Fire stopping falling short

Passive fire protection has a significant effect on limiting fire spread in a building. The application of current regulations for checking installations has shortfalls and should be examined.

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Incorrect application of fire stopping yet it was signed off with PS3 and PS4.

INCORRECT FIRE STOPPING of service penetrations can allow fire to penetrate fire cells, while incorrect material selection or poor application can severely reduce the fire resistance rating of the seal.

Too much poor installation

Usually poor installation stems from a lack of knowledge that passive fire protection is about correctly installed, tested and compliant systems. It is not about squirting some foam or sealant around cables.

Yet the current inspection process, from new consents to independent qualified person (IQP) inspections, still results in major issues and non-complying passive fire protection. Of particular concern is fire stopping of service penetrations.

Many people have asked why the installation of passive fire protection, and in particular fire stopping of service penetrations, is so poor considering councils use a producer statement (PS) process, and each year an IQP must sign a Form 12A for fire and smoke separations under the building warrant of fitness (BWOF) regime.

One lawyer spoken to in Auckland has indicated that there are potential litigation cases relating to incorrect passive fire protection installation.

If cases do go to Court, judges will decide which parties are responsible, and I suggest there will be major changes. In the meantime, there are opportunities to dramatically improve the current system.

When problems emerge

Currently, the main problems with passive fire protection inspections, particularly fire stopping of service penetrations, are due to poor understanding by installers, builders, project managers and many fire designers and fire engineers. There are also insufficient design reviews and building consent conditions.

Unclear who does the work

There are no detailed requirements in the building consent process to identify who is undertaking the fire stopping of the various service penetrations. On most projects, several trades carry out the work. Each trade should be identified, with confirmation of who will be doing the fire stopping, and a corresponding Producer Statement Construction (PS3) required by each trade.

Insufficient Producer Statement Design Review (PS2) information

Sometimes, when asked, contractors supply the wrong fire stopping literature for the system used for the service penetrations.

Contractors may also decide to use cheaper solutions that are often not suitable.

The peer reviewer needs to understand the systems and reject systems that are unsuitable for the particular penetrations.

Also, some passive suppliers provide insufficient literature. Additional information is often required to ensure that the systems are installed as per the manufacturer's tested requirements. Many people undertaking PS2 design reviews miss the detail due to a lack of knowledge.

Self-checking not working

Some building consent conditions request that the installing company inspect its own work and sign a PS3, but as the majority of trades lack knowledge of passive fire protection, self-certification is not working.

Construction monitoring issues

Construction monitoring of passive fire protection is either not required or is at the wrong level - see IPENZ construction monitoring levels CM1-CM5.

Construction monitoring levels 1-3 are based on construction being undertaken by experienced and competent constructors. There are few experienced and competent installers for fire stopping of service penetrations however, so construction monitoring of passive fire protection currently requires CM4/5 monitoring. Inspection frequencies may vary according to IPENZ Table 3 Construction Monitoring.

Engineers rely on producer statements

The Producer Statement Construction Review (PS4) for fire stopping of service penetrations is often signed by the fire engineer or fire designer. However, there appear to be few fire engineers with a good knowledge of most fire stopping systems sold in New Zealand.

Many fire engineers don't have the time or incentive to read up on literature of various systems to correctly review fire stopping. Many inform me that fire stopping is not their area of expertise, and they rely on PS3 documents plus a quick review to see if fire stopping has been applied.

However, from my experience as a peer reviewer for councils, many systems are far from compliant. Fire engineers may have complied with their PS4 requirements for sign-off - CM1/2 - however, with current installation knowledge levels, this is insufficient.

Lack of knowledge by BCAs

The BCA inspection is a point in time inspection, so inspectors have to be satisfied on reasonable grounds that the installation is correctly installed. Arguably, this could be that they have received a PS3 and PS4.

For this approach to work, people signing the PS3 and PS4 need to have a good knowledge of passive fire protection systems.

All parties require major improvements in knowledge levels, and design and peer reviews need to be undertaken by passive fire protection specialists with knowledge of many systems.

As the government is committed to self-regulation for new construction, including for passive fire protection, the current system needs review.

BWOF regime

IQPs are now required annually to sign Form 12A for fire and smoke separations that are part of the means of escape from fire. For them to do this confidently, several issues need to be addressed:

- Clarify which fire and smoke separations are part of the means of escape from fire for the BWOF regime. This could be set out in a code of practice to eventually be cited in building regulations.
- Few IQPs check fire separations within ceiling voids and risers even when they are clearly part of the means of escape from fire. It is crucial that these areas are reviewed, so the code of practice could clarify the extent of inspections.

Establishing a code of practice that is cited in building regulations could solve these issues.

IQPs need training

Every week, there are many fires in New Zealand and passive fire protection has a vital part to play in restricting the spread of fire and smoke for a designed timeframe.

However, this can only be achieved when fire stopping systems are correctly installed by competent persons and checked by specialists, followed by annual IQP inspections by another trained person.

The level of passive fire protection knowledge by IQPs is diverse, and the assessment requirements by councils (who approve IQPS) are wide ranging.

In my opinion, all IQPs who are inspecting fire and smoke separations should have NZQA qualifications for passive fire protection and appropriate experience.

Fire collar not tested or approved for cables yet it was signed off with PS3 and PS4 .