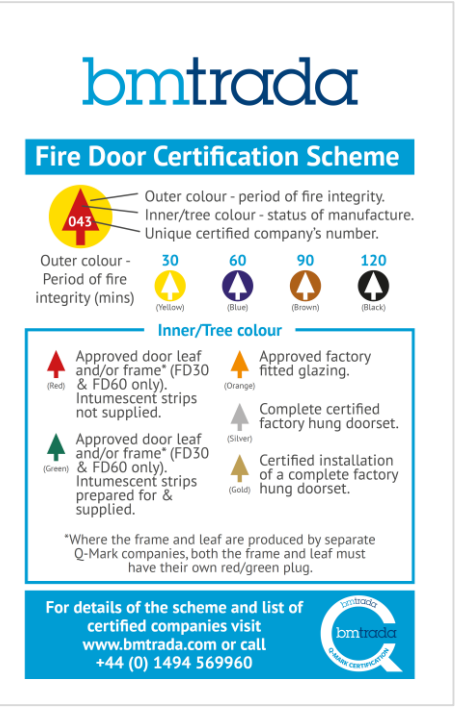
broken butt hinges

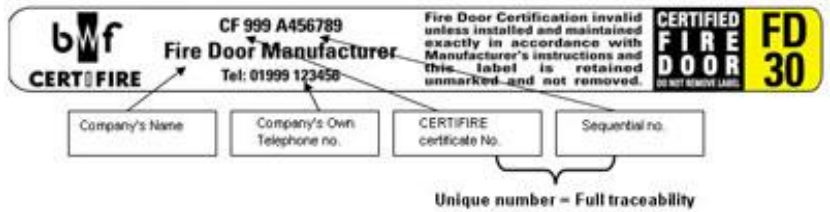
2. Fire Doors – 3

- Presence/condition of intumescent strips?
  - Around periphery of leaf
  - To ironmongery and glazed panels
- Presence/condition of smoke seals?
- Hold open device - automatic release on activation of fire alarm/detection? Records of checks?

2. Fire Doors – 4

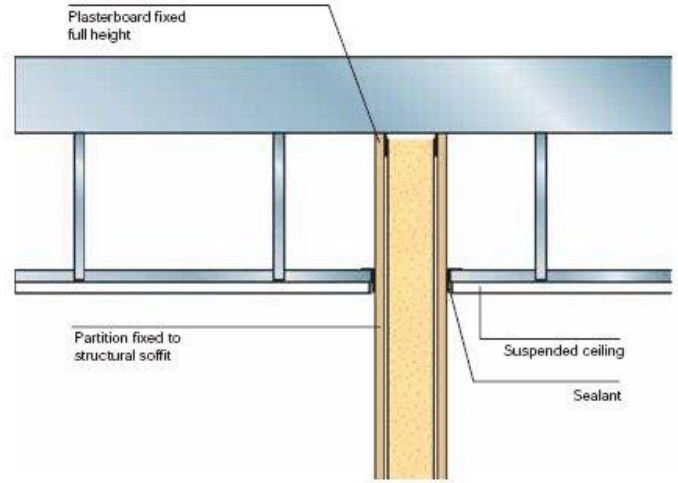
- Panic exit devices (not PFP but important in escape – maybe fitted to non fire doors)
- Air transfer grilles
  - Cannot be thermally activated
  - Linked to fire detection/alarm in escape routes. Records of checks?
- Third party certificated products/installers?
  - Higher quality
  - Labelled/numbered to help traceability
- RECORDS?





3. Walls/floors/ceilings – 1

- Don’t assume existing construction is OK
- For all construction:
  - Is it fire resisting construction?
  - Walls/glazing/ceiling?
  - Changes to means of escape layout?
  - Role of suspended ceilings?
  - Any holes in hidden spaces?
- Third party certificated products/installers?
- RECORDS?



3. Walls/floors/ceilings

4. Penetrating services (cables/pipes)

- Suitably fire stopped?
- Suitably supported?
- Good condition/complete?
- Any holes?
- Third party certificated products/installers?
- Labelled?
- RECORDS?

4. Penetrating services (cables/pipes)

Intumescent pipe wrap installed around a plastic soil pipe in East London

The instructions…

Kooltherm
Kooltherm
Kooltherm
Kooltherm
Kooltherm
Kooltherm
Kooltherm

4. Penetrating services (ducts/dampers)

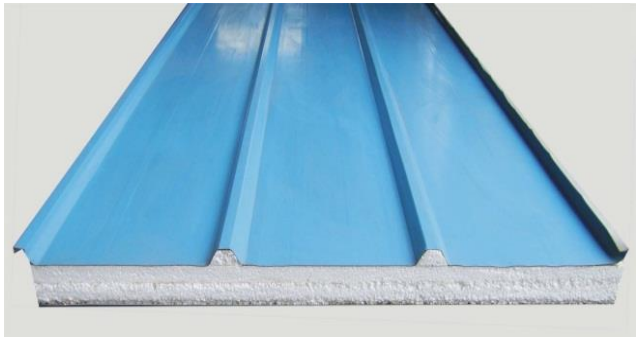
- Suitably fire stopped?
- Suitably supported?
- Good condition/complete?
- Method of air handling understood?
    - Method 1: thermally actuated fire dampers;
    - Method 2: fire-resisting enclosures;
    - Method 3: using fire-resisting ductwork;
    - Method 4: automatically actuated fire and smoke dampers triggered by smoke detectors.
- Third party certificated products/installers?
- Labelled?
- RECORDS?

4. Penetrating services (ducts/dampers)

- Dampers not in plane of wall
- Duct is not protected
- No fire stopping around ducts
- Duct performance will not have been evaluated in cellular beam
- Not Labelled
- No RECORDS

5. Sandwich panels

- Fire resisting construction? (where visible)
- What is the core material?
- Competent repairs or modifications?
- Operational considerations
  - No heating applances or ovens adjacent to walls/ceilings?
  - No storage of highly combustibles adjacent to walls/ceilings?
  - Are panels loadbearing?
- Hot work/processes to be supervised
- RECORDS?

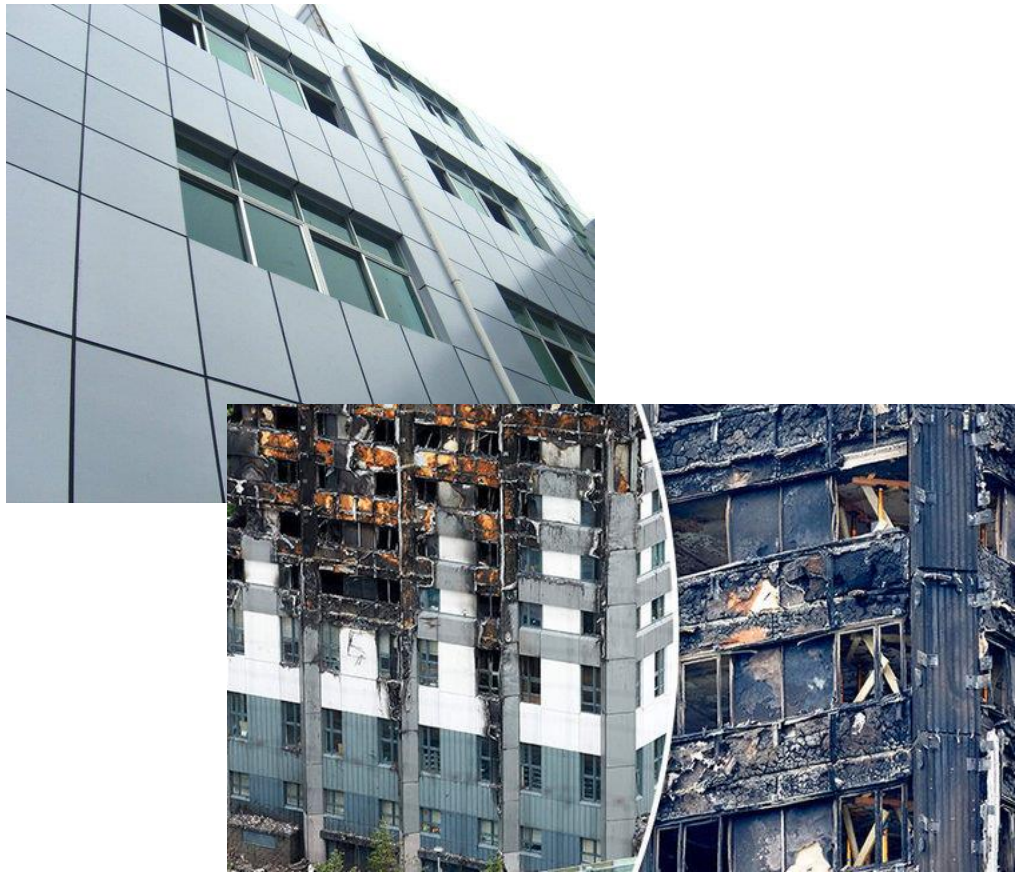


6. Other Passive Fire Protection - 1

- Fire protection to structural frame (where visible)
  - Good condition?
  - Complete?
- Cavity barriers (where visible)
- If there are problems call in a third party inspector
- Third party certificated products/installers?
- RECORDS?

7. Cladding

- Is cladding common works????
- Ban on combustible materials on outside of HRRBS
- Detailed considerations:
  - Cladding – what is the core?
  - What is the insulation?
  - Cavity barriers?
- How is fire performance justified
  - Test? Desktop study? Other?
- RECORDS?



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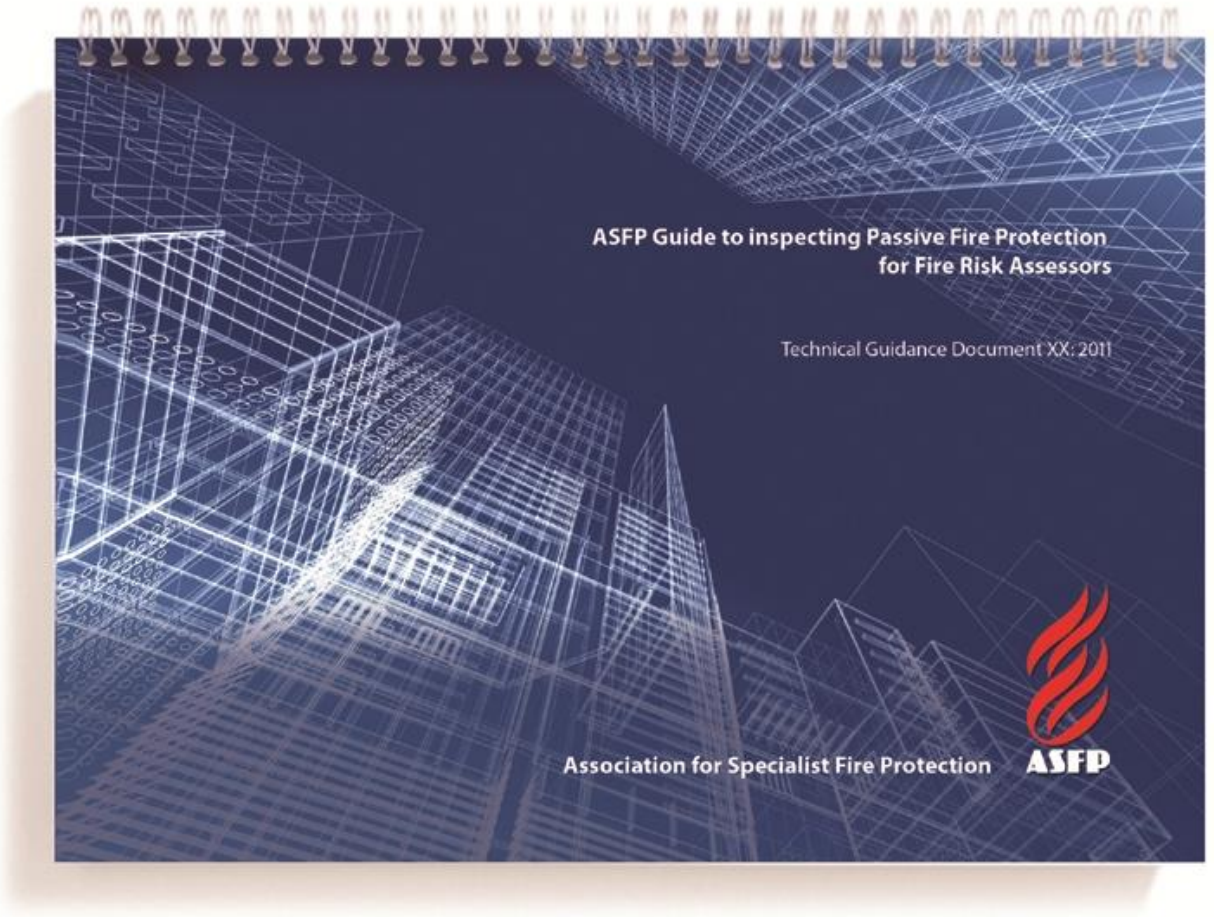


Regulatory Reform (FS) Order and Passive Fire Protection – Getting it Right

- Introduces role of Fire Risk Assessor/Assessment
- Need to evaluate PFP associated with Means of escape
- NOT a full survey of compliance with statutory documents (ADs)

ASFP Guide to inspecting Passive Fire Protection for Fire Risk Assessors

1. Introduction

This guide has been produced to assist fire risk assessors (FRAs) carry out inspection of Passive Fire Protection (PFP) as part of a Fire Risk Assessment under appropriate fire safety legislation which includes:

- Regulatory Reform (Fire Safety) Order 2005 (England & Wales) (RRO)
- Fire (Scotland) Act 2005
- Fire and Rescue Services (Northern Ireland) Order 2006
- General Application Regulations 2007 under the Safety, Health and Welfare at Work Act 2005, Fire Services Act 1981 & 2003 (Ireland)

It provides assessors with appropriate guidance for them to be able to verify that the PFP supporting means of escape is adequate. The legislation referred to above is designed to save lives in the event of a fire but does not necessarily cover the issue of property protection. Building owners or insurers wishing to ensure that the building is capable of withstanding the spread of fire for a period longer than that necessary to evacuate its occupants should contact the ASFP for further guidance.

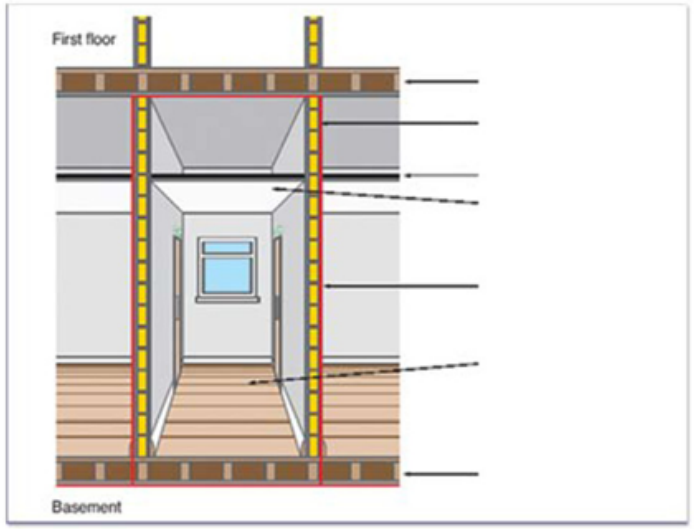
2. How to use this document

The fire risk assessor should initially read this document in its entirety to obtain a basic understanding of PFP and its role in means of escape. Thereafter, it can be used as a reference source to assist the inspection process.

- Chapters 3 – 5 contain background information, including a brief explanation of the relevant regulations
- Chapter 6 explains how to decide what to check to ensure life safety and where to get information on the location of installed PFP in the building.
- Chapters 7 - 12 explain how to identify each type of PFP, and what to look for.
- Further information on each type of construction is given in the Annexes starting on page 26, but the main points to check are in chapter 7.
- A checklist of what needs to be inspected for each type of PFP is given in Annex A. The checklist contains cross references to the relevant text in chapters 8- 12.

3

These include: fire doors and associated ironmongery, fire-resisting ducts and dampers. Many products can be CE marked already (for example, fire door ironmongery) and these provide some reassurance that the product has been adequately evaluated.



7.4 Procedure

To evaluate the PFP associated with the means of escape, the fire risk assessor will need to examine:

- Lining materials for wall and ceilings on escape routes
- Fire doors
- Construction of walls, ceilings and floors forming escape routes
- Penetrating services in walls ceilings and floors forming escape routes e.g. ducts
- Other items of PFP, but usually only in the course of examining the items above

These are considered below in appropriate detail. Further detailed guidance on each type of construction can be found in Annexes B to K.

Fire risk assessors should take care when inspecting buildings that they follow all relevant health and safety guidelines. In particular, hazards associated with confined spaces, working at height, protection against dust (which may include asbestos) and vermin should be considered.

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Regulatory Reform (FS) Order and Passive Fire Protection – Getting it Right

- ½ to 3 pages on each type of Passive Fire Protection
- Pictures of what to look for (good & bad)
- Annexes with more info, further reading & links to third party organisations

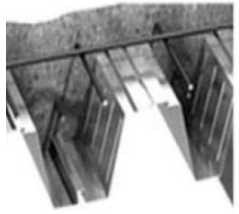
9.9 Air transfer grilles in fire doors

If a fire door protecting a means of escape is fitted with an air transfer grille then it needs to be a type linked to a suitable fire detection/alarm system. Thermally triggered dampers e.g. those operated by a fusible link and intumescent dampers are not suitable for these situations.

The fire risk assessor should check that the intumescent matrix is present and that the operation of any such air transfer grille has been regularly checked and recorded.

More guidance is given in Annex C on fire doors.

Air transfer grille operated in conjunction with fire alarm system Image courtesy of Lorient Ltd



10. Construction if fire-resisting walls, ceilings and floors forming escape routes

10.1 Existing construction

For most buildings, it should not be necessary to extensively evaluate the fire-resisting construction used in escape routes or in compartmentation as these should have been covered by the building control process. For example in an office building, the number and construction of the floors (which will often be concrete) are unlikely to change. This contrasts with the situation with wall and ceiling linings and to a lesser extent fire doors and suspended ceilings which are likely be changed during the life of the building for aesthetic reasons.

10.2 New construction

The only changes in fire-resisting construction of walls and floors that are likely to occur are those where the internal layout has been changed e.g. by relocating, replacing or demolishing internal partitions (changes due to the inclusion of new services etc. are dealt with in chapter 112). In this case, the fire risk assessor needs to verify that the new construction is still suitable for use as an escape route in two regards; layout and type of construction.

10.3 Layout

The fire risk assessor needs to check that any modifications have not affected the means of escape, for example, significantly increased travel distances, or removed some of the fire doors. Changes in the construction and layout of internal walls may occur during the life of the building and may not be examined by Building Control so it is very

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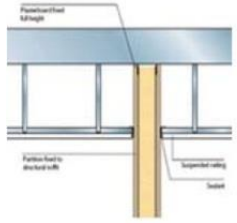

If this is significant e.g. if it means that fire can spread via the ceiling void over compartment walls which have not been taken floor slab to floor slab, then the assessor should note this in his assessment and recommend inspection by a third party to verify if the ceiling is fire-resisting or not, or alternatively, to recommend replacement.

One of the most common faults found in existing ceilings is that hold-down clips are removed and not replaced when maintenance work has been conducted behind the ceiling. If tiles are a loose fit, the original design should be checked, since pressure increases during a fire condition can remove lightweight tiles. Damage to tiles is common and replacement with tiles from another manufacturer could lead to a premature failure in a fire. Tiles that are damaged should be replaced with ones of the correct type. Further guidance on the construction of ceilings is given in Annex F.

Image: Vertical compartmentation taken up to underside of floor slab (correct)

10.5 Hidden spaces

In addition to checking the materials and construction of the walls, floors and ceilings in escape routes, it is crucially important that the assessor ensures that these extend above suspended ceilings to the floor slab (or equivalent) above and below the raised floors to the floor slab below. There are many instances where an 'out of sight – out of mind' mentality results in fire-resisting construction being compromised because it is not extended from 'floor slab to floor slab'.

Image: Vertical compartmentation not extending up to floor slab above (incorrect). Image courtesy of Exova Warringtonfire

10.5 Methodolgy

The assessor will need to inspect all fire-resisting walls, ceilings and floors forming escape routes and evaluate the condition of the fire separating elements. He will also need to look above suspended ceilings abutting walls that bound escape routes – especially at corridor ends. It is unreasonable and impractical to lift every ceiling tile to examine the whole length of such walls, but a selection from each escape route will give the assessor an idea of the condition of the fire-resisting construction. Remote video equipment and/or the use of torches to illuminate any holes will assist. A torch or lamp placed on one side of a wall while the assessor looks at the other side for any light shining through is an indicator of the degree to which the wall is sealed against the passage of smoke. The assessor should to pay particular attention to walls above suspended ceilings at corridor ends (where there will usually be fire-resisting doors) as the wall above the suspended ceiling may not extend fully to the floor slab above.

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- The all important Check List for each type of construction
- Related to means of escape
- References to clauses in doc with further information

	▶ Suitable records
Fire doors Chapter 3	▶ Is it a fire door? Is it certificated? ▶ Correct door gaps ~3-4mm ▶ Suitable ironmongery - Labelled (CE marked) - 3 hinges - Operation of lock, latch and striker - Presence of self-closing device - Secure knobs handles etc. ▶ Presence and condition of intumescent/ smoke seals - Around periphery - To glazing - To ironmongery - To threshold (if >3mm) ▶ Automatic release of self-closing device ▶ Panic exit devices ▶ Air transfer grilles – not thermally activated but linked to fire detection in escape routes ▶ Third party certificated products/installers ▶ Suitable records

Summary

- Passive Fire Protection - what it is and how it works
- Need to determine building layout and where to get information
  - Modern Building from documents where possible
  - Older Buildings where info is not available - from your own compartmentation audit of what is needed for means of escape
- How to assess each type of PFP within the context of a Fire Risk Assessment for means of escape
  (more where it's important and less where it's not)
- Examples of good and bad
- Need to get professional surveyors in if problems found
- Get information from new ASFP publication and website

Passive Fire Protection

You only need to use it once…

Niall Rowan – Chief Executive Officer

Association for Specialist Fire Protection

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