

The Blame Game

.....and so called Non-conforming building products

An Article by John Rakic; someone who wants to see serious improvement and help share some thoughts....

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I feel myself getting a little carried away as I do this brain dump and I apologise if I offend anyone, but remember I believe we are all to blame in some way. Don't take it personally or shoot the messenger when you read this



Introduction

For the majority of my working life I have been working in the Australian construction industry. I have been involved with the manufacture and supply of specialty building products with an emphasis on fire protection and mostly with so called passive fire protection or fire stopping systems.

I was also a keen sportsman; having captained my AFL, Soccer and Cricket teams and won premierships and wooden spoons alike.

I think I can draw many parallels between sport, family life and working life; when things are going well everybody says it is their doing, but sadly when things are going badly, everyone runs for cover and people inevitably start blaming others. To fix the problems, often we need someone to stand up and lead from the front; to facilitate a shift in paradigm. This shift involves accepting that we have some problems, and that no one alone is at fault, and that no one gets

to blame anyone else. We work together to create a strong and united TEAM and ultimately if this is done correctly, the root causes of the problems are identified, and the team players start working together and if this is done properly, often things quickly improve and ultimately the problems get solved. Blame, creates friction and stifles effective communication; and without communication there is no TEAM and problems escalate.

Sadly, when it comes to the construction industry; all I see is blame; there is too much friction and things are not working.

Just like the cladding and fires, waterproofing and our cracking buildings for example where things aren't quite right, I think passive fire protection is one area that could use some leadership and a shift in paradigm.

In this article I am going to accept there is problem; that no one thing or group of people are at fault; and call a spade-a-spade and suggest how each and every area could improve to ultimately solve the problems.



Where do I start?

A good friend of mine told me to watch a documentary about Bill Gates and his time after Microsoft. How inspiring; thousands of people die daily from sanitation problems; the simple privilege of having a toilet and functioning sewerage system just don't exist in many parts of the world. This causes people to die from diarrhea of all things. Bill Gates and his wife saw knew there was a problem and set out to facilitate a total shift in paradigm and invoke innovative ideas to start addressing the problem and finding solutions.

Watching this documentary made me think of the problems our construction industry is facing and I thought it might be prudent to do a brain dump and put forward some observation and ideas which might add to the work going on to improve the confidence people are losing in our construction industry.

I am going to start by identifying the **“parties”** who are involved in the construction and what role they play in our ultimate aim of having safe, cost effective and functional buildings with minimal problems.

I am not sure “parties” is the best choice of word, but it will do for now. I see them as building blocks, or players in a team that do influence the construction outcome or perception of the construction outcome in some cases.



To get things right takes a pro-active approach involving all “parties”

The parties

These are some of the parties I will discuss further later in this article:

- Government and Building Regulations
 - ABCB
- Developer
- Builder
- Architect
- Consultants for:
 - Fire Safety
 - Building Services
 - Passive Fire Protection
- Building Surveyors / Certifiers
- Sub-contractors for installation of:
 - Fire barriers (walls, floors, shafts, ceilings and the like)
 - Plumbing
 - Electrical
 - Refrigeration
 - HVAC
 - Passive fire protection
- Manufacturer / suppliers of passive fire protection products / materials
- Industry or Trade Associations
- Fire Services
- Insurers
- Building owner
- Tenant / occupier of building
- Strata Managers
- Media
- Pets
- Insects

Most readers will fall into one of these categories; do you feel you are to blame at all for the quality of our buildings or for poor or non-compliant passive fire protection?

Government and Building Regulations

I have always said to my friends or others who ask what I do is what I like most about fire protection and being involved in this area of construction, is that people do it because they have to not because they want to; so all buildings require fire protection. I am more technically orientated than sales and marketing so at least what I make or sell has a chance of being purchased and used because all buildings need it.

Why is this so?

It's the law!

Yes, you guessed it we have legislation for control of buildings; this legislation can be split into a few areas covering safety of buildings and building occupants.

So called **administrative provisions**, which require for example a development application process, a building permit, fees and the like. Sadly these vary in each State & Territory of Australia and this I see as one problem. This is where the building control process and mechanism is covered and whereby a Building Surveyor or Certifier (depending on what State you are building in), has ultimate responsibility for approving a building for final occupancy. Forgive me for the simplistic overview but I think it covers roughly how it works.

One big legislative or Government change was privatization of Building Control; moving it from what was solely a Council role to private companies. Sadly the Developer appoints and pays for the "Building Controller" or Building Surveyor / Certifier. I have always said that Building Surveyors are the police for buildings and ironically our legislation allows a Developer to have the police on their payroll. We might have got that one a little wrong? But who am I to say so?

Technical provisions, go through the design and technical requirements on how to build, what is required for amenity and safety. We have a somewhat National approach to this by way of the National Construction Code, (formerly the Building Code of Australia). This is called up in all State & Territory Government Legislation and is administered by the Australian Building Codes Board (ABCB) on behalf of the States & Territories). Our first Building Code was only published in 1990 and was updated to be Performance Based in 1996. This is not long ago so the NCC is still very much work in progress in my opinion.

The NCC outlines Performance Requirements which require an approved building solution which for what is called the "Deemed to Satisfy" (DTS) provisions, utilises Australian and other International Standards, and Codes of Practice to define the technical requirements. These DTS provisions spawned from the old Ordinances or Building Rules; some of us will remember Ordinance 70 for example in NSW.

The NCC also allows for the use of approved Verification methods to meet the Performance Requirements; sadly since 1996, there has been little work done on verification methods and only recently with the debacle relating to fires and cladding or the external building envelope system, we have seen a new verification method added.

The NCC also allows for so called Alternative Solutions which are Specialist Building Solution Analyses which must meet the Performance Requirements. When they involve fire; the practitioners who do them are typically so called Fire Safety Engineers

For passive fire protection systems to meet the deemed to satisfy provisions they need to be fire tested to AS1530 Part 4 and comply with some design considerations in AS4072 Part 1. One problem with services going through opening in fire barriers is that there are an infinite number of configurations so more common sense could be used to allow cost effective compliance and transparent compliance. This probably needs to be done by improving AS4072 Part 1. Sadly any variation to fire test prototypes required a formal opinion or assessment from a Registered Testing Laboratory and the tardiness here caused by the large quantity of requests results in a bottle neck and confusion / frustration and the like.

Other legislation that I can think of that effects construction and occupation of buildings include:

- Occupational Health and Safety provisions
- Fire Services and their statutory requirement to fight fires and save lives of occupants
- I am not sure if it legislation, but many building owners require finance and this invokes insurance requirements; this will be covered again when I discuss insurance

One area where legislative improvement is CRITICAL in my opinion is occupational licensing especially for those involved in construction and selfishly I say fire is a priority.

Developers

I thought I would turn to the trusty Google to help me with a relevant definition of a Developer in terms of construction and building.

Developers buy land, finance real estate deals, and typically have builders build projects, create, imagine, control, and orchestrate the process of development from the beginning to end. Developers usually take the greatest risk in the creation or renovation of real estate—and receive the greatest rewards.

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I think the biggest problem with involvement of a Developer is they do not typically own or occupy the buildings that results from their Developments. This is definitely the case for high rise residential apartments (and I am not going to mention cladding again).

The developer want to maximize their return on their investment so will often build to the lowest possible compliance level for obvious reasons. Remember that the Developer appoints the Certifier / Building Surveyor whom are acting as the “Building Police”. They appoint a builder who needs to finish on time or face serious liquidated damages invoked contractually by the Developer; this is a recipe for problems in my humble opinion. QUICK & CHEAP. The Builder in turn passes the responsibilities for QUICK & CHEAP to the sub-contractors and we wonder why there are potentially problems. There is often little engagement of consultants as often detailed design in not completed and passed onto the builder.

If the developer owns and operates the building; I think the whole QUICK & CHEAP scenario changes.....

Builders

Again I turn to Google for help with a definition....

Builders oversee, coordinate and (some) work on the construction of buildings. In addition to undertaking some of the works personally, some Builders also manage the entire project.

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My observation is that most builders do not do much of the construction work themselves and typically manage the entire project.

A better name for many builders would be a Project Manager. Contractually from them it works best if they pass on all the responsibility and liability to others and this in my opinion can cause problems in itself. For this to work; the selection of competent sub-contractors is critical as is a clear scope of works. Pay peanuts and you get monkeys; so acceptance of the cheapest price and threats of liquidated damages result in QUICK & FAST; poor or no independent inspection on site and what do you think you get? CRAP!

I think there is a systematic problem with Developers / Builders and delegated responsibilities especially in high rise residential apartments.

Having said that; in terms of passive fire protection I have seen some very positive changes from some larger builders and their more pro-active view to getting the "fire stopping" right the first time. Sadly this was spawned from many warranty claims for works that were not compliant at the time of construction being picked up in the 7 years defect liability period. When rectification costs for warranties grew; awareness grew and some improvements have been seen. The larger and more reputable builders do come back to projects and do some remedial works; other sadly cannot be found or have gone out of business (conveniently?).

Some of these larger and more reputable builders are thinking about passive fire protection BEFORE they build; they are planning and taking a serious interest in the outcomes (WHO WOULD HAVE THOUGHT????). This has created an opportunity for what I first termed **Engineered Fire Stopping** whereby innovation and working with builders can make it easier to get cost effective and compliant passive fire protection. My Fyrebox innovations inventions have proven very successful and popular – take a look at www.fyrebox.com.au. Maybe they were too clever because over-zealous competition are now copying my inventions and trying to pass them off as theirs. Not to worry; the ultimate goal is to improve the way we build and greed and money always cause problems in any industry or industry sector sadly.

Architects

OK Google; another definition please.....

Architects in construction play an important role and they are responsible for **visual** appearance of the buildings and structures before final structural design. Architect is a person appointed by the client (developer?), who develops a facility as per the design concept and the requirements specified by the client (developer?).

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Sadly I don't think too many architects get involved in passive fire protection.

They are not paid to; it's not in their scope, so they don't bother with it?

Maybe they should be paid to take more interest.

Is the answer legislative change maybe?

I really don't know???

Too much coffee for me maybe?



There is a role for architects in off-site pre-fabrication I think?

Consultants

OK Google, another definition please.....

Consultant; a person who provides expert advice professionally.

There are several consultants that I feel could add value and help us ensure compliant essential service measures such as passive fire protection. These include:

- Fire Safety Engineers
- Fire Protection Engineers
- Building Services Engineers, and last but not least
- Specialist passive fire protection consultants

It is my personal view that our problematic installations stem from the fact that passive fire protection is not given the attention that is required. No one is paying any consultants (or engineers) to look at passive fire protection. It is sadly left to (or some would say “dumped” onto) the services sub-contractors who are installing the various services, such as the plumber and electrician for example.

At the design stage of a building, I would assume the services and which ones are required will be known and there should be a good idea where they will be reticulated or run. We know we need power, plumbing, refrigeration, heating, air conditioning, electrical power and the like. Especially for a high rise building; many of these follow very similar designs and methods of construction so there should be plenty of residual knowledge?

Where services pass through a fire rated barrier and an opening is created; this needs a fire stopping (passive fire protection) SYSTEM to re-establish or maintain the fire rating (FRL) of the barrier.

As one would say; it’s not rocket science.

So why do we see so many poor attempts at passive fire protection?

I am happy to take a stab from my perspective; I have been mulling over this and making frustrated observations for over 25 years now.....

I will put it down to the Builder not taking the overall responsibility for passive fire protection and delegating it to the services contractors; they do what they do and provide certification documentation which says everything is compliant; but sadly no one checks this at the time of construction; otherwise we would need so many non-compliant installations on existing buildings.

It starts with the selection of the fire rated walls; these need to be selected to ensure they have fire tests to allow openings and services to pass through them; one fire test on a blank wall is

useless in the REAL world. We see too many new fire wall types that sadly fall into this category; at least initially in their life cycles.

The budget to build obviously does not afford the luxury of having a Building Services Engineer detail where services will run; where they will need to pass through and breach fire barriers; and there requiring a compliant fire stopping system for each of these openings.

When I try to get people to think of the concept of fire barriers; I ask them to think of ships and the requirement for water tightness; any hole and the ship hull leaks. If they still look at me blankly, I say think of a condom; it really does not function well when full of holes!!!!

The responsibility for creating and ultimately fire stopping these openings for services is delegated by the builder to the sub-contractors installing the services.

In many ways this really does create a free for all. Soon, well-constructed fire walls or fire rated riser shafts, look like "Swiss Cheese"; holes everywhere and services pushed and poked around like "Spaghetti".

There is no controls to limit the number of openings; there is no control between trades regarding the proximity of their services to each other. It is each trade for themselves and services are run through any opening they can find or when it is lightweight construction (yes plasterboard) they make a hole where it is easiest for them. Then I guess the poor apprentice is told to "slap" some fire rated sealant in the hole; "chuck" a fire pillow or two in around cables, or "bang on" a magical fire collar on plastic pipe. There is obviously very little knowledge on how the FRL System can be maintained and we get the same mess; project after project sadly.

It only when and if a Building Surveyor sees part of it that the Builder rises from his so called "Passive Slumber". Quick call the manufacturers, Promat or Trafalgar; get some advice to fix things and quickly; we need our Occupation Certificate tomorrow!

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It's sad that so many people involved in construction will read this and if there honest with themselves will say; "Bugger me, Rakic is right; but Rakic is not a genius; he is just stating what we already know".

Some will fall into the defensive mindset and start the blame game.

How does this happen and how do they or we get away with it?

Is it a Legislative / Regulatory issue?

Where was the Certifier?

Why does the Developer get to wash his hand off it?

The Builder is forced to quote low to win the project?

Why is the fire stopping compliance responsibilities delegated to the services contractors?

Why is a letter saying all opening comply with the NCC and are fire stopped with SYSTEM tested to AS1530 Part 4 and compliant with AS4072.1 accepted when they are clearly not? Why aren't photos and a passive fire protection log requested by the Building Surveyor / Accredited Certifier; therefore giving the Builder and his subcontractor more accountability.

Where is the Builder's Service Engineer when all this was going on?

Why wasn't a specialist passive fire protection company used; wait a minute, what is the definition for this company? What qualification or experience do you need? Why aren't they Passive fire safety ENGINEERS???? There are too many companies masquerading as the passive "Gurus" who sadly just don't really get it themselves! Yes it's a damn debacle....

Sadly, many of the problems get covered up by a ceiling, or raised floor!

Does anyone STOP for only "one minute" and think that we are dealing with life safety here?

It's damn embarrassing and maybe it's time to start a shame file

Why does the poor building owner, years later have to pay to commission the building correctly for the first time?

We need to ALL be accountable and start to CHANGE the way things are currently being done.

Building Surveyors / Accredited Certifiers

I will start with definitions

My definition mentioned previously in the article is that the so called Building Surveyor (also known as the Accredited Certifier in NSW) is the “Building Police”; helping ensure compliance with our Building Control Legislation or Building Laws. It is a serious role, and those who qualify spend at least four (4) years at University to gain a Degree in Building Surveying.

It is important to distinguish an Accredited Certifier as the Principal Certifying Authority whom ultimately approving the whole building; not a certifier for approving an individual fire safety system or passive fire protection installation for example.

** From the AIBS web site, a **Building Surveyor** is described as follows:

In Australia, a Building Surveyor is a professional who is tasked with understanding the building control process. A Building Surveyor has the authority to assess building plans to ensure that they comply with the Building Code of Australia, the Australian Standards referenced within it and any other relevant Building Acts or other legislation or requirements of the jurisdiction the building is in. Building Surveyors are either private or municipal.

Building Surveyors have an impact on the design, planning and functionality of buildings as part of their responsibility to ensure that buildings are safe, accessible and energy efficient. A Building Surveyor is involved for the length of a building project, from the start until the end, and conduct inspections in order to sign off on every stage of the construction. Only one Building Surveyor can be appointed to a building project, and at the end of the building work it is the responsibility of the Building Surveyor to issue the occupancy permit or certificate of final inspection.

In addition, a Building Surveyor can also conduct inspections for a variety of reasons, such as compliance audits for insurance or dilapidation reports.

** An **Accredited Certifier** is defined by Fair Trading NSW as follows:

Accredited certifiers assess developments and determine applications for development certificates. They are regulated by the Building Professionals Board and subject to strict accreditation criteria and legislative requirements.

Certifiers are independent regulators and public officials. They do not work for builders, developers or homeowners. Certifiers must put the public interest first and only issue certificates if all legislative requirements are met.

Most certifiers are qualified building surveyors who can approve building construction and occupation and act as the principal certifying authority (PCA) for development.

** From the Association of Accredited Certifiers

What does an **Accredited Certifier** do?

An Accredited Certifier is a building professional, who, depending on their type of accreditation, can act as a Principal Certifying Authority (building inspection role) and/or can issue Part 4 and 4A certificates under the Environmental Planning and Assessment (EP&A) Act 1979 (issue Complying Development Certificates, Construction Certificates, Strata Certificates and Occupation Certificates for projects).

If you are planning to carry out building work or subdivide land you may be required, under state legislation, to obtain approvals and be issued with particular certificates.

To obtain approvals and receive the appropriate certificates you can choose to appoint either an Accredited Certifier working in private practice or an Accredited Certifier working in the local council.

So what do I have to say about my Building Surveying mates and this important fraternity?

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Sadly I think Legislation outlines what a Building Surveyor can and cannot do.

I note from the definition above and particularly the Fair Trading NSW definition:

“Accredited Certifiers are independent regulators and public officials”.

Calling a “shovel a shovel”, I am pretty sure we stuffed up by changing legislation to require the Developer to appoint their own Building Surveyor / Accredited Certifier and privatizing this important so called public official role. I am not against privatization but the basis of the Legislation does in my humble opinion create a potential conflict of interest for Building Surveyors / Accredited Certifiers; it's often hard to “bite the hand that feeds”

My other observation is that this important Group invoice a very small fee for the serious importance of their function and this inevitably does not afford enough resource to do anywhere enough on-site inspections. The first time I saw what they charge I was “gob smacked”; you try and do all that for just that small amount of money? Really? You should put your prices up!

In all honesty who would want to be a Building Surveyor / Accredited Surveyor? What a “tough gig”; having to be technically across so many areas of compliance, from amenity, safety, energy efficiency, accessibility and many other areas. It is hard enough for me to understand just passive fire protection; so these folks need to rely on those involved in the building process to

design, construct and commission properly and to provide written confirmation (certification) for these roles. Yes they get criticized at times for just collecting pieces of paper and rubber stamping.

Not quite sure how to fix this, but I think it does involve some changes from all so called “parties”. For passive fire protection in NSW there have been some legislative / regulatory changes involving additional mandatory inspection for fire stopping for so called “sole occupancy units” which recognizes the ongoing issues in my beloved passive fire protection domain historically for this building type. More prominent manufacturers and suppliers of passive fire protection SYSTEMS, yes Trafalgar is one; try and provide training and installation videos and supporting literature, but quite frankly too many people who buy and install the products just don’t care (obviously) and don’t bother reading or watching how to do a compliant installation.

**Have some bloody pride in what you do.....
PLEASE??????**

Last but not least; a licensing system I think is well overdue –well done to my QLD colleagues; I remember only too well supporting changes to the Integrated Planning Regulations (if my memory still serves me correctly) after the terrible Back-Packers Fire which invoked the requirement for Occupational Licensing in QLD for practitioners; and well done to the BSA for administering this; I think QLD is better for these changes.

Previously I recall doing dozens of “Accredifire” training courses in QLD for fire door / shutters and separately for passive fire protection to help those seeking a license for installation and inspection & testing of both these passive fire protection areas of industry.

Sub-contractors doing installation of passive fire protection SYSTEMS

OK Google, another definition please.....

Sub-contractor is defined as a firm or person that carries out work for a (building) company as part of a larger project.

I will go a little deeper with my definition of a sub-contractor in terms of passive fire protection; and in keeping with previous discussion.

Sub-contractors (aka Plasterboard contractors, Plumbers and Electricians for example) have to co-ordinate the installation of various fire resisting building elements (fire barriers) and the reticulation of all requisite services, which of course encompasses providing compliant passive fire protection measures when services pass through openings made in any . The responsibility for certification of these passive measures forms part of the scope of work, delegated (or dumped?) onto the sub-contractor by the builder.

Let's take a look at some of the so called fire resisting building elements and services involved here.

“Fire barriers” (walls, floors, shafts, ceilings and the like)

I am using the term “fire barriers” to describe fire resisting walls, floors, ceilings and so called “riser” shafts; Fire Resisting is an NCC defined term meaning all these fire barriers are required to have fire ratings – Fire Resistance Levels (FRL's).

There is a myriad of different sub-contractors who get involved here; from form workers, concrete companies, block workers, plasterboard contractors and specialist installers of proprietary fire barrier types.

I just want to touch on so called “fire rated riser shafts” quickly here. They make sense from a first principles point of views, but in practice I don't think I have ever seen one that complies as each and every service that enters or exits the “riser” requires effective fire stopping. I think it is more reliable to do floor-to-floor opening fire stopping and not to utilize fire rated riser shafts. Food for thought????

Historically and sadly, the wall, floor and shaft are often built with little regard to the requisite openings for reticulation of services and the fire stopping systems to be included.

It's only when an obvious cost saving is passed onto the builder does things change in this regard.

I think back to my early days in passive fire protection and the introduction of PVC pipes for plumbing replacing cast iron and copper (don't laugh at my age). Initially we would see core

holes being cut into slabs everywhere and a retrofit (intumescent) fire collar was fixed to the underside of the slab to protect the opening. In the advent of fire, the intumescent would help close off the opening as the PVC pipe softened from the heat of the fire; thus resulting in a closed opening full of intumescent char.

What happened, was the advent of a cast-in fire collar and who would have thought, the plumber and form workers started talking together and coordinating for cast-in fire collars to be put onto the formwork prior to concrete being poured; thus avoiding costly and timely core holes!

In recent years, I invented and patented some new Trafalgar Firebox™ products which I have called the Trafalgar slab-mount Fyrebox™, and Trafalgar cast-in Fyrebox™ respectively.

These products help speed up construction and try to invoke more co-ordination of trades. Their acceptance is somewhat stifled by the fact that they allow multiple and different service types to pass through what I term loosely as a “fire rated hole”.

It is early days for these innovative products; everyone says they are fantastic and a MUST use; but sadly they often don't get used as contractually the sub-contractors are typically asked to make their own holes and do their own subsequent fire stopping.

So who pays and puts in the Firebox™ systems?

The builder likes them for improved compliance and simplification of trade co-ordination, but does not want to purchase or certify them; so what happens? We do it poorly the way we have been for years.

Building Services Engineers if hired would love these and have a meaningful and modest role

If the Builder asks the electrician, refrigeration and plumbing sub-contractors to quote without fire stopping; that is only to run the services through Fireboxes™ provided by the Builder (wall contractor or concreter; they might get a nice surprise about the overall costs savings and of course some comfort in less holes and improved compliance if it is all conducted as it can and should be?

My point is we need a captain; the builder I think should captain the TEAM not just “bark orders”; the captain (builder) is also a player of the field.

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Steel fireproofing

This is where structural steel is used and is required to have an FRL (fire rating).

Here there is a requirement for structural engineer and fire proofing company to be on the same page in terms of compliance with AS4100.

I am not going to ramble on here except to say if people start looking at compliance here so rude awakening might result. AS4100 has strict requirements for minimum fire testing and requires a laboratory to do a detailed mathematical regression analyses for determination of thickness of fire proofing materials and requisite FRL. AS4100 requires fire testing of steel with applied load and application of the fire proofing. This testing shows the fire proofing SYSTEM can cater for deflection of steel under both fire and applied load; just like we will find in real building fires!

Just because it's pink; it does not mean it complies!

It might have an AS1530 Part 4 reference but does it comply with the requirements of AS4100?

Plumbing contractors

We forget that things change quickly in terms of service used in construction.

The advent of thermal insulation requirements / energy savings; developments in plastic technology, increased cost of copper and the like see changes.

The biggest change I have observed here is the use of so called “PEX” pipes for hot and cold water reticulation; and even for gas.

Google.....

PEX stands for cross-linked polyethylene. It is a type of plastic **tubing** made from high-density polyethylene. It is used for radiant floor heat **tubing** and for water supply.

So called “PEX” pipes have much thicker walls than conventional PVC and some have aluminium foil reinforcing. This makes them a more difficult fire stopping prospect and this has seen many new passive fire protection SYSTEMS have to be fire tested and launched onto the market.

These “PEX” pipes are typically yellow.

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Do plumber understand passive fire protection?

What training do they do?

What accreditation do they need to do the fire stopping of their services?

It's not just “banging” on a fire collar sadly!

The Builder just sadly dumps the responsibility on the plumbers as a rule.



Electrical contractors

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Do electrical contractors understand passive fire protection?

What training do they do?

What accreditation do they need to do the fire stopping of their services?

The Builder just sadly dumps the responsibility on the electrical contractor as a rule.

What an electrical contractors does understand is the different types of cables; from small diameter 240V cables; right through to larger high voltage cables.

Cable installations through openings perform differently in fire conditions and apart from the fire stopping system employed; the number of cables, the type of cables, their proximity to each other, whether they are on a cable tray or ladder which passes through the opening all effect the fire test requirements and whether there is fire test data to allow certification.

It's not just "plugging up holes" around cables with fire pillows and a dab of fire sealant anymore.

What has changes and why?

In my opinion, the biggest change comes from enforcement of the insulation or temperature criteria of the FRL or fire rating.

Larger cable with decent diameter copper cores, just like PEX pipes, copper pipes, sprinkler pipes and of course cable trays and cable ladders are ductile. This means that when one side of the opening is exposed to fire; the ductile materials conduct thermal heat from the fire side to the non-fire side; this can lead to fire spread. This is why additional thermal wrap materials such as Trafalgar Fyrewrap™ are required.



Refrigeration / air conditioning (HVAC&R) contractors

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Again, do HVAC&R contractors understand passive fire protection?

What training do they do?

What accreditation do they need to do the fire stopping of their services?

The Builder just sadly dumps the responsibility on the electrical contractor as a rule.

Insulated copper

Insulated copper is used to limit thermal losses by reticulation of refrigerant used in air conditioning systems.

The proximity of insulated copper pipes and the fire stopping SYSTEM requirements are poorly understood and most certification in my opinion is questionable.

Fire rating ducting and fire dampers

I am not sure why I put these together here as a sub-heading.

Typically where fire rated ducting is required, we don't use fire dampers.

Fire rated ducting usually is ducting that plays a role when a building is in fire (alarm) or fire safety mode; some examples are kitchen exhaust or so called "GREASE" duct, smoke exhaust ducting, and ducting for supply air required in zone or sandwich pressurization smoke control systems

Fire rated of ducting can be achieved by running it in fire rated shafts, or by applied fire proofing materials such as vermiculite based fire spray systems, cladding in fire rated board systems; and most recently the last 5 years has seen a big uptake of Fyrewrap which many say is FAST; CLEAN & EASY and helps facilitate off-site pre-fabrication efforts.

Where normal ducting used for air conditioning or heating passes through a fire barrier (this is non fire rated ducting); a fire damper is required. These fire dampers can be mechanically operated fusible link type, intumescent type or motorized dampers (typically used in smoke control systems).

Fire dampers are a big issue for owner of existing building as compliance is problematic due to poor training / working knowledge of installers of fire dampers historically.



Trafalgar cast-in situ Fyreboxes™- solving some complex HVAC&R real world problems

Fire Door contractors

A fire doorset is a defined term in AS1905 Part 1 and encompasses the wall, door frame, door leaves and all hardware.

I used to love fire doors but the requirement for speed of construction has increased to a point where I think it is hardly sustainable; and as price pressures have increased the traditional fire door industry in my opinion has suffered.

I feel myself getting a little carried away as I do this brain dump and I apologise if I offend anyone, but remember I believe we are all to blame in some way. Don't take it personally or shoot the messenger when you read this

The fire door industry is a little broken in my humble opinion.

The inflexibility of AS1905 Part 1, particularly in terms of approved hardware stinks of an ACCC debacle waiting to happen.

Recent acquisitions of most of the larger and somewhat independent fire door manufacturers and especially the fire door core suppliers (who typically own the fire door fire testing intellectual property) will lead to interesting times I think for the fire door industry.

Where fire doorsets suffer are that the frames are installed typically by the fire wall contractor (and there are special requirements for back filling of the fire door frames; again to avoid ductility and temperature rise via conduction through the steel door frame) whilst the fire door leaves are installed by other but usually includes fitting of door hardware.

Specialist Passive Fire Protection contractors

I thought when I set out to write this Blame Game article that it was a good idea?

I am not so sure now?

Are we just airing dirty laundry?

I have had to second guess myself a little; but.....we do need to own up to our sins and come together to fix things.

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I am growing a little bored of spending \$250k per annum on fire testing; only to see the system cause short cuts and poor installation results; it surely isn't too hard to change the status quo somewhat????

So what is a "Specialist Passive Fire Protection" contractor?

I am sorry but I cannot use Google here.

This is a term that industry uses and that I also tend to use.

My definition unfortunately needs to be a little convoluted; it's Regional

Historical and ongoing inspection and testing) of passive fire protection measures. They have typically been in business for a long time and have had training from the manufacturers and suppliers of passive fire protection materials (SYSTEMS). Some sub-contractors will use a specialist passive fire protection contractor to do all or some of their passive installations and to provide SYSTEM certification of the as installed outcomes.

A GOOGLE search will unearth some of those who are well known or know how to use SEO to get a good ranking on GOOGLE!

Queensland's occupational licensing backed by Legislative change makes the definition a little easier in QLD!

Anyone doing passive fire installation in QLD needs to be licensed; one license class is as follows:

Passive Fire Protection – Fire Collars, Penetrations and Joint Sealing – Occupational

Scope of work

- Certify, install and maintain, inspect and test, fire collars, fire-rated penetrations and fire rated joint sealing

I will say that just because you're a licensed doesn't mean you are competent or will always act competently. Business pressures, too much work, poor supervision, time and cost constraints and lack of ongoing training can all lead to problems even for the best companies if not managed properly.

For large and complicated openings; often a so called Specialist Passive Fire Contractor is often used; they might use something like a Trafalgar Maxilite™ calcium silicate board material for example to fill a large opening and then integrate other fire stopping systems that are compatible to complete the installation in a compliant and certifiable manner.

Quite often sadly they are used for rectification works and stuff ups.

Manufacturer and Suppliers of passive fire protection products

This category includes what one of my Business Units; Trafalgar Fire Containment Solutions or www.tfire.com.au does.

As I have said throughout the article; all “roles” in construction contribute to the construction outcomes and in terms of passive fire protection or fire stopping; the manufacturers and suppliers of passive fire protection should play a vital role.

What is a passive SYSTEM?

A quick diversion to some theory!

For passive fire protection **SYSTEMS** to be sold and be compliant with Building Control related Legislation and in turn the National Construction Code (NCC) in Australia, someone needs to do independent fire resistance testing to AS1530 Part 4 and be mindful of some design requirements in AS4072.1.

You will note that I used the term SYSTEMS; not materials or products. It kills me to think that many people just don't understand the fundamental fact that products and materials can't have fire ratings or FRL's in their own right; it's the as installed SYSTEM that provides the fire rating or FRL.

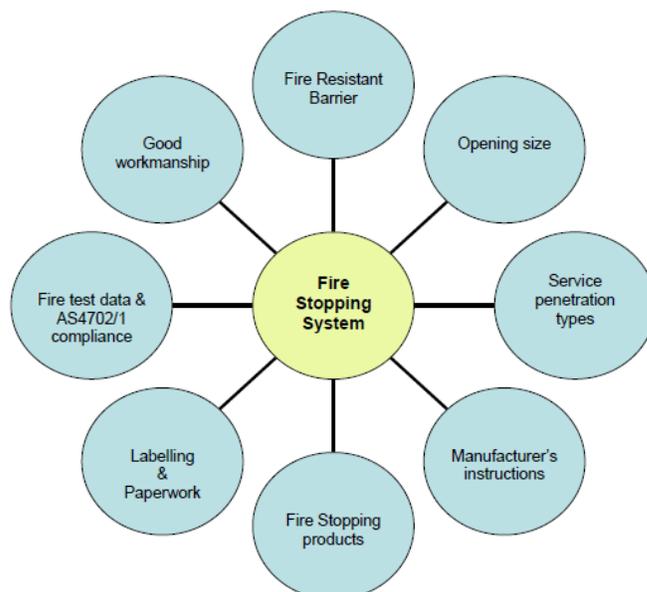


Figure 1 – Pictorial representation of the components that make up a fire stopping system

This concept is shown in Figure 1 above whereby to have confidence that an installation in a building can achieve the required fire rating or FRL; we need all of the components in play to be done correctly.

Some simple explanation might help you get the SYSTEM concept better:

The fire barrier itself must have been fire tested to achieve the required FRL.

The opening size must be no bigger than fire test data allows in that particular fire barrier type; I will add here that the number of different opening and their proximity to each other is almost important as the “Swiss Cheese” look just might not be compliant.

The types of services, their quantity and their proximity to each other all must be supported by fire test data within the fire barrier type and with the fire stopping materials used.

The product Manufacturer’s (or Supplier’s) installation instruction are paramount to follow as they should articulate what fire barrier type, opening size, service types, quantities and mix of services are required, and how to protect the opening correctly with their products or materials.

The required fire stopping products need to be used and installed in a manner to comply with fire test data; mixing and matching different Manufacturer’s or Supplier’s products in one opening will probably not comply.

Good workmanship for installation is paramount. Why do all the expensive fire testing to get it wrong at installation time. More training and probably accredited installers under a licensing system does make sense to me.

Supporting fire test data for the installation is required. This is made up of one or typically many fire tests and some assessments from registered testing laboratories to augment what can and cannot be done based on all the fire testing. Remember it is impossible to fire test every conceivable barrier, wall, opening and service type, quantity and mix as we find installed in our building so we need a so called field of application document.

I am saddened that some prominent fire test laboratories are disallowing the inclusion of manufacturer’s technical manuals and installation instruction as part of technical assessments. The fire testing field of application assessment should be user friendly.

Labelling of opening as fire stopped is important for ongoing identification during inspection and testing for the life of the building; as is a record of where and what is installed in the building; this is a register of penetration or as some people say a “Penno Log”. The term “Log” comes from the use of Log Books required for ongoing recording on mandatory inspection and testing (previously called Maintenance). In today’s electronical world; the “Log” is often done on software and record keeping also stored in the software probably up in the “Cloud”!

Back to manufacturers and suppliers

Unfortunately from where I sit, and being somewhat of an expert in passive fire protection; considering my experience and education in this field, ***sadly the sale of passive fire protection products is not conducted in a controlled manner by many.***

To achieve a compliant SYSTEM (as described above); we need multiple fire tests for many different configurations and we need detailed installation instruction and ongoing technical support in the field as questions arise and challenging variations inevitably confront the installer.

Some products like fire collars, fire sealant and fire pillows for example are a commodity; it's gone so far I think you can buy them all at your local milk bar (hang on I am showing my age here); let's correct that with Bunnings. There is little or no documentation available to help the installer get things right. The product just says on the packaging:

TESTED FOR UP TO 4 HOURS; complies with AS1530 Part 4 and AS4072 Part 1

This is not going to result in compliance in most instances.

I think you will find with many of these product if you do go looking for fire test data you might get a rude surprise as to how little there or is; or that you are using it in an application, wall type and with services that are not fire tested.....

It just like PINK plasterboard; there are approved applications and the as required SYSTEM installation is required; just because it is PINK does not mean it is compliant; and just because it says 4 hours, doesn't mean it will be complaint.

At Trafalgar we try hard to EDUCATE and provide the tools people need to do the installation correctly and within the constraints of our fire tested SYSTEMS. We have Trafalgar TV on You Tube where we use videos for example. We run internal training sessions for installers and do quite a bit of on-site support. It's hard to fund that when we compete with product with poor fire testing and no overhead to provide ongoing technical support.

So I think manufacturers and in particular what I term commodity suppliers have a duty of care to provide the requisite information to the construction industry to help them do installation that can easily be certified as compliant.

Local manufacturing

Sadly like many industry sectors, local manufacturing of passive fire protection products and materials is diminishing. I see numerous supply companies spawn; some selling imported products with no local AS1530 Part 4 fire testing. These suppliers have never read AS1530 Part 4 and have not even heard of AS4072 Part 1.

At Trafalgar we are proud of how much of our range is locally manufactured; this includes for example our Trafalgar fire rated access panel systems, our FIREBOX™ range of fire rated Fyrebox™ systems; FYREFLEX™ fire rated sealant systems, FYRESET™ fire rated mortar systems and FYREPLUG™ fire rated pillow systems. We are proud to support the local manufacturing industry and give more than 50 people a full time job in Australia.

In summary, I have said previously that we all have a role to play in CHANGE for the better in terms of passive fire protection; manufacturers and suppliers should provide requisite information to help the process; please ask and if they can't or won't perhaps reconsider purchasing; you might just find they are the cheapest for a reason?



This just should not happen?

Industry or Trade Associations

What role can so called “Associations” play in improving the Quality of our Buildings?

What role do they play in terms of passive fire protection?

There are several answers that come to mind from my first-hand experience being involved as a member of several trade associations and once upon a set founding and operating the Alliance for Fire and Smoke Containment and Control (aka PFPA)

Some of those include:

- Development of Australian Standard and Industry Guidelines and Practice Notes
- Training
- Facilitating Accreditation – voluntary just does not cut it
- Assisting with getting Occupational Licensing – requires legislative reform
- Liaison with Government reforms and changes to Regulations
- Lobbying for necessary CHANGE; although I keep hearing Associations are not lobby Groups
- Facilitating dialogue between relevant parties?

.....

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Sometimes Passive Fire Protection and especially fire stopping gets lost in the overall gambit of the bigger Fire Protection scheme of things. Sprinklers, Alarms, EWIS, Hydrants, Boosters and the like tend to be more dominant voices with bigger membership categories and this can be problematic for priorities and progress for fire stopping.

It might be time for Australia to start up another Passive Group; akin to those in the UK, USA, Europe and other regions?

No I am not putting my hand up again!!!!

Fire Services

Legislation requires of Fire Services to do search and rescue and assist with safe evacuation of building occupants in the advent of fire. No one will dispute the courage and conviction of our Fire Services.

Of course they are a big stakeholder is the quality of buildings and in particular the fire and essential services measures being installed and maintained correctly. After all they rely on these for their own safety and livelihood when entering a building.

Those taking short cuts should STOP and think about the ramification of their actions for our Fire Services; not to mention the potential life safety concerns for building occupants.

AFAC who represent the fire services are a strong political voice; and rightly so and they have a role to play just like all other stakeholders in seeing better built and maintained buildings.



Insurance Industry

Often we forget about insurance or take it for granted until something goes wrong. It is then we want to claim for damages and utilize insurance.

So how does Insurance impact on the Quality of Buildings; AND also how does the (perception of poor) Quality of Buildings impact on Insurance.

Most companies operating in the Building Industry require some form of insurance; whether it is Public Liability, Professional Indemnity, Building Insurance, Business Interruption Insurance; Rental Insurance, Fire and Theft, Storms, Floods etc.....

If we stop and think we can see the impact insurance or lack of insurance can have or make on the Building Industry.

I think back to 2003/4 and fires involving so called EPS Sandwich Panels at Tip Top Bakery and West Gate Cold Stores; overnight effectively, facilities incorporating Sandwich Panels were almost un-insurable in term of a huge premium hike. Sound familiar, well it just happened again with Cladding and serious fires occurring outside of Australia and of course locally here too.

The lack of confidence in cladding fire safety cascades in terms of insurance.

Practitioners doing design, approval, certification of cladding can't get insurance without "cladding exclusions"; this means the legislation doesn't work and requires interim amendments.

Wouldn't it be easier if we got it right the first time and insurances were affordable as claims would be minimized? Sounds too EASY??????

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I don't want to be seen as a prophet but I can't help but if we are not very CAREFUL I think Cross Laminated Timber (CLT); the new buzz word and environmentally friendly concrete replacement might follow on as problematic in the future; EPS sandwich panels; cladding; timber.....they are all combustible and it can be an issue in fires.

Passive fire protection of opening in CLT; now there is a can of worms. It can be done but I went to a few fire tests personally on CLT (and no not involving Trafalgar's product before you draw poor conclusions) and we nearly set the fire test laboratory on fire when the whole 4m x 3m horizontal barrier caught fire.

I am a BIG advocate for the environment, recycling and protecting our future; I am just saying be CAREFUL!!!!

Building owner(s)

I inadvertently covered building owners earlier in terms of when Developers are used and particularly in terms of high rise residential apartments.

The Building Owners aren't typically involved in the design and construction of their high rise residential apartment. Many buy them with an assurance they comply with all relevant legal construction related compliance requirements; including but not limited to essential and fire safety measures are in order. They take out the biggest loan of their lives for a family home and "BOOM"; the Strata says we have huge compliance issues; whether it be cracking walls, structural issues, waterproofing issues, combustible cladding, non-compliant fire safety measures etc. We all read about; have seen a Current Affair and the like

To say it is Building Industry at large is BROKEN I think too many is an understatement.

I feel the most for a building owner faced with a huge spike in their building levy or even worse being told to move out because their building is unsafe.

Strata Managers

What a horrible role considering the high rise residential apartment quality debacle we face at present. They can only be the bearer of bad news sadly.

Media

What can I say about our Media.

They can help spread the word, but what do you believe and what do you put down to over dramatization. It's tough to decide at times. I do think they could help promote some positives at times not just "flog the dead horse" on the negatives.