Addressing Passive Fire Protection

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My Intro

- IQP – Fire & Smoke Separations
- Passive Design – Fire stopping of service penetrations
- Construction Monitoring
- Peer Reviewer
- Passive Project Management
- Training PFP for: Fire Engineers, IQP’s, Trades, Councils, Property Managers
- Expert Witness
- Pre Purchase Inspection – Passive Fire Protection

Chairman - Association Building Compliance (IQP Association)
Chair – Passive Sig Group – Fire Protection Association
What we will cover

- What is Passive Fire Protection
- Systematic problems of Passive Fire Protection
- Installation
- Building Act and IQP
- MBIE Fire Review
- Potential changes for Installation / IQP
- What can you do now?
Passive Fire Protection is not always a popular subject, but can be paramount to life safety and property protection.
Its like paying insurance premiums!

We don’t like it but if we need it we are only then grateful!
What is Passive Fire protection
What is PFP

Is part of the building fabric and is to provide inherent fire safety and protection, by responding against flame, heat and smoke, toxic gases; and
What is PFP

Is to maintain the fundamental requirements of:

- building compartmentation
- structural stability
- fire separation
- safe means of escape.
What is PFP

What measures do we take to achieve the intended purpose?
by raising the fire resistance of the structure; and
What is PFP

protecting the **structure** against the effects of fire; and
What is PFP

reducing fire spread through secondary ignition; and
What is PFP

limiting the movement of flame and smoke through fire stopping and construction; and
What is PFP

minimizing the danger of fire-induced collapse or structural distortion.
It will never happen!
Is Passive Fire Protection new?
Is Passive Fire Protection New?

Fireproof materials become part of Regulations!

Stone and Brick houses with Fireproof Party Wall Separations
History

- Great Baltimore Fire (1904)
- McCormick Place Exhibition Hall (1967)
How Does Fire and Smoke Spread
Disastrous Results

- MGM Grand Hotel 1980 – 85 Killed 679 Injured
- What did 85 people die from?
Disastrous Results for client in NZ!

- How did fire and smoke spread so quickly?
Disastrous Results for client in NZ!

- How did fire and smoke spread so quickly?
Warehouse Stationary Rotorua Dec 2011
Fire Door – Stopped fire spread
Fire side of Fire Door
Smoke Issue Tauranga Hospital

Fire at Tauranga Hospital – Smoke distributed via A/C
Monday, March 5, 2012 9:17 . Electrical Fire in Electrical Switch room
Extinguished by Sprinkler and NZFS
Warning

This next Video will affect you
It's a real fire with 100 fatalities

Rhode Island, USA - 20 Feb 2003
Station Nightclub Fire
100 Dead & 200 Injured

Warning content may offend some viewers
Typical Fire Separations
New Building
Fire Separations
Passive Fire Protection – Systematic Problem?
Why Systematic Problem

- Lack of education of passive in most industries
- Passive is not costed correctly at tender stage – lack of understanding
- Passive mostly not considered as part of the initial construction design
- GENERALLY Architects / Builders / Trades do not understand passive installation requirements
- Trade centers selling product with no knowledge
- Few Passive Installers – some companies negligent
- Fire Engineers – many lack of knowledge of fire stopping /
- BCA limited or no training
- IQPs – knowledge varies greatly
Systematic Problems – Building Companies

- Builders facilitate subcontractors - don’t manage passive requirements
- Builders don't ensure fire stopping complete prior to ceilings closed in
- Builders rely on subcontractors – self certification!

Riser - This is a fire rated wall without the plasterboard lining and penetrations not fire stopped.
Systematic Problems – Fire Rated Walls Risers

Hole in wall and Fire rated damper installation issue.

Foam!
This was in a new hospital (Surgery wing), installed by specialist!
Systematic Problems – Fire Rated Door

Fire Rated Door has tag indicating complete!

However door installation / wall not complete!
Systematic Problems – Fire Damper Installation

Required gap is missing!

Unit cannot expand in fire and damper would likely jam meaning no fire damper!
Expanded fire rated foam is for gaps in solid substrates! Not for combustible materials.
This sealant is for stopping small gaps and up to 3 cables, not PVC pipe!
Potential Implications for Construction Team!

- Architect / Designer: Litigation
- Project management company: Litigation
- Engineers: Litigation
- Fire engineer: Litigation
- Suppliers: Litigation
- Builder: Additional Costs / Litigation
- Trades: Additional Costs / Litigation
- BCA: Litigation

= Non compliant / potentially unsafe building
Ron the mystery shopper!
PFP is all about Approved, Tested and Compliant Systems
IQP Inspection
Pre Building Act

No Inspections of Fire Separations

PRE 1990
Building Act 1991

BWOF Regime Introduced

IQP – Annual Inspections

Means of Escape From Fire

Included Fire Separations
Building Act 2004

Building Regulations
Specified Systems
Fire and Smoke Separations
SS15 C & SS15 E

However old CS Features Remain
Means of Escape From Fire
Building Act 2004

Building Regulations
Specified Systems
Fire and Smoke Separations
SS15 C & SS15 E

However old CS Features Remain
Means of Escape From Fire

12A Introduced – Increased Liability for IQP
“The surveys of the buildings that were carried out clearly demonstrated that there are a number of significant and serious problems with regard to the quality of PFP in New Zealand buildings”

The fundamental problem with PFP is that a very minor omission can have catastrophic consequences in respect to overall fire safety for building occupants in the first instance – in other words there is often very little if any redundancy. This is in stark contrast to general building construction where minor omissions are dealt with very effectively by factors of safety and general redundancy in design.
There were also some systemic problems highlighted by the inspections, particularly in relation to Compliance Schedules and the non-involvement of qualified professionals at crucial stages of the construction and approval process”.

Full report
Old CS Features Disappear
Compliance Schedule Requirements by April 2013!
IQP – Forced to Sign 12A for SS15 C & SS15 E

Where and What does an IQP Inspect?
IQP – Responsibility

IQP
Checking of Fire Separations
Now Improving
SS 15/3 Fire separations

A. Scope

A fire separation is required to be listed on a compliance schedule where the fire separation:

A.1 forms part of the means of escape from fire which contains one or more of the specified systems 1–6, 9 and 13.

Examples:

Examples of fire separations include, but are not limited to, the following:

(i) fire door forming part of a fire separation
(ii) walls forming a safe path within a building
(iii) fire rated floor in a service cupboard.
Fire and Smoke Separations

What happens if you don’t know where the Fire and/or Smoke Separations are?

- How can IQPs sign the form 12A if they don’t know where the Separations are?
- Only a few ways to obtain this information correctly
  - Copy of fire report
  - Copy of approved drawings identifying separations
  - Have a qualified person produce a fire design
- If you choose to ignore, then one day you and the building owner may be held accountable
✓ Fire Review
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<td>Fire Safety in Supported Housing</td>
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<td>Alterations to Existing Buildings (ANARP)</td>
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<td>Timber Linings &amp; Material Group Numbers</td>
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<td>13</td>
<td>Construction Monitoring Post Construction Compliance</td>
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<td>HSNO - Understanding of the Various Legislation in Relation to Fire</td>
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The Fire Regulation Development Programme

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Potential Fire Code / Legislative Changes - Passive
Potential Fire Code / Legislative Changes - Passive

✓ Passive – restrictive building work?
✓ Passive design requirements as part of consent prior to installation?
✓ Purchase of systems/materials restricted?
✓ Compulsory third party inspections during construction by licensed inspectors?
Potential Fire Code / Legislative Changes - Passive

- Licensed installers for each manufacturer?
- Licensed installer – general installation?
- Final inspection 9 months after practical completion to inspect tenancy fit outs
- Passive module for all relevant trade qualifications
Potential Fire Code / Legislative Changes - Passive

Post Construction

- IQP Inspection – within one month after compliance schedule issued
- IQP inspection by licensed IQP specialist?
- IQP inspection risk based percentage inspection?
- IQP Inspection - risk based 100% within 5 years?
- Legal declaration by building owner for fire stopping of new penetrations through fire separations?
Potential Fire Code / Legislative Changes - Passive

✓ Specific requirements of where and what IQP is to inspect
✓ Annually – risk based percentage inspection
✓ Annually – declaration by owner regarding new works
✓ Two Yearly - risk based up to 100% inspection
What can you do as Facility Managers?

- Check your Compliance Schedules
- Have fire report / drawings available
- Ask IQP where and what he is inspecting
- Have an audit completed so you know what base line is
- Ensure subcontractors know where fire separations are by installing labels
- Management of subcontractors – penetrations
- Declaration by subcontractors – fire stopping
- Pre Purchase inspection – Passive Fire
Passive Fire Protection

IT’S ALL IN THE DETAIL!