

PART 1: FIRE RATED WALLS AND SERVICE RISER SHAFTS

Introduction

The NCC in Australia has made it clear; fire testing needs to be current and conducted in accordance with AS1530 Part 4 - 2014. Any variations from a fire tested SYSTEM can only be minor in nature and there are now strict requirements in Schedule 5 of the NCC which require thorough technical articulation based on sound supporting fire testing only.

Fire rated access panels are often required to be installed into fire rated walls, fire rated service shafts, and of course fire rated ceilings. They allow for convenient access to services such as shut of valves for example which look much more aesthetically when inside an access panel. They also allow for inspection, testing and maintenance of services.

The technical fire testing requirements for fire rated access panels are relatively simple, but more often than not the correct technical requirements for compliance are not adhered to. In recent times, we are seeing compliance of fire rated access panels becoming more of an issue for builders, trades and certifiers as the NCC requirements are being looked at more closely. It's sad to see fire rated access panels having to be pulled out and replaced with a different make and model, but it is happening way too often.

This little overview will try and summarise the requirements for fire rated access panels in walls and fire rated shafts. A subsequent overview will be prepared for fire rated ceilings.

NCC Requirements

Fire rated access panels must maintain the same FRL as the fire rated wall or fire rated shaft they are installed into, unless the NCC provides any concessions.

There are no concessions provided for walls in the NCC, so they must maintain the same FRL as the wall. This means they require both the full integrity and insulation ratings of the FRL. The latter category is the tougher one for manufacturers, as the temperature of the frame, and access panel leaf MUST keep temperature on the non fire exposed side of the wall below set temperature limits for the entire fire rating period. There is also no way to know which side of the wall the fire will be on, so due to the asymmetric nature of access panels, fire testing is required in both direction; hence the term 2-WAY fire ratings was born.

There is however a concession for fire rated shafts, provided in NCC Clause C3.13 (c) in Type A Construction, requiring access panels to have a reduced FRL of -/60/30

C3.13 Openings in shafts

In a building of Type A construction, an opening in a wall providing access to a ventilating, pipe, garbage or other service *shaft* must be protected by—

- (a) if it is in a *sanitary compartment* — a door or panel which, together with its frame, is *non-combustible* or has an FRL of not less than -/30/30; or
- (b) a *self-closing* -/60/30 fire door or hopper; or
- (c) an access panel having an FRL of not less than -/60/30; or
- (d) if the *shaft* is a garbage *shaft* — a door or hopper of *non-combustible* construction.

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By John Rakic

So in summary, for a wall, the fire rated access panel must provide the same FRL as the wall.

For example, a-/60/60 fire rated partition, would require a fire rated access panel with an FRL of-/60/60

Whereby, for a fire rated shaft with an FRL of 120/120/120 in Type A construction, will be allowed to incorporate a fire rated access panel with an FRL of-/60/30 using the NCC Clause C3.13 (c) concession.

Fire Testing and Determination of FRL

Fire testing of fire access panels is required to be conducted in accordance with the AS1530.4-2014 fire test method, and the requirements are clearly laid out in this fire test method. This is how the FRL is determined for the fire rated access panel for a particular construction of fire rated wall or shaft.

It is a requirement to fire test each fire rated access panels in both directions of exposure to fire, that is with fire exposure from the outside where the architrave, panel and where one would lock and unlock the panel is practice.

This needs to be conducted for each wall and shaft configuration.

Manufacture and supply is not for the faint hearted, as fire testing of many configurations is both expensive and requires an excellent product design.

Fire test in both directions, results in a so-called 2-WAY fire rating or bi-directional FRL as required under NCC and AS1520.4-2014 fire test requirements.

The FRL determined for AS1530 Part 4-2014 fire testing applies strictly to:

1. The make and model of fire rated access panel
2. The size of the fire rated access panel fire tested
3. The wall or shaft type the fire test was conducted in
4. The orientation the fire rated access was fire tested in

Most Common Oversights We Find

Sadly, over-zealous sales from suppliers and the untrained purchaser sees the following example where certifiers find themselves in an uncomfortable position of having to reject as installed fire rated access panels:

1. Fire testing in different wall type being used as evidence for the wall in question
2. Fire testing only conducted one side of fire rated access panel
3. Old fire test data and assessments whereby the fire rated access panel frame temperature far exceed the requirements of AS1530.4-2014 for temperature rise or insulation criteria – circa AS1530.4-2005 and prior as a rule
4. Larger fire rated access panels being used than fire tested size
5. Very old and tired assessment being used to sell the products which do not comply with NCC schedule 5

Trafalgar's New Patent Pending Range of Fire Rated Access Panels

[Trafalgar's FyreSHIELD range of fire rated access panels](#) utilise some patented features which allow them to provide both integrity and insulation ratings when fire tested in both directions of exposure, and have been extensively fire tested to AS1530 Part 4-2014 to provide the requisite FRL in most proprietary fire rated walls and fire rated shafts, and most importantly with fire testing in both orientation of fire exposure affording them with 2-WAY fire protection wall and shaft SYSTEM approvals.

FyreSHIELD Patent Pending Design Features

FyreSHIELD fire rated access panels utilise the patent pending FyreFRAME, which incorporates a clever polymeric low thermal conductivity thermal bridge allowing them to keep the temperature on the frame below the acceptable temperature required to maintain the insulation requirement of the FRLs needed.

The FyreSHIELD PLUS incorporates the patent pending RAK Back, which is an integrated back panel, which is factory fitted to the back of the fire rated access panel and allows for hinged access panels in walls to achieve high insulation ratings above the previous 30 minutes insulation limit that hinged access panels previously could achieve.

The access panel construction uses our own [FyreBOARD Maxilite](#) as a core material, laminated to decorative paint grade facings in a 5 daylight hot press. Panels are machined using a CNC router to exact tolerances, meaning FyreSHIELD and FyreSHIELD plus fire rated access panels are not only fire rated, but have superior acoustic properties and look and operate like a normal access panel. The perimeter of the frame and panel incorporate Trafalgar's Gee WHIZ graphite intumescent material to seal the perimeter of the panel and the external frame when the heat of a fire causes the intumescent to swell and seal gaps with proven efficacy.

Some Fire Test Photos and Details for Trafalgar FyreSHIELD Fire Rated Access Panel Range

The first example relates to fire testing in both directions of exposure for the very thin, 60mm Pronto Panel wall shaft constructions.

Fire Exposure from the outside of the Access Panel - Where you open and close the Access Panel

The first example relates to fire testing in both directions of exposure for the very thin, 60mm Pronto Panel wall shaft constructions.

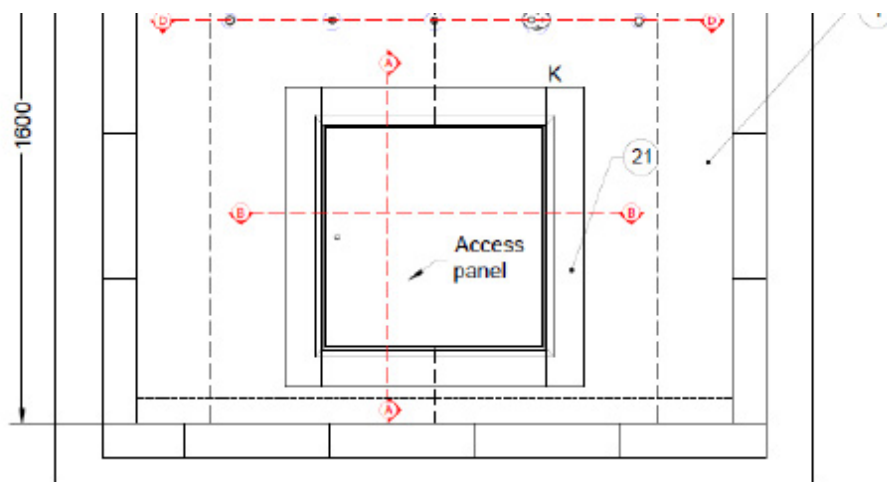


Figure 2 Elevation view of test specimen (exposed side)

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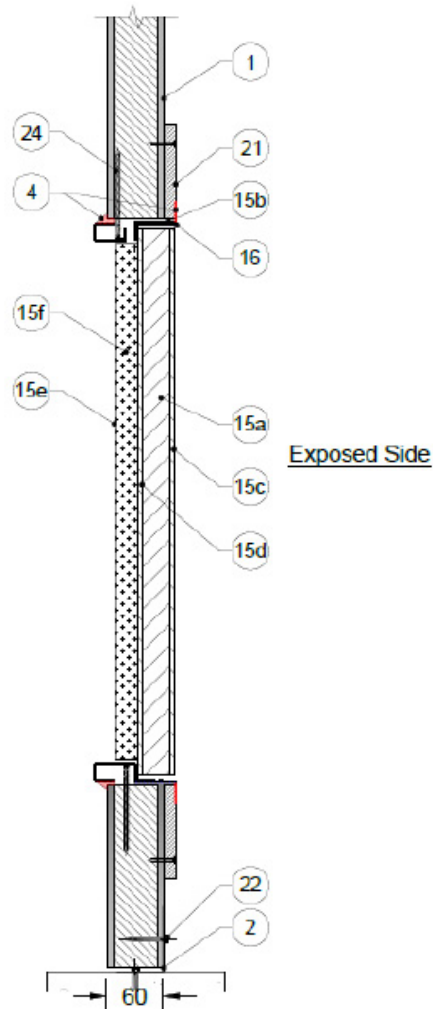
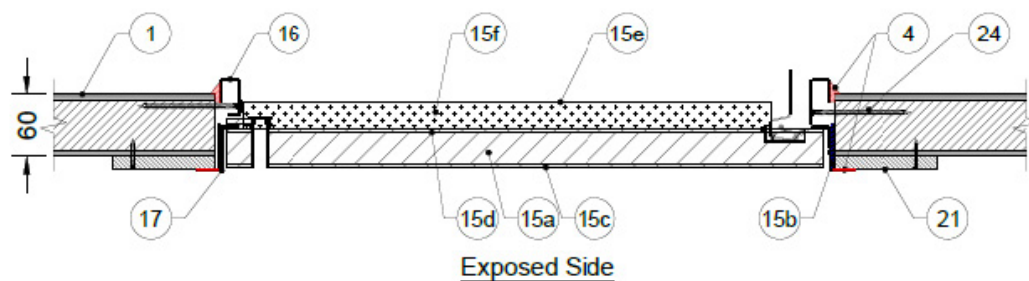


Figure 4 Cross-section A-A



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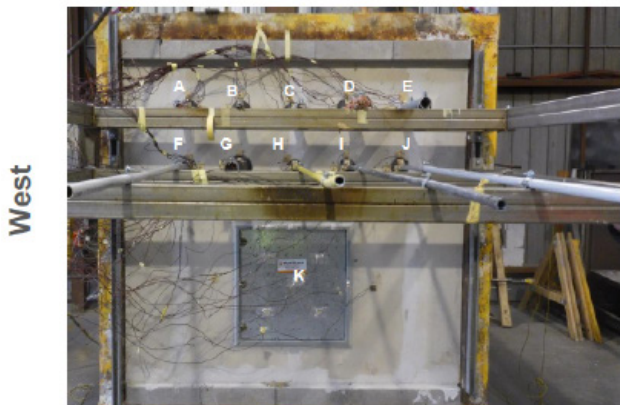


Figure 35 Unexposed face of the specimen before the start of the test

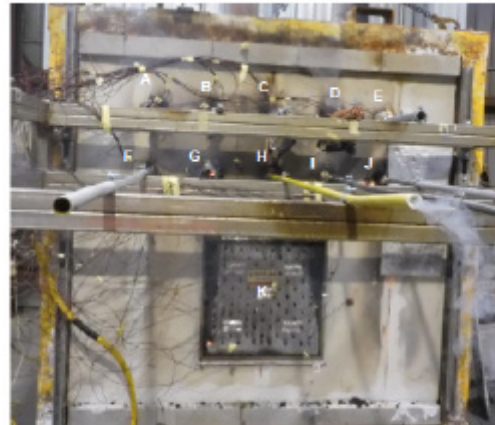


Figure 37 Unexposed face of the specimen at the end of the test

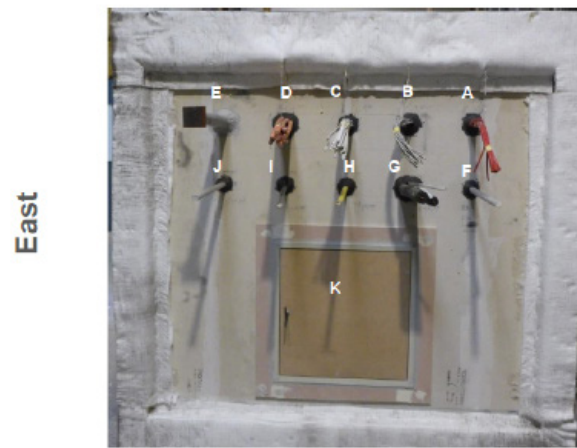


Figure 36 Exposed face of the specimen before the start of the test



Figure 38 Exposed face of the specimen at the end of the test

Fire Exposure from the Inside or Hardware Side of the Access Panel

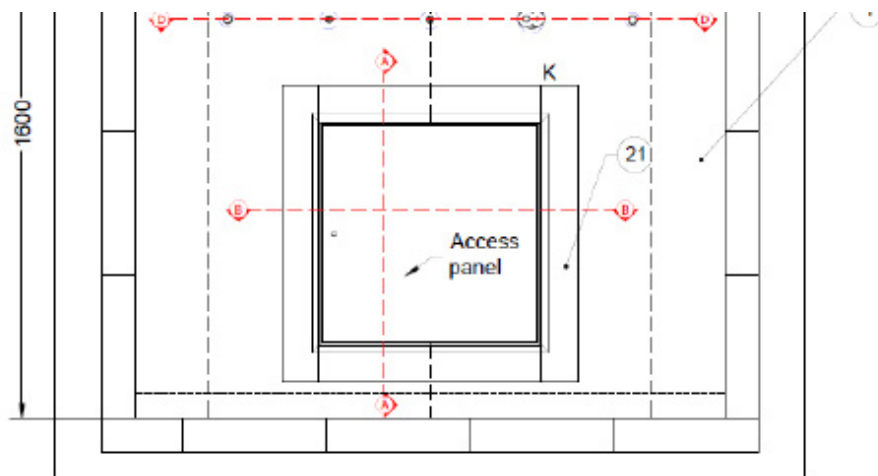


Figure 2 Elevation view of test specimen (exposed side)

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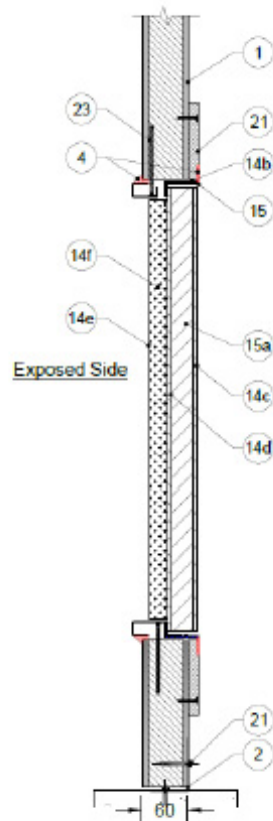


Figure 4 Cross-section A-A

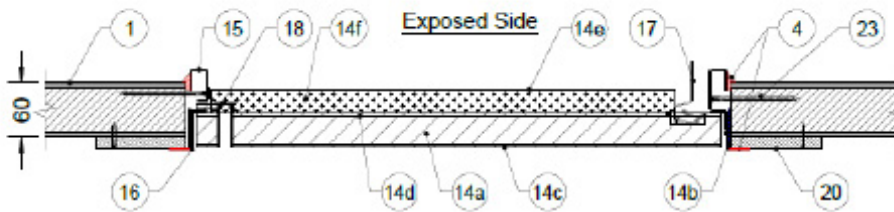


Figure 5 Cross-section A-A

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Figure 30 Unexposed face of the specimen before the start of the test



Figure 32 Unexposed face of the specimen at the end of the test



Figure 31 Exposed face of the specimen before the start of the test

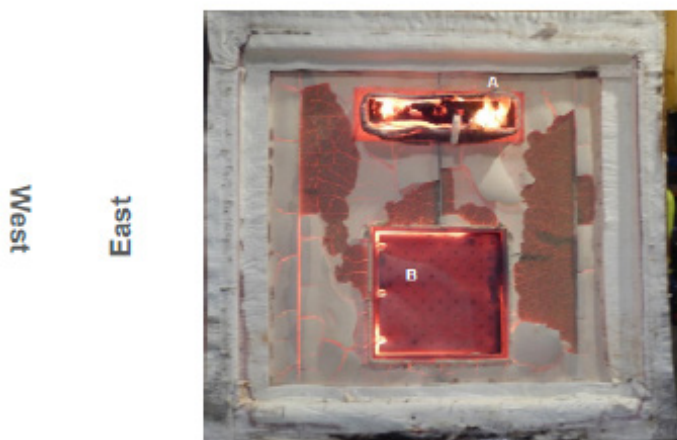


Figure 33 Exposed face of the specimen at the end of the test

Fire Test Systems Approvals for the FyreSHIELD Range

At the time of writing, numerous fire tests are completed.

FyreSHIELD and FyreSHIELD PLUS are approved for use in the following walls and service risers with bi-direction or 2-WAY approvals.

60 minute or FRL -60/60 Walls for Residential Apartments

FyreSHIELD PLUS incorporating the RAK BACK is used for:

- Single Layer Plasterboard Walls
- Hebel AAC Walls
- Walsc ACC Walls
- Speedpanel Composite Walls
- Pronto Composite Walls

90 minute or FRL Service Riser and Other Fire Rated Shafts

A basic model FyreSHIELD is suitable for this application by way of the NCC Concession in Clause C3.13

- Conventional Plasterboard Shafts
- Plasterboard Shaft Wall Constructions
- Hebel AAC Shafts
- Walsc ACC Shafts
- Speedpanel Shafts

We have some upcoming fire test installed and ready to burn which we hope will see 2 hour FyreSHIELD PLUS system approvals be achieved completing the fire testing for walls and shafts.

To learn more about our system approvals and product FyreSHIELD product design please take some time to visit either of www.tfire.com.au or www.taccess.com.au.

For those interested in fire rated ceiling, please read Part 2 of this article coming soon.