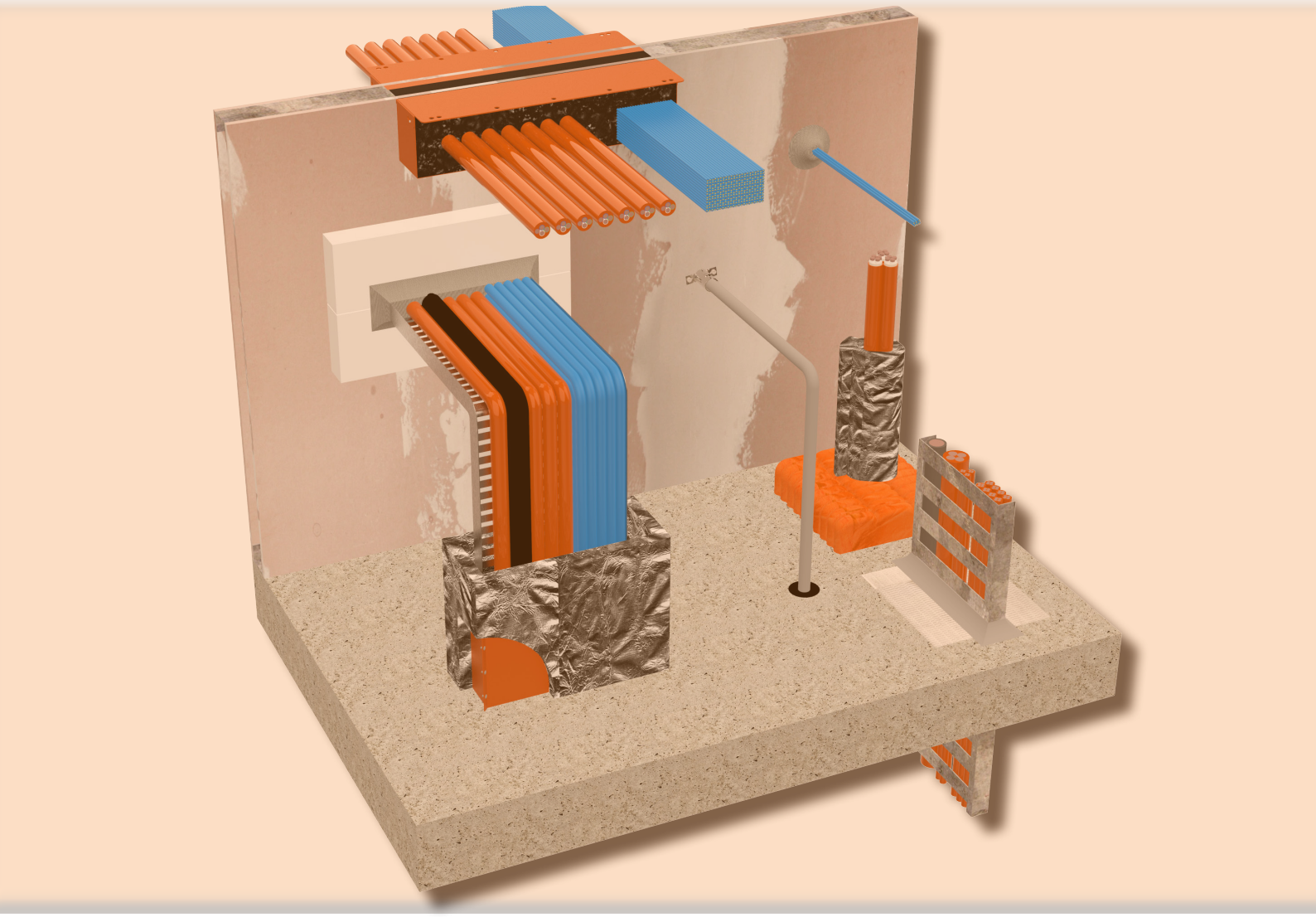

TRAFALGAR FIRE



# UNDERSTANDING PASSIVE FIRE PROTECTION SYSTEMS

# Understanding Passive Fire Protection Systems

By John Rakic

## INTRODUCTION

Having spent my entire working life in passive fire protection, I am amazed at how little of the basic principals are taught to the trades, whether it be at TAFE, University or on the job.

Once the so-called BLACK BOX is taken away, passive fire protection can be much easier to understand.

I am passionate about educating builders, trades, design professionals and certifiers in all things passive fire protection, as a little bit of basic knowledge goes a long way to improve selection, installation and commissioning of passive fire protection SYSTEMS.

I often sit in on our FREE training sessions for industry and often chip in towards the end of the day and say to attendees; "If you get nothing out of today except one thing; remember that it is the **SYSTEM** that the FRL or fire rating applies to, not the products themselves".

# PASSIVE FIRE PROTECTION 101 – THE BASICS

The NCC or BCA requires that we provide fire barriers to separate larger buildings into discrete fire compartments therefore helping to limit the size of a fire and allow for safe egress of occupants, fire brigade intervention and property protection.

These fire barriers typically consist of both vertical and horizontal barriers. These include fire rated walls, fire rated service risers, lift shafts or stair shafts, fire rated floor slabs and fire rated floor ceiling systems.

This concept of creating fire compartments is referred to as fire compartmentalisation and often described as passive fire protection; to compare and contrast to active fire protection which are water-based systems to extinguish or control a fire, emergency warning systems to alert the occupants and of course the fire services of a fire.

Fire ratings are described in the NCC or BCA as Fire Resistance Levels; FRL's.

***FRL's are determined from subjecting a representative wall, shaft, floor or ceiling SYSYEM to a fire resistance test in accordance with AS1530 Part 4 – 2014.***

As doors, control joints and services need to pass through fire barriers, these also need to have been subjected to the AS1530 Part 4 – 2014 fire test each fire barrier type. This is required to verify the wall for example, with these openings in it, can effectively provide a passive fire protection barrier SYSTEM. This SYSTEM can be characterised by stopping the fire spread, limit smoke spread and keep the temperature on the non-fire side of the wall cool enough to not allow a secondary fire to initiate by way of radiant heat, conduction or convection for example.

The fire test is called a **SYSTEM test**, and the only way we can know for certain how it will perform in a fire is to fire test the proposed SYSTEM to the AS1530 Part 4 – 2014 fire test methodology.

Take a look at our 2 Hour Plasterboard Application Page

**Trafalgar Fire Range in a 2 Hour Plasterboard system tested to AS1530.4 .**

**Systems Tested here include:**

- **FyreBOX Range,**
- **FyreBOARD Maxilite,**
- **FyreCOLLAR Premium Retrofit**
- **FyrePLUG Pillows,**
- **FyrePEX HP intumescant sealant**
- **FyreFLEX low VOC acryilc mastic**

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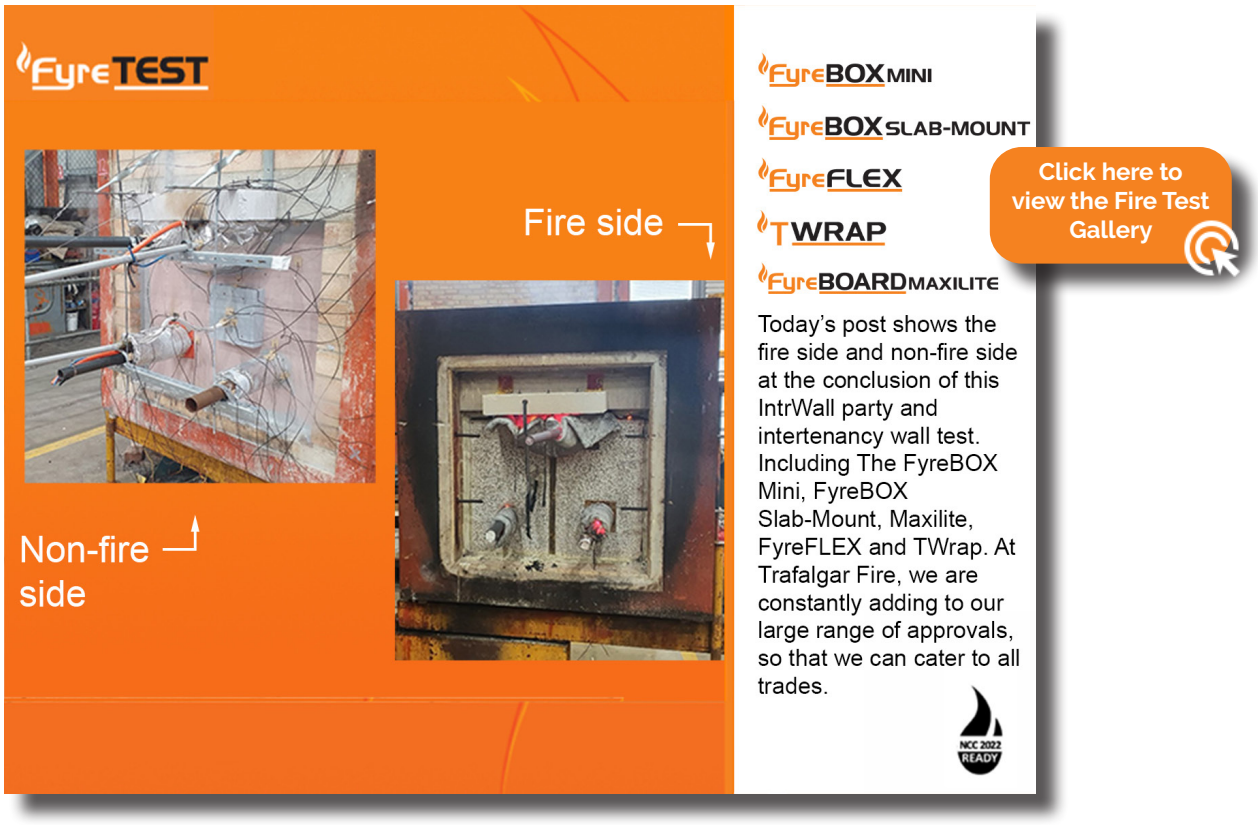


## PASSIVE FIRE PROTECTION SYSTEMS

The most basic way to understand passive fire protection is that we install on site in the same manner that a successfully fire tested SYSTEM was installed.

Put simply, **INSTALL WHAT WAS SUCCESSFULLY FIRE TESTED AS A SYSTEM.**

If you follow this logic through, it makes sense that the manufacturers of the products which make up the SYSTEM provide clear technical instruction on how to build the fire barrier, complete with the openings and the fire stopping materials; this allows replication of the proven, fire tested SYSTEM installation on real world building sites.

Where it gets a little more complicated is that there are many different suppliers and a multitude of materials used to build fire rated wall, shaft, floor and ceiling SYSTEMS. To further complicate the choice, one can quickly realise the number of different openings in these barriers; openings for doors, windows, access and opening for services for all the trade including for example plumbing, HVAC&R, electrical, active fire, data etc….
Fire testing is expensive and therefore not too many companies have the financial strength or foresight (or some might say stupidity) to provide fire stopping materials for the plethora of services and fire barrier types and orientation a typical building will employ.

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I like to think of a passive fire PROTECTION as a V8 engine, depicted below with 8 important cylinders, which must work together for correct and efficient operation of the engine.

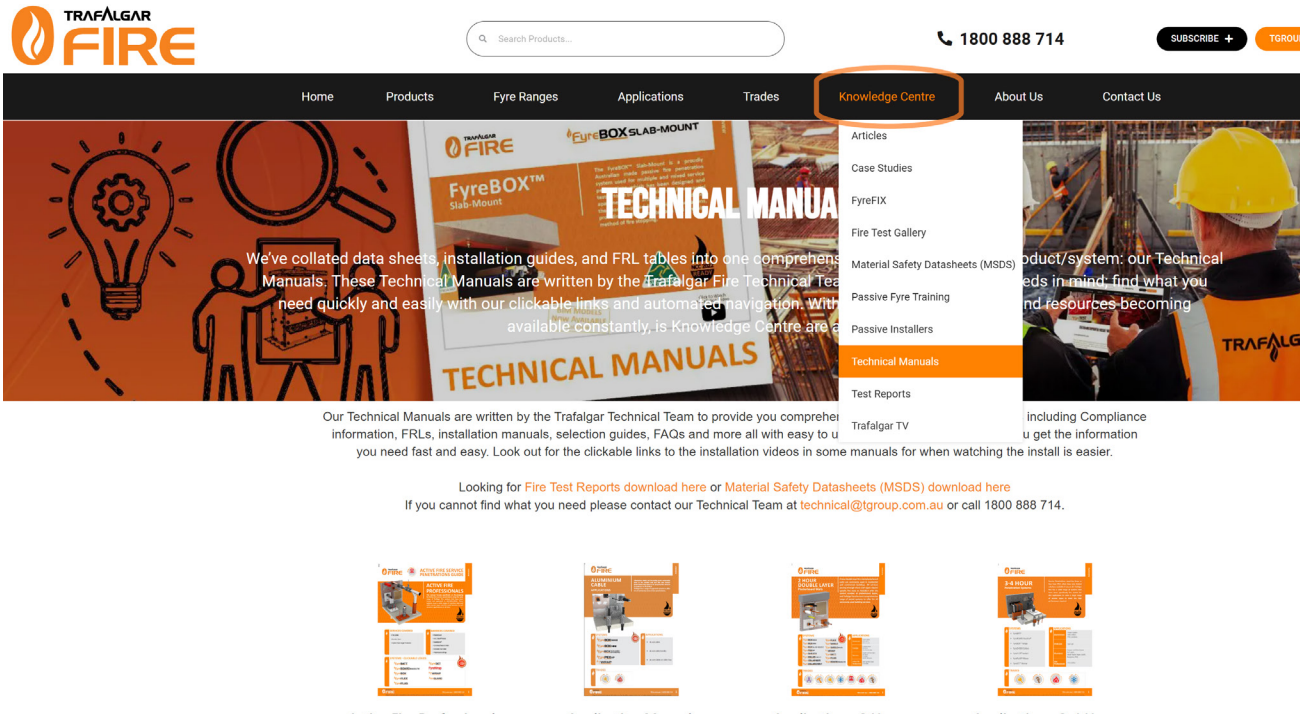
Not one cylinder is more important than the others, but when built and operating correctly, the noise or purr of the engine is easy on the ear!

***The eight (8) components shown on the wagon wheel depiction are as follows:***

1. *The fire barrier with its requisite fire rating requirement or FRL*
2. *Openings in the fire barrier; size and proximity to each other where multiple opening are required*
3. *Service types, quantity and proximity to each other passive through an opening*
4. *Fire stopping product(s) which close of the openings around the services*
5. *AS1530 Part 4 – 2014 fire testing and additional compliance articulated in AS4072 Part 1*
6. *Manufacturers detailed technical manuals and installation videos communicating how to correctly install as per successful fire tests*
7. *Good workmanship and training of installers*
8. *Labelling and documentation including design drawings, penetration registers and labels of each penetration allowing initial and ongoing certification.*


Watch: Online Passive Fire Training

## FINDING MANUFACTURERS FIRE TESTING, TECHNICAL MANUALS AND INSTALLATION INSTRUCTIONS




The good old days of trying to fax out 50 pages of a fire test report are behind us. The internet and websites allow us to store information and for people to access the important SYSTEM details they need.

At Trafalgar, on our **www.tfire.com.au** we coined the term the ***KNOWLEDGE CENTRE***. Here we provide everything we think the market needs to have confidence to design, select, purchase, install and certify Trafalgar products which form thousands of SYSTEMS.

## MORE TAILORED TECHNICAL TOOLS FOR DIFFERENT PARTS OF THE CONSTRUCTION INDUSTRY

Here are some examples of how we at Trafalgar have tailored our technical manuals to make it easier for the whomever is wanting to find the relevant information.

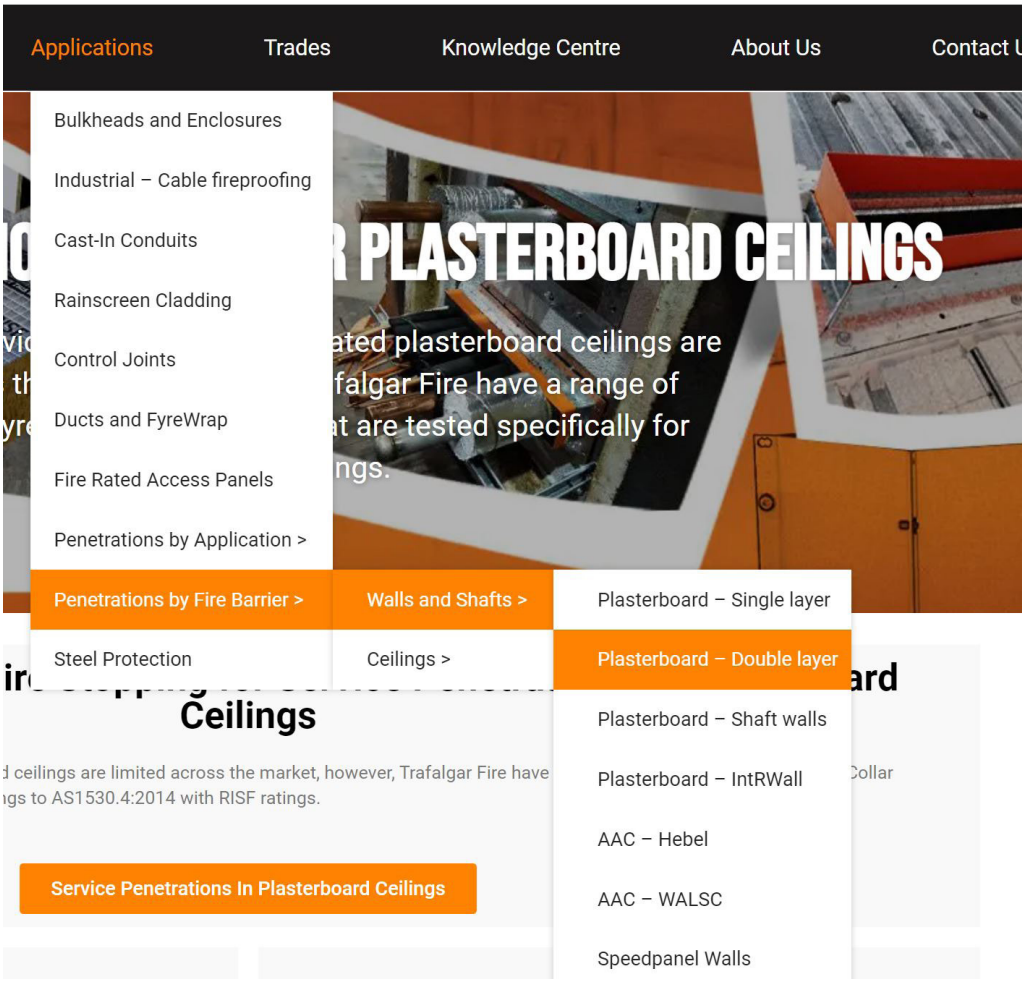
### FIRE BARRIER SPECIFIC TECHNICAL MANUALS

For designers, building project managers and certifiers, once you know what the fire barrier is, you really want to know what can go through that fire barrier and how the passive fire protection SYSTEM needs to be completed to provide a necessary FRL.

At Trafalgar, we have fire tested in so many fire barrier types, we can therefore provide a long list of fire barrier specific or application specific technical manuals.

These live on **www.tfire.com.au** under APPLICATIONS, in PENTRATIONS BY FIRE BARRIER, whereby one can choose walls, shafts, floor or ceilings and select the fire barrier material being used for construction.

Be it fire rated plasterboard, block, masonry, Hebel, Walsc, Pronto, Speedpanel, concrete or many other proprietary barrier types, most can be found here.



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### Trade specific technical manuals

For trades it is convenient to have all the passive fire protection SYSTEM in one trade specific manual. These live on **www.tfire.com.au** under **TRADES**.

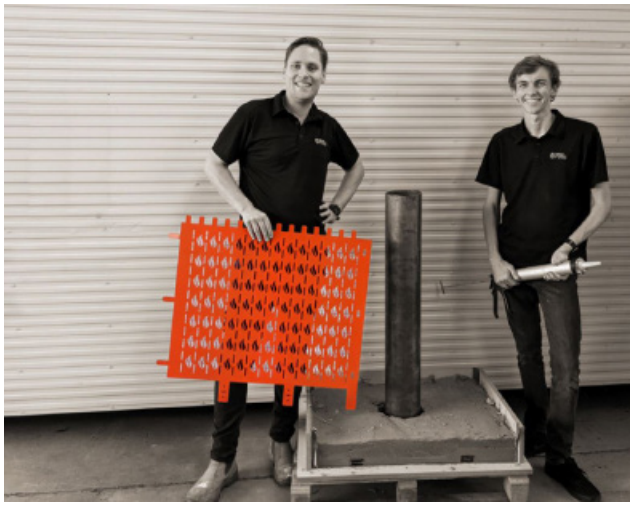
**Electrical, Plumbing, Active Fire, HVAC&R** all can download their trade specific technical manual here.


### Product or common application specific information

Information pertaining to Trafalgar proprietary products and more prevalent applications can also be found of **www.tfire.com.au**

Whether you are looking for FyreWRAP, FyreBOARD Maxilite, Trafalgar Corex, Fire sealant, Pillows, duct fireproofing, Fire rated access panels, Structural steel protection or cast in situ product for floor slabs like Cast-In fire collars or our patented Cast-In FyreBOX SYSTEMS; it can all be found on our website.

### Good old fashioned technical support



The website is fine, but some prefer the good old fashioned phone call or an e-mail from an actual human.

Trafalgar's technical team are well known to industry practitioners, whether it's Chris Todd, John Henry, Sean McDonald or any of the other Engineers the **1800 888 714** technical hotline offer FREE advice, as does **technical@tgroup.com.au**

If in doubt, trust Trafalgar to help you with whatever role you play in the construction of buildings.

We often attend site to assist at the coalface.