

# BAL FZ BUSHFIRE MANUAL

## ROOFING, WALLS & EAVES (BAL) 12.5, 19, 29, 40 AND FZ FLAME ZONE

 FIRE TESTED BY CSIRO



### AUSTRALIAN STANDARDS **BUSH FIRES**

- ✓ FCA MEETS AS 3959
- ✓ FIRE TESTED CSIRO AND RESOLUTE LABS
- ✓ AS/1530.1 NON COMBUSTIBILITY
- ✓ AS/1530.4-2014
- ✓ AS /3837
- ✓ MEETS AS /1530.8.2 UNDER (NCC)  
ALTERNATIVE SYSTEMS /FIRE ENGINEER
- ✓ CERTIFICATION UNDER (NCC)
- ✓ NATIONAL CONSTRUCTION CODE (FCA)

NATA  
CERTIFIED  
**NO METAL  
CORROSIVE  
CHLORIDE**  
MgSO<sub>4</sub>  
Sulphate Board

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### **NOTE: DRAWINGS IN THIS BUSH FIRE MANUAL ARE NOT TO SCALE**

All specifications quoted in this manual relating to fire tests have been carried out by both NATA accredited csiro infrastructure technologies North ryde testing centre sydney and to (BCA) standard time temperature. Curve software by resolute fire labs ,lawnton brisbane .

Tests relate to the bushfire standard as/3959 which encompasses AS/1530.8.1 and .2, as/3837 smoke release test, AS/1530.1 non combustibility test, and various FIRE TESTS for EAVES ,WALLS, FLOORS, CEILINGS AND BUSH FIRE ROOFING TESTS relating directly to the as/3959 provisions.

Tests also encompass heavy duty fire systems tests under AS/1530.4-2014 /18 for periods of 30 mins ,60 mins ,90 mins and 120 minutes. The bushfire certification of firecrunch products and systems is verified using the national construction code (ncc) alternative systems in Certificates of compliance, issued by Registered Australian Fire Engineering Consultants see web site for certifications or contact FCA direct on 1300 933 102 or [technical@firecrunch.com.au](mailto:technical@firecrunch.com.au))

### AUSTRALIAN TESTED

TEST CERTIFICATIONS ARE EITHER BY DIRECT DTS METHOD OR QUALIFIED NCC FE

#### **ASSESSMENT**

AS/1530.8.1  
AS/1530.8.2  
AS1530, 4-2014/18  
AS/1530.1  
AS/3959  
AS/3837  
AS/717  
AS4964

FRL 30/30/30, 60/60/60, 90/90/90, 120/120/120

(UNDER FIRE TESTED PROVISIONS) OF ABOVE (AS) AUSTRALIAN STANDARDS

# What is a BAL?

## (BUSHFIRE ATTACK LEVEL)

### What is a BAL? (Bushfire Attack Level)

This is a means of measuring a building's potential exposure to ember attack, radiant heat and direct flame contact, in a bushfire event. It is a basis for establishing the requirements for construction to improve protection of building elements from attack by bushfire. SEE AS/3959

### BAL LEVELS EXPLAINED

The BAL takes into consideration a number of factors including the (FDI) Fire Danger Index, the slope of land, types of surrounding vegetation and its proximity to any building. There are six levels of bushfire attack under the Australian Standard 3959-2009, ranging from low to flame zone

#### BAL - Low

There are minor requirements that warrant specific construction requirements

#### BAL – 12.5 Ember Attack

Increasing levels of ember attack and burning debris ignited by wind borne embers together with increasing heat flux between 12.5 and 19 kW m<sup>2</sup>

#### BAL - 19

Increasing levels of ember attack and burning debris ignited by wind borne embers together with increasing heat flux between 19 and 29 kW m<sup>2</sup>

#### BAL – 29

Increasing levels of ember attack and burning debris ignited by wind borne embers together with increasing heat flux between 29 and 40 kW m<sup>2</sup>

#### BAL - 40

Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux with the increased likelihood of exposure to flames.

#### BAL – FZ

Direct exposure to flames from fire front in addition to heat flux and ember attack Generally council's Development Plan details the medium and high bushfire prone areas. Planning Assessment Requirements and Asset Protection Zone conditions

A CFS Country Fire Service referral is only required in high bushfire prone areas for new dwellings and additions to dwellings consisting of habitable rooms.

A (BAL) assessment report would generally be provided to the council planning officer as part of the CFS or RFS referral and Building Assessment requirements and asset protection zone (APZ).

A medium bushfire prone area is deemed to have a BAL of 12.5 and accordingly a BAL assessment is not required within this area. All residential buildings including additions and Class 10a outbuildings and decks, within 6 metres of a dwelling located within a high bushfire prone area, must have the site's BAL assessment provided as part of the supporting documentation for building rules assessment.

The BAL site assessment is commonly carried out by the RFS or CFS (Country Fire Service), however it can be carried out by, but not limited to, building surveyors, building designers & architects. The Australian Standard and BCA (Building Code of Australia) specifies the requirements for the construction of residential buildings and required outbuildings for a particular (BAL) bush fire attack level.

meets AS/3959  
meets AS/1530.8.2  
AS/1530.4 -2014  
AS/1530.1  
AS/3837

# Bushfire Roofing Systems

(BAL) 12.5, 19, 29, 40 AND FZ FLAME ZONE

## Guide 1 ROOF SECTION ONLY FCA TG 19mm

### Figure 1 FCA /FZ

Fascia Detail – Metal Roof (BAL12.5 – 40) and FZ Flame Zone.

- Install FCA entire roof area over roof trusses and fix 90mm separator battens over the top of the board into frame.
- Insert suitable FIRE / Climate Zone compliant, 90mm min R 2.5 GLASSWOOL batts or Bradford Anticon.
- Fill Roof cavity opening behind Fascia FCA board position with **Bradford Fire seal FZ**, Compress with the steel roof sheeting and insert / fix, Z plate trimmer min 0.75BMT as per diagram. below. Fire seal any openings.

### Timber or steel roof truss protection - Generic layout / Figure 1 FCA /FZ

#### REQUIREMENTS:-

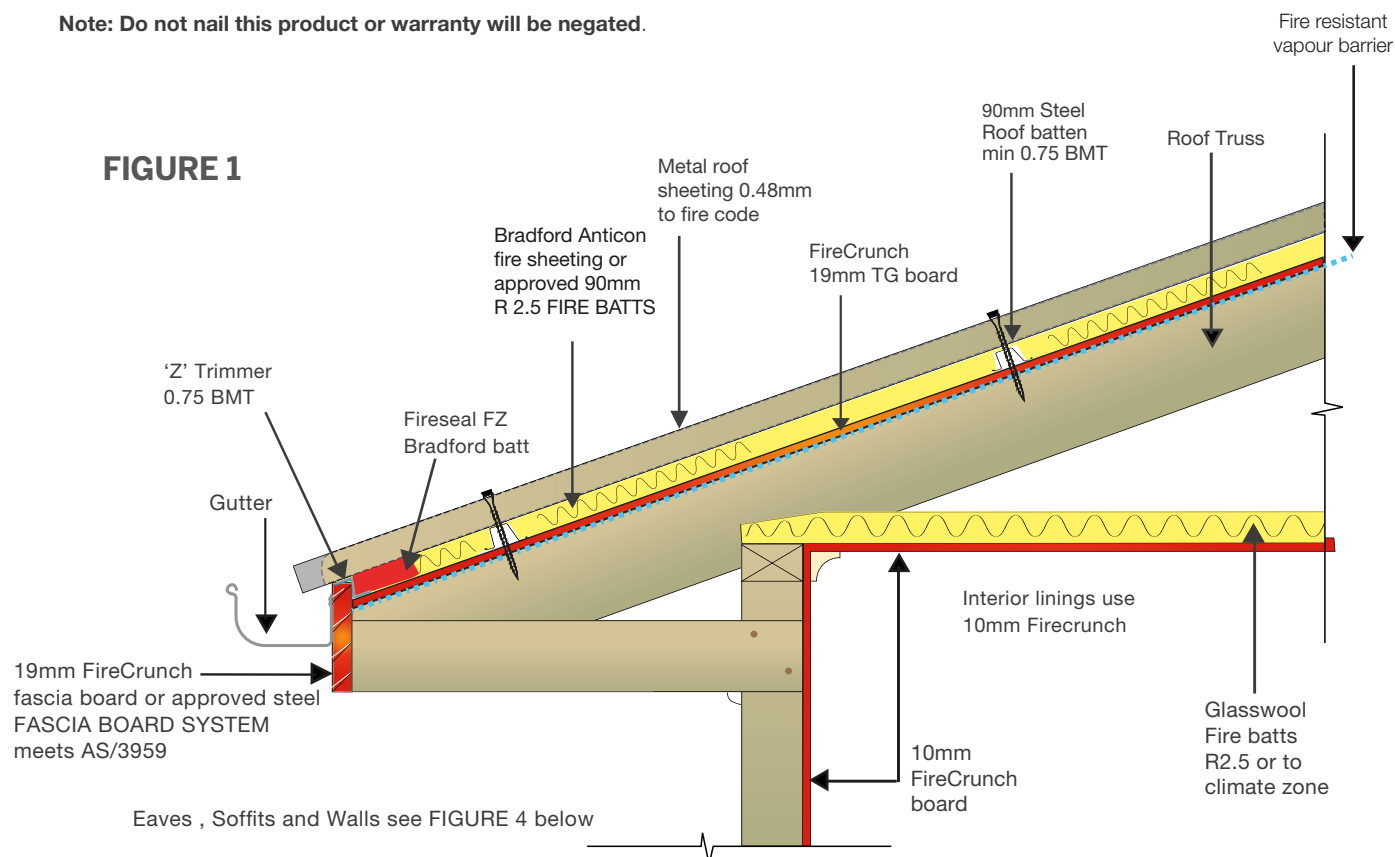
- 19mm TONGUE AND GROOVE ROOFING SHEETS 2700mm X 600mm
- AS /1530.4 RECOMMENDED FIRE SEALANTS as per WEB site: [firecrunch.com.au](http://firecrunch.com.au)
- USE Corrosion proof OR Stainless steel screw fixing as per specs on WEB site: [firecrunch.com.au](http://firecrunch.com.au)

#### INSTRUCTIONS

- Lay first TG FCA sheet across truss rafters over fire resistant vapour barrier and secure fix first sheet with FCA screw fixings specs in install manual and tech info sheet web site: [firecrunch.com.au](http://firecrunch.com.au)
- Gun in fire sealant to groove side, push in next sheet tongue, screw fix and continue until roof section covered. Edge seal all perimeters.

**Note: Do not nail this product or warranty will be negated.**

**FIGURE 1**



**NOTE:** The method, fixings and products shown in this FCA Bushfire Installation manuals are based on the tested value of FCA (Mgo) 10mm Fire board related directly to the scientific fire test report issued by the CSIRO after the extensive computer logged temperatures and heat flux variables experienced at the Mogo Bush fire simulation test in February 2012, showing as 1530.8.2 achieved FRL 30/30/30 . Plus the current and subsequent superior AS 1530.4 -2014 CSIRO /BCA standard furnace tests to BCA standards and FRL 90/90/90 on a single 10mm sheet each side of a 1.15 BMT CRF steel frame. The roof system ( Eaves system) was tested by Resolute Labs BNE QLD in Dec 2017 and achieved double the FRL .../30/30 being FRL ...60/30 in the more aggressive up fire horizontal fire test at 1000 deg c. 10mm FCA was fixed direct onto the Timber Trusses as per above specification using only 1x 10mm sheet. In September 2018 a further timber wall test using a 90mx35mm stud frame with 1 x10mm FCA fixed direct to the timber facings achieved FRL ..../60/60 with no steel top hat separators. A Fire Engineering CERTIFICATE under the (NCC) approving FCA to AS/ 3959 can be obtained through FCA after determination of the BAL Level and mandatory provision of a copy of the clients relevant building plans and DA FireCrunch Australia





## GUIDE 2 ROOFING /VALLEY GUTTER ( where applicable)

### Figure 2 FCA /FZ

Valley Detail – Steel Roof (BAL-12.5 – BAL-40) and FZ Flame Zone.

- Install FireCrunch to the entire roof area over truss rafters
- Insert suitable fire / climate zone, glass wool batts or Bradford Anticon.

### Timber or Steel Roof truss protection - Generic layout / Figure 2 FCA /FZ

#### REQUIREMENTS:-

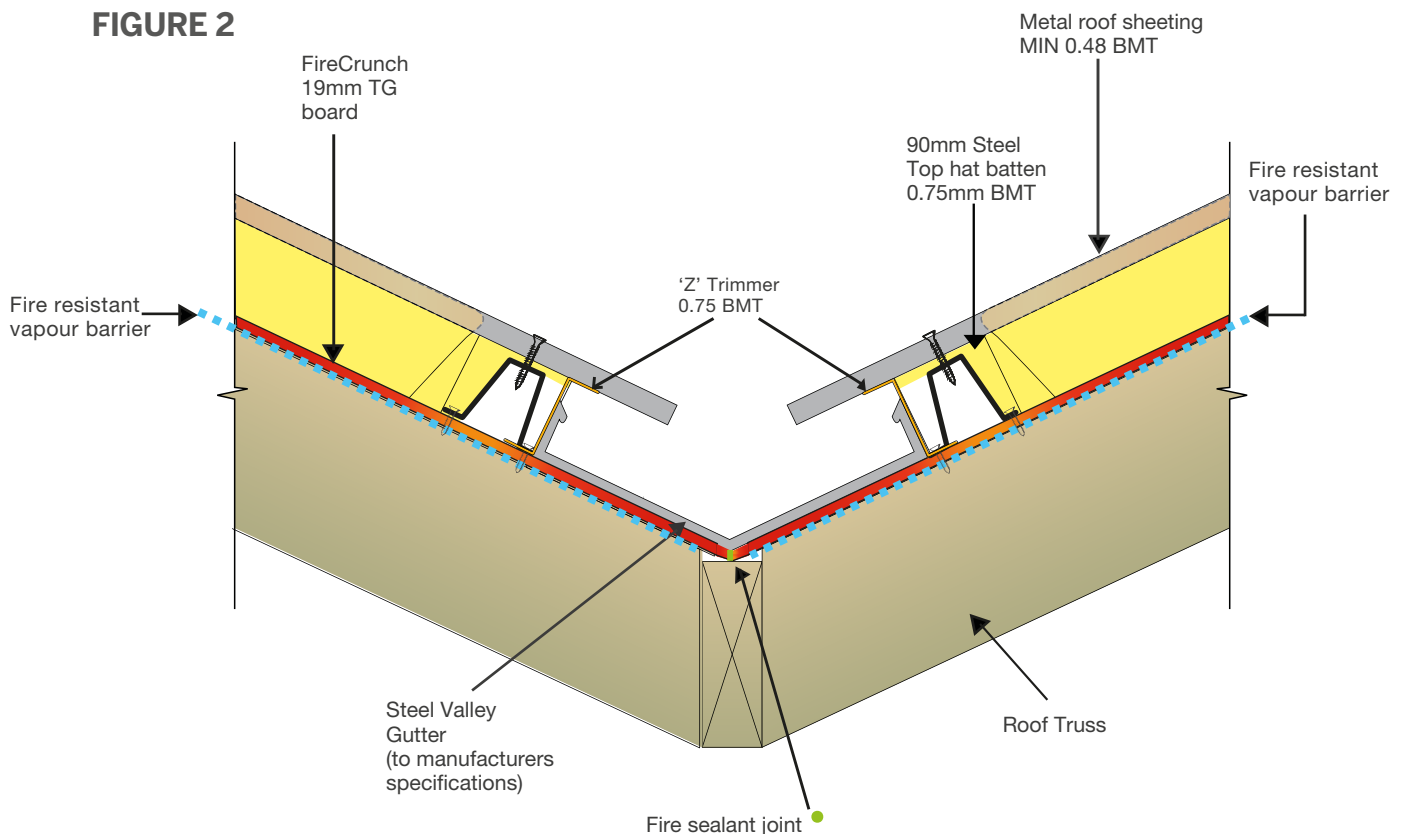
- 19mm tongue and groove roofing sheets 2700mm x 600mm
- AS/1530.4 recommended fire sealants as per WEB site: [firecrunch.com.au](http://firecrunch.com.au)
- Use corrosion proof steel stainless steel screw fixing as per specs on WEB site: [firecrunch.com.au](http://firecrunch.com.au)
- Insert suitable fire/climatic zone min R2.5 glass wool insulation / Bradford Anticon.

#### INSTRUCTIONS

- Lay first TG sheet across truss rafters over fire resistant vapour barrier and secure fix first sheet with FCA screw fixings specs in install manual and tech info sheet WEB site: [firecrunch.com.au](http://firecrunch.com.au)
- Gun in fire sealant to groove side, push in next sheet tongue, screw fix 200mm centres and continue until covered. Edge seal perimeters to sealant Mfg instructions.
- Lay steel batten separators (minimum 90mm) over the FCA sheets screw fix steel roofing through battens and FCA board into timber or steel trusses.
- Fire seal joint below steel valley gutter section weather / fire seal all apertures and perimeters.

**NOTE:** Do not nail this product or warranty will be negated.

**FIGURE 2**



[firecrunch.com.au](http://firecrunch.com.au)

 FIRE TESTED BY CSIRO AND OTHERS / NATA TO BCA / NCC



## Guide 3 ROOF CAPPING AREA



### Figure 3 FCA /FZ

Hip/Ridge Detail – Steel Roof (BAL-12.5 – BAL-40) Flame Zone

- Install FireCrunch to the entire roof area and install 90mm steel battens or top hat separators.
- Install the ridge capping to the roof profile
- For further fixing details contact FCA technical support email: [technical@firecrunch.com.au](mailto:technical@firecrunch.com.au)

### Timber or Steel roof truss protection - Generic layout / Figure 3 FCA /FZ

#### REQUIREMENTS:-

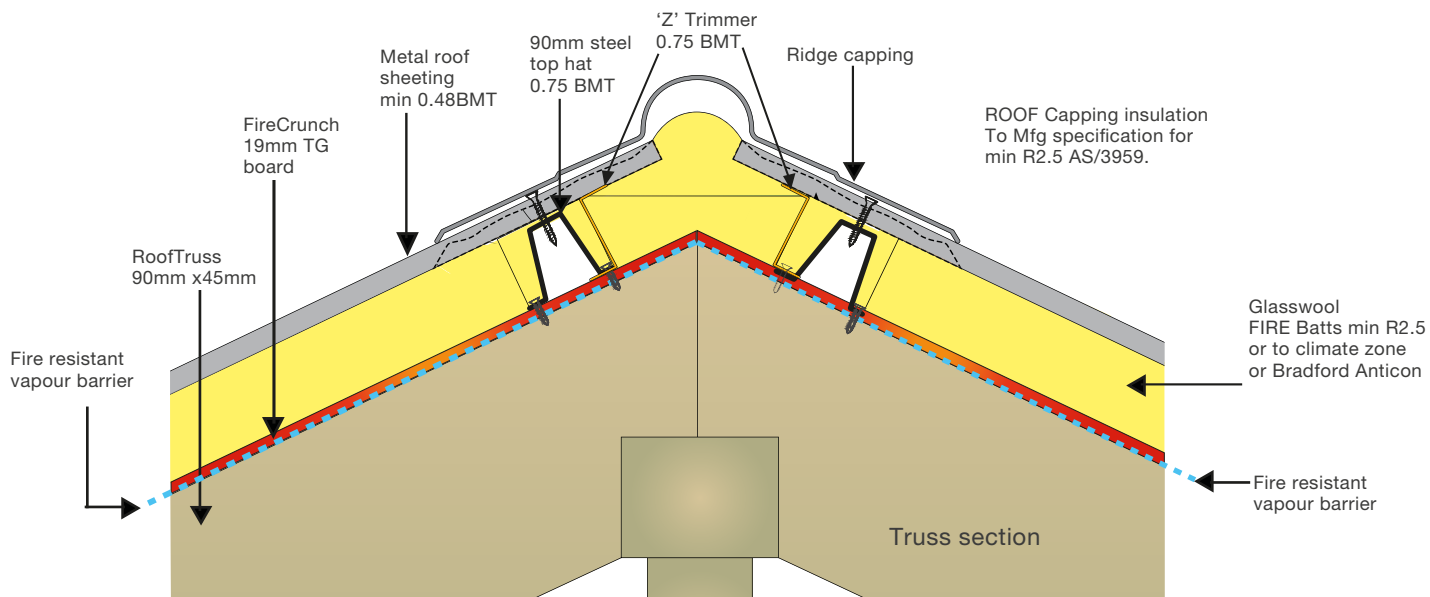
- 19mm tongue and groove roofing sheets 2700mm x 600mm
- Use recommended AS/1530.4 fire sealants WEB site: [firecrunch.com.au](http://firecrunch.com.au)
- USE Corrosion proof or Stainless steel screw fixing as per specs on WEB site: [firecrunch.com.au](http://firecrunch.com.au)

#### INSTRUCTIONS

- Lay first TG sheet across trusses over fire resistant vapour barrier and secure fix first sheet with FCA screw fixings as per specs in install manual and tech info sheet WEB site: [firecrunch.com.au](http://firecrunch.com.au)
- Gun in fire sealant to groove side, push in next sheet tongue , screw fix and continue until roof section covered. edge seal perimeters to sealant Mfg instructions.
- Fix 90mm steel battens separators over the FCA TG Sheets. Insert glass wool batts or Anticon screw fix steel roofing (to MFG specification) through battens and fca board into timber / steel trusses to roofers fixing specs.
- fire seal apex joint apply/ fix steel min 0.75mm BMT cover plate to ridge joint weather/fire seal all apertures and perimeters.

**NOTE:** Do not nail this product or warranty will be negated.

**FIGURE 3**



[firecrunch.com.au](http://firecrunch.com.au)

**FIRE TESTED BY CSIRO AND OTHERS / NATA TO BCA / NCC**



## Guide 4 ROOF, EAVES , FACIAS and WALLS

### Figure 4 FCA FZ

## BAL FZ System 4 Fascia/Eaves detail

- At eaves screw fix 2 x 10mm sheets direct to underside of rafters and fire seal all perimeters with AS1530.4 Fire sealant
- Fix with corrosion proof screws across width of the FCA eave panel into support rafters above.
- Timber or steel roof truss protection - Generic layout / Figure 4 FCA /FZ

### Timber or Steel roof truss protection - Generic layout / Figure 4 FCA /FZ

### REQUIREMENTS:-

- FCA 10mm 1200mm wide Eave sheets and 19mm 2700 x 600 TG Roofing sheets cut sizes to suit.
- AS 1530.4 Recommended Fire Sealant as per web site [www.firecrunch.com.au](http://www.firecrunch.com.au)
- USE Corrosion proof screw fixing as per specs on WEB site [www.firecrunch.com.au](http://www.firecrunch.com.au) all fixing 200 centres.
- Lay first 19mm TG sheet across trusses over fire resistant vapour barrier and secure fix first sheet with FCA screw fixings specs in install manual and (tech info sheet), see web site [firecrunch.com.au](http://www.firecrunch.com.au)
- Gun in fire sealant to groove side, push in next sheet tongue, screw fix 200mm centres and continue until roof section covered.  
Edge seal all perimeters to sealant Mfg instructions.

**NOTE:** ENSURE BUTTED ENDS ARE OVER A TRUSS BACKER FOR FIRE SEALANT JOINT

## JOINT INSTRUCTIONS

- Lay first TG sheet across trusses over fire resistant vapour barrier and secure fix first sheet with FCA screw fixings specs in install manual and (tech info sheet) ,see web site **firecrunch.com.au**
- Gun in fire sealant to groove side, push in next sheet tongue, screw fix 200mm centres and continue until roof section covered. Edge seal all perimeters and sheet butt ends over truss centres with min 4mm fire sealant gap or to sealant Mfg instructions.

**NOTE: ENSURE BUTTED ENDS ARE OVER A TRUSS BACKER FOR FIRE SEALANT**

## EAVES AND FACIAS


- |  |  |                                    |           |
|--|--|------------------------------------|-----------|
| <ul style="list-style-type: none"> <li>• Use 2 X 10mm FCA sheets cut to sizes required for eaves and min 19mm barge plate or approved steel fascia plate back protected by FCA 10mm or as required under AS/3959.</li> <li>• Eaves: Screw Fix 2 x 10mm FCA sheets direct to underside of exposed timber or steel rafters, fire seal perimeters with Recommended fire sealant AS1530.4.</li> <li>• Push in and secure 50mm thick R2.5 or appropriate climate Zone Glass Wool batts.</li> <li>• Fix appropriate furring support channel for eave panels, min 0.75 BMT.</li> <li>• Fire seal 4mm separating linear end joints which must be back blocked or fixed aligned on face joint, back support battens. These require AS1530.4 fire sealant combed down support backing face of rafter on joints before screw fixing.</li> <li>• Comply Aust building standards and attention to expansion joints 5 metres.</li> </ul> | <p>Use steel (L) and Z support brackets where required and fix and fire seal in position fire sheeting Fire seal all perimeters on completion.</p> | <p>Use standard roofing screws</p> | <p>gl</p> |
|--|--|------------------------------------|-----------|

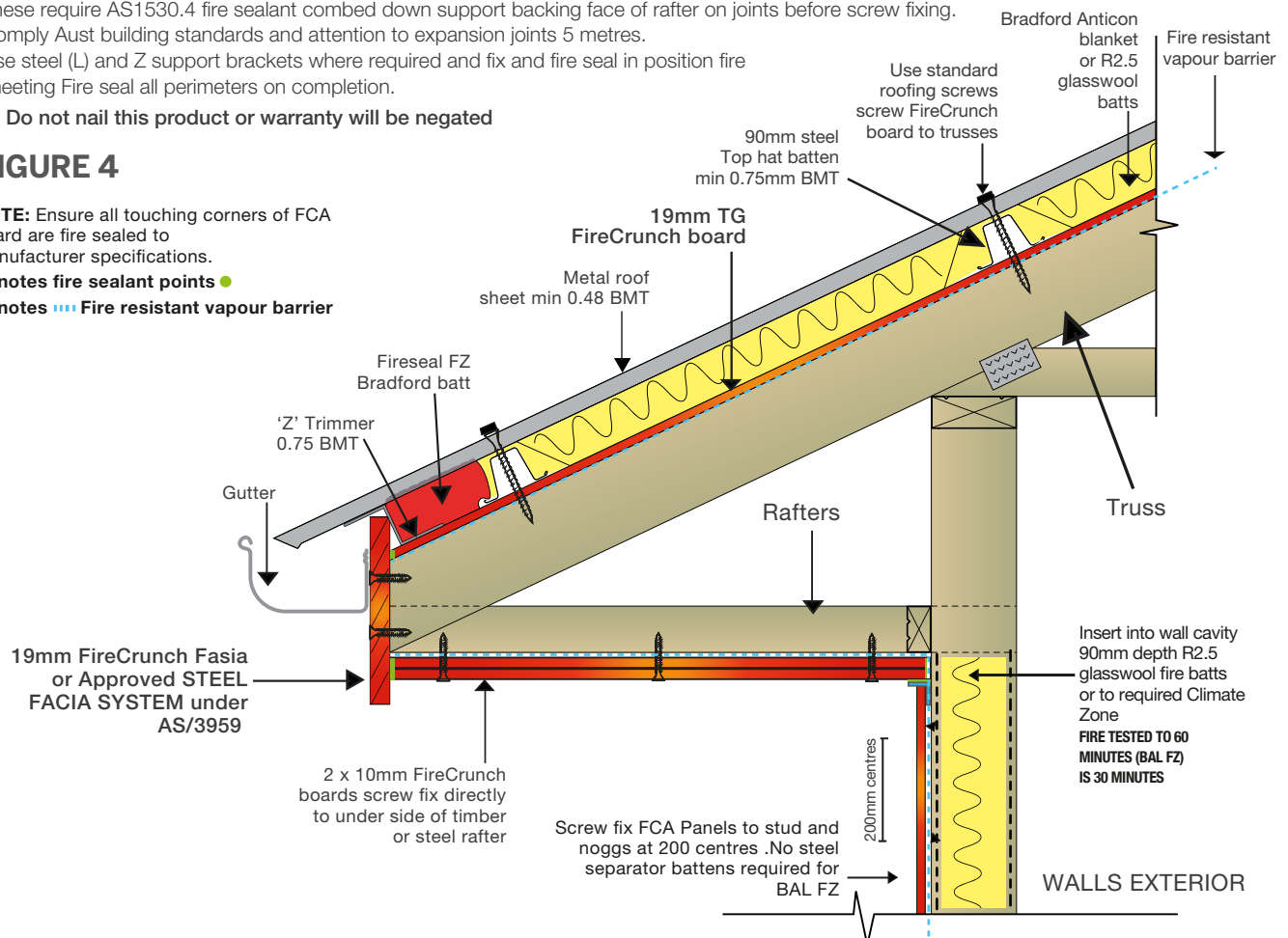
**NOTE: Do not nail this product or warranty will be negated**

### FIGURE 4

**NOTE:** Ensure all touching corners of FCA board are fire sealed to manufacturer specifications.

**Denotes fire sealant points ●**

Denotes  Fire resistant vapour barrier



firecrunch.com.au



FIRE TESTED BY CSIRO AND OTHERS / NATA TO BCA / NCC



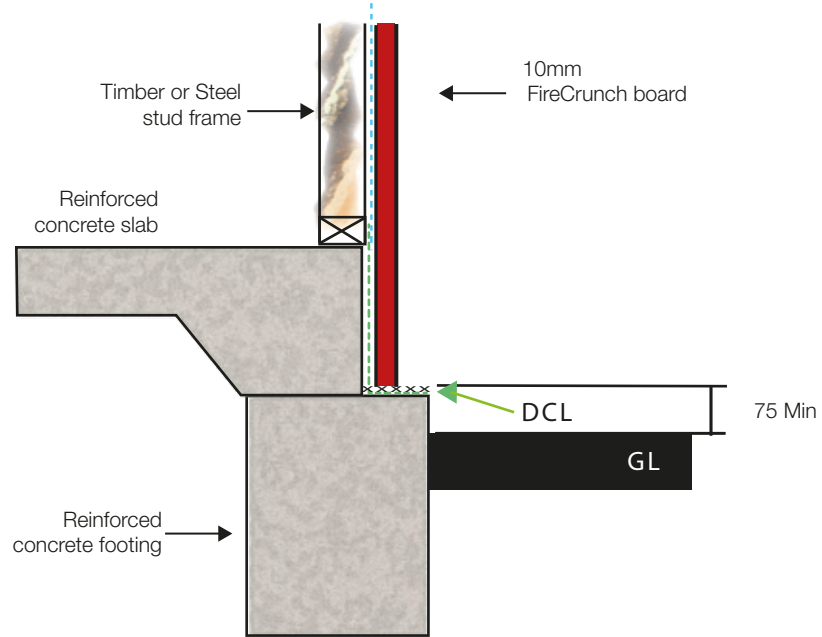
# FCA BOARDS FOOTINGS AND FIXTURES



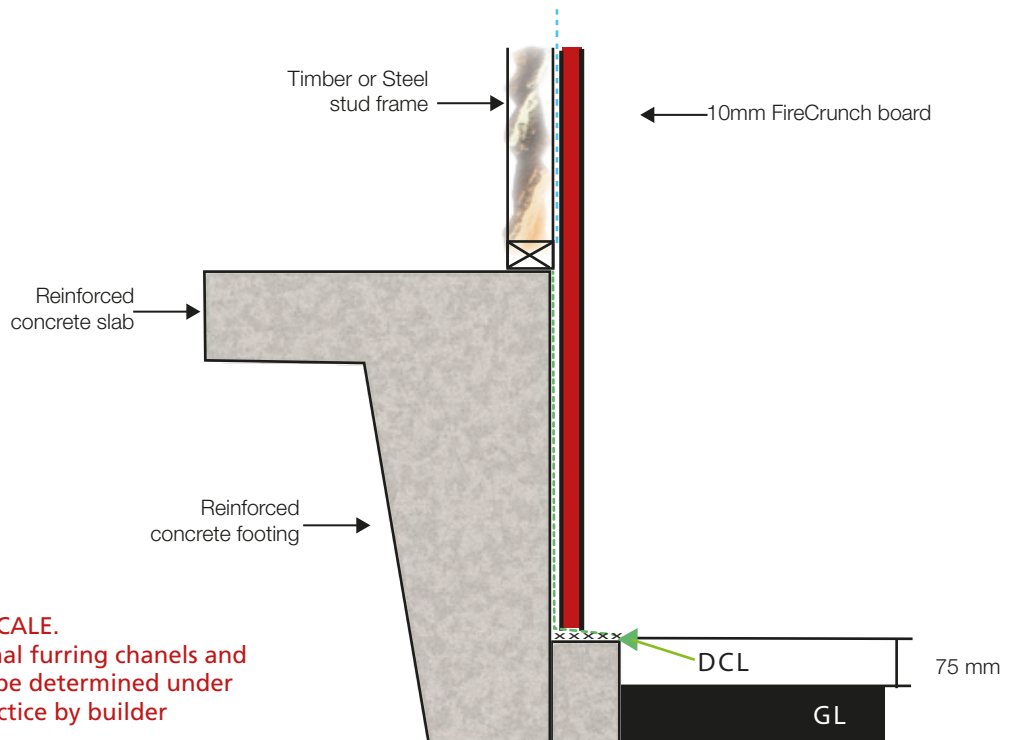
Use ONLY screws, nailing will void FCA warranty  
DCL :Damp course layer  
GL: Ground Level.

FIGURES 5 AND 6

TYPE OF  
CONCRETE  
FOOTINGS  
OPTIONAL



TYPE OF  
CONCRETE  
FOOTINGS  
OPTIONAL



**NOTE:**  
Drawing NOT to SCALE.  
Trims and additional furring chanel and  
bracketing are to be determined under  
good building practice by builder



firecrunch.com.au

FIRE TESTED BY CSIRO AND OTHERS / NATA TO BCA / NCC

