

# BAL FZ BUSHFIRE MANUAL

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



### AUSTRALIAN STANDARDS **BUSH FIRES**

- ✓ FIRECRUNCH MEETS AS/3959
- ✓ FIRE TESTED CSIRO AND RESOLUTE LABS
- ✓ AS/1530.1 NON COMBUSTIBILITY
- ✓ AS/1530.4
- ✓ 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

CALL TODAY **1300 933 102**

**INTERNATIONAL SALES EXPORT ENQUIRIES TO:** [sales@firecrunch.com.au](mailto:sales@firecrunch.com.au)

# BAL FZ BUSHFIRE MANUAL

# 2022

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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- 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

AS/1530, 4

AS/1530.1

AS/3959

AS/3837

AS/717

AS/4964

FRL 30/30/30 - 60/60/60 - 90/90/90 - 120/120/120\*\*\*\*

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

**NOTE:** Bush Fire Building , has a range of conditions under the regulatory framework of AS 3959 which often seem contradictory and unclear. Builders and Architects should further consult with FireCrunch Australia for any assistance.  
**1300 933 102 or [technical@firecrunch.com.au](mailto:technical@firecrunch.com.au)**

Disclaimer: All drawings are generic indicators and can be relied upon where shown with dts or ncc approved assessed fire tests. Structural adequacy is not determined in some of these drawings except those with dts or ncc references tested under load bearing conditions. Industry standard types of steel and timber products are specified by firecrunch. However the final arbiter is the structural engineer in load bearing Capability or assessment for each clients project.

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# 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.



## Bushfire Roofing Systems (BAL) 12.5, 19, 29, 40 AND FZ FLAME ZONE

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

### 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 / Z plate trimmer min 0.75BMT as per diagram. below. ( or 2 x Back to back 90 degree angle formings. Fire seal any other smaller openings with fine steel security mesh to eliminate any ember entry.

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

#### REQUIREMENTS:-

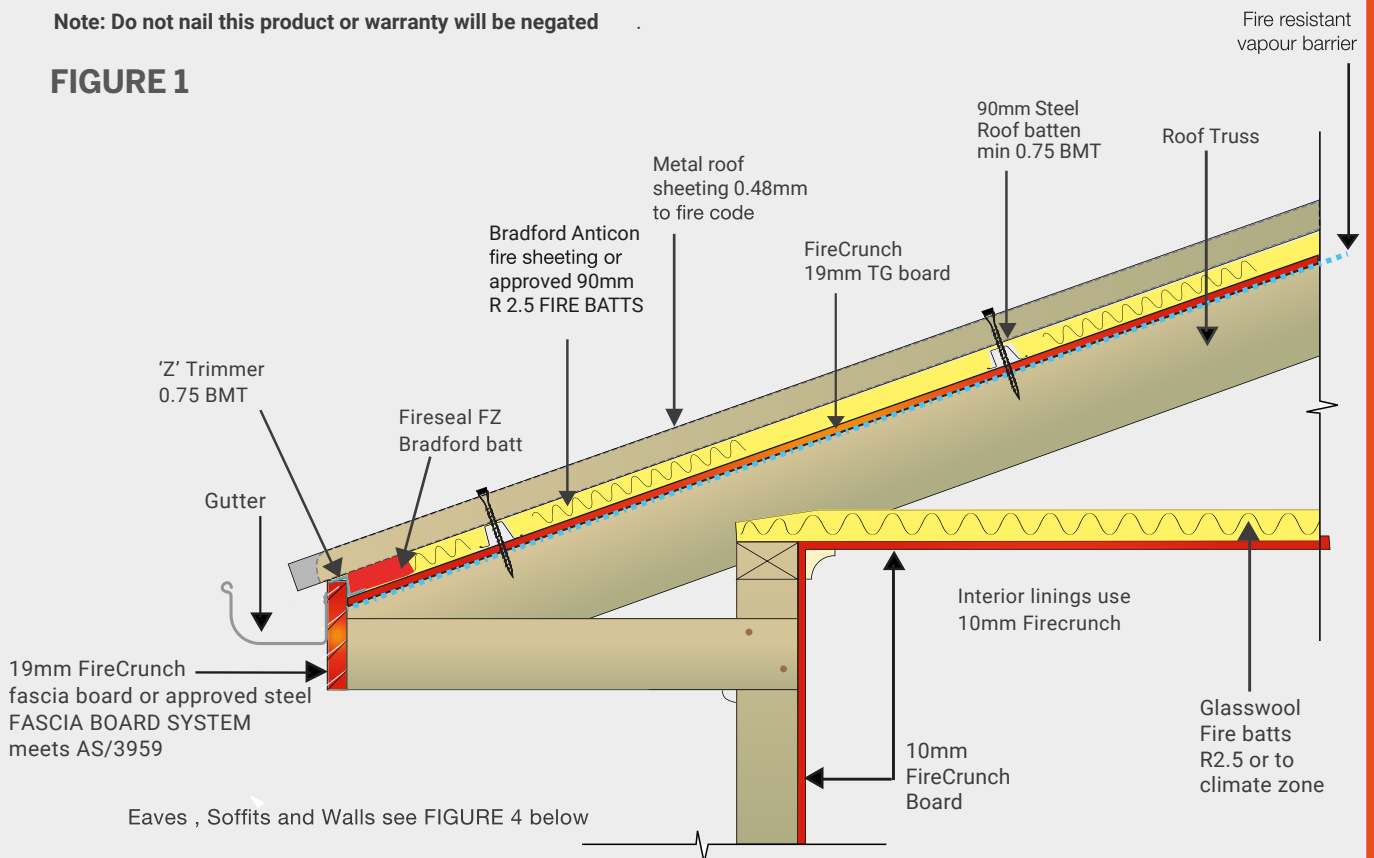
- 19mm TONGUE AND GROOVE ROOFING SHEETS 2700mm X 600mm
- AS /1530.4 RECOMMENDED FIRE SEALANTS as per WEB site: [firecrunch.com.au](http://firecrunch.com.au)
- USE Corrosion proof OR Stainless steel screw fixing as per specs on WEB site: [firecrunch.com.au](http://firecrunch.com.au)

#### 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**





## Bushfire Roofing Systems (BAL) 12.5, 19, 29, 40 AND FZ FLAME ZONE

### 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:-

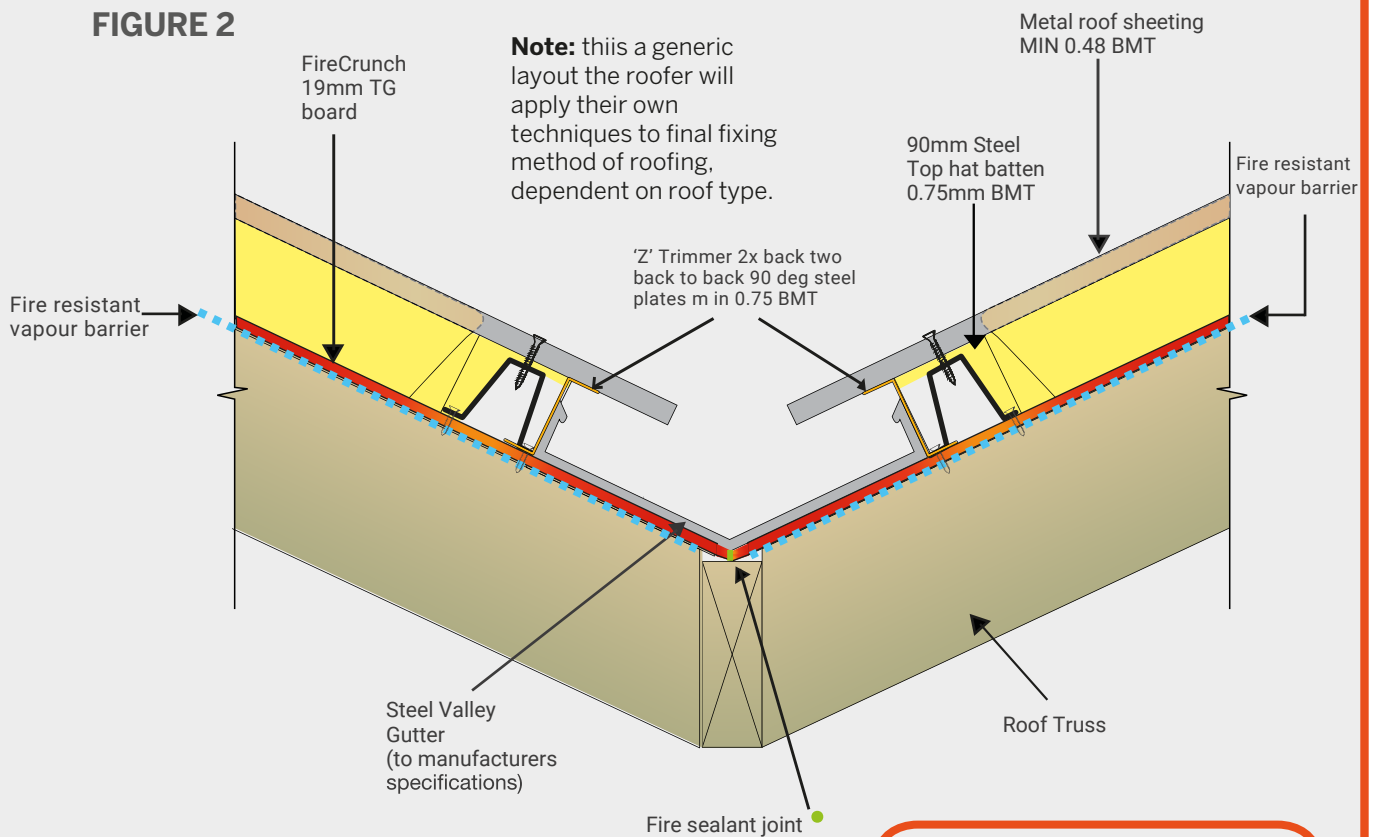
- 19mm tongue and groove roofing sheets 2700mm x 600mm
- AS/1530.4 recommended fire sealants as per WEB site: [firecrunch.com.au](http://firecrunch.com.au)
- Use corrosion proof steel stainless steel screw fixing as per specs on WEB site: [firecrunch.com.au](http://firecrunch.com.au)
- Insert suitable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



Weather seal facing surface of FCA boards with FireCrunch (Aqua) or KLAAS S1 Vapour permeable sealer. Use water based paints for finishing. see recommended products web site instructions



## Bushfire Roofing Systems (BAL) 12.5, 19, 29, 40 AND FZ FLAME ZONE

### 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)

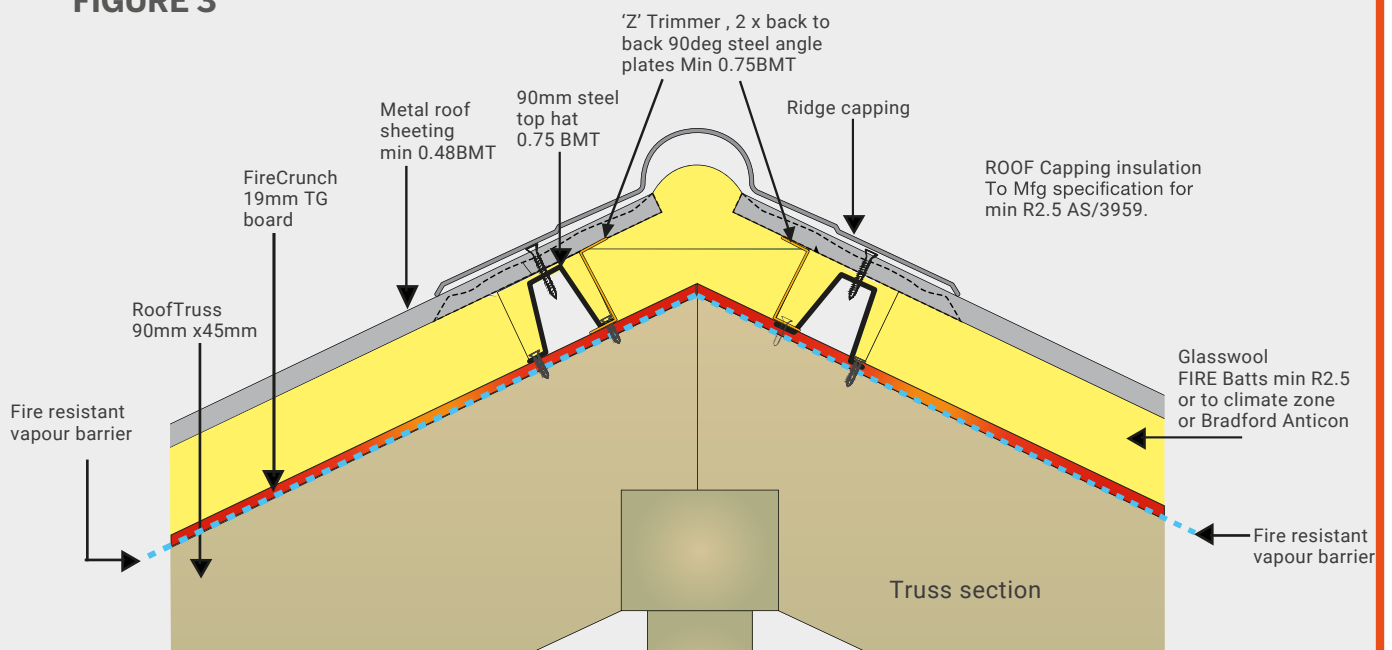
#### INSTRUCTIONS

- 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.

Weather seal facing surface of FCA boards with FireCrunch (Aqua) or KLAAS S1Vapour permeable sealer. Use water based paints for finishing. see recommended products web site instructions

**FIGURE 3**



## Guide 4 ROOF, EAVES, FASCIAS and WALLS

### Figure 4 FCA FLAME ZONE 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 rafters or battens 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 2700mm x 600mm 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) recommended products.
- 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](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 and sheet butt ends over truss centres with min 6mm fire sealant gap or to sealant Mfg instructions.

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

##### EAVES AND FASCIAS

- 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.
- Eaves: Screw Fix 10mm FCA sheets direct to underside of exposed timber or steel rafters, fire seal perimeters with Recommended fire sealant AS1530.4.
- Apply fire sealant to back of barge plate and fix 50 mm x 50mm 90 deg galvanised steel right angle plates 1.15BMT over the sealant at position 1A.

At 1B apply a 75mm right angled 90deg 1.15BMT to building frame and to underside of rafter and on outer side of wall frame and to underside of rafter as per diagram fig 4 1b .

- Apply sealant to any gap between the barge plate and the 10mm FCA Eave sheets where it abuts the barge plate. Screw fix 10mm FCA sheets through and into underside of rafter ensure a cross support batten is set where the linear laid boards ends meet use same

Seal : KLAAS S 1primer sealer for interior and exteriors.

NOTE: Do not nail this product or warranty will be negated Guide 4 ROOF, EAVES , FACIAS and WALLS [firecrunch.com.au](http://www.firecrunch.com.au) Fire resistant vapour barrier Bradford Anticon blanket or R2.5 glass wool batts. Use standard flat head self c/s screws Cntr sink max 2mm and 15mm from edges and 50mm from corners

Weather seal facing surface of FCA boards with FireCrunch (Aqua) or KLAAS S1Vapour permeable sealer. Use water based paints for finishing. see recommended products web site instructions

sealant instructions as per wall studs

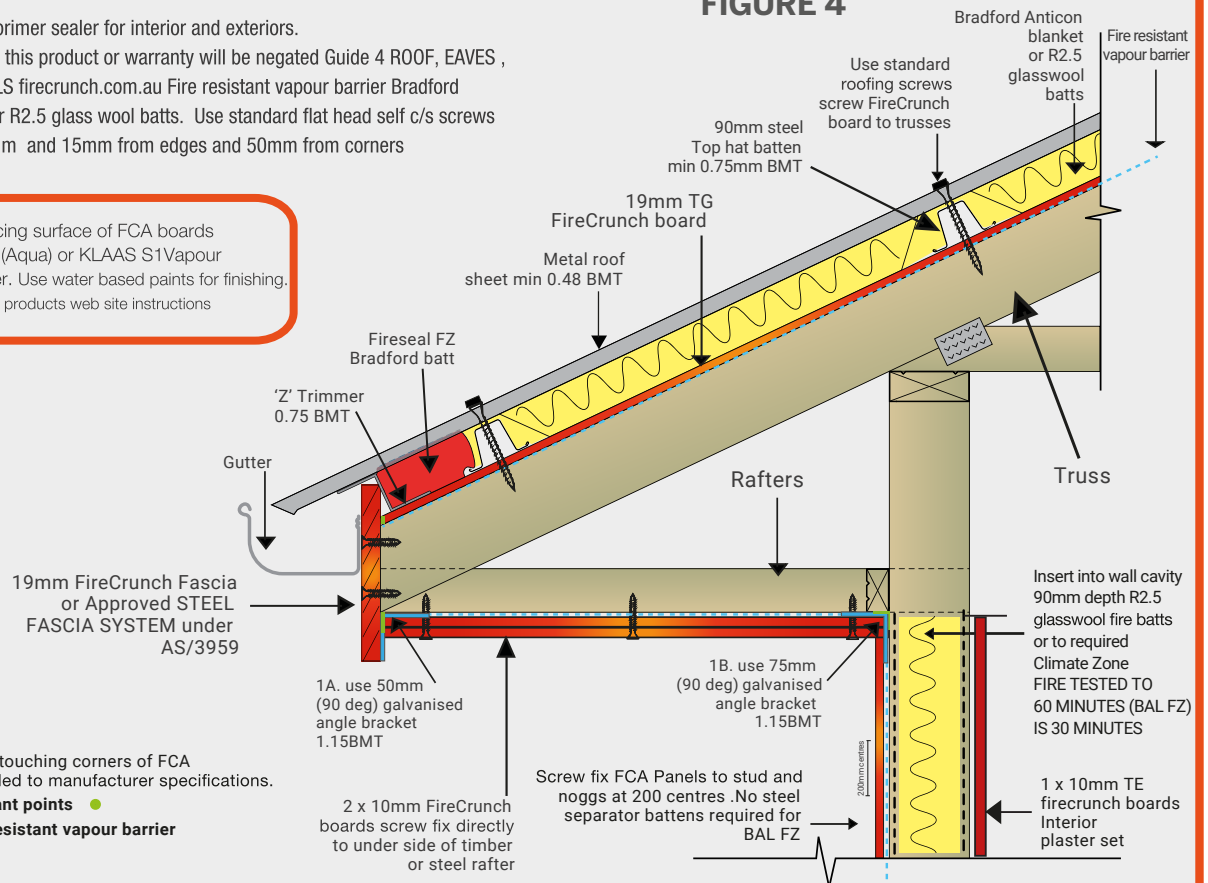
- Fire seal 6mm separating linear end joints which must be back blocked or fixed aligned on face joint, back support battens.

These require AS1530.4 fire sealant combed down support backing face of rafter on joints before screw fixing.

( see web site recommended products fire sealants)

- Comply Aust building standards and attention to expansion joints 5 metres. Use steel (L) and Z support brackets where required and fix and fire seal in position fire sheeting Fire seal all perimeters on completion.

**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

EXTERIOR WALL

## SUMMARY INSTALLTION STEPS: FRAME AND CLADDING TO SLAB BASE FIXINGS

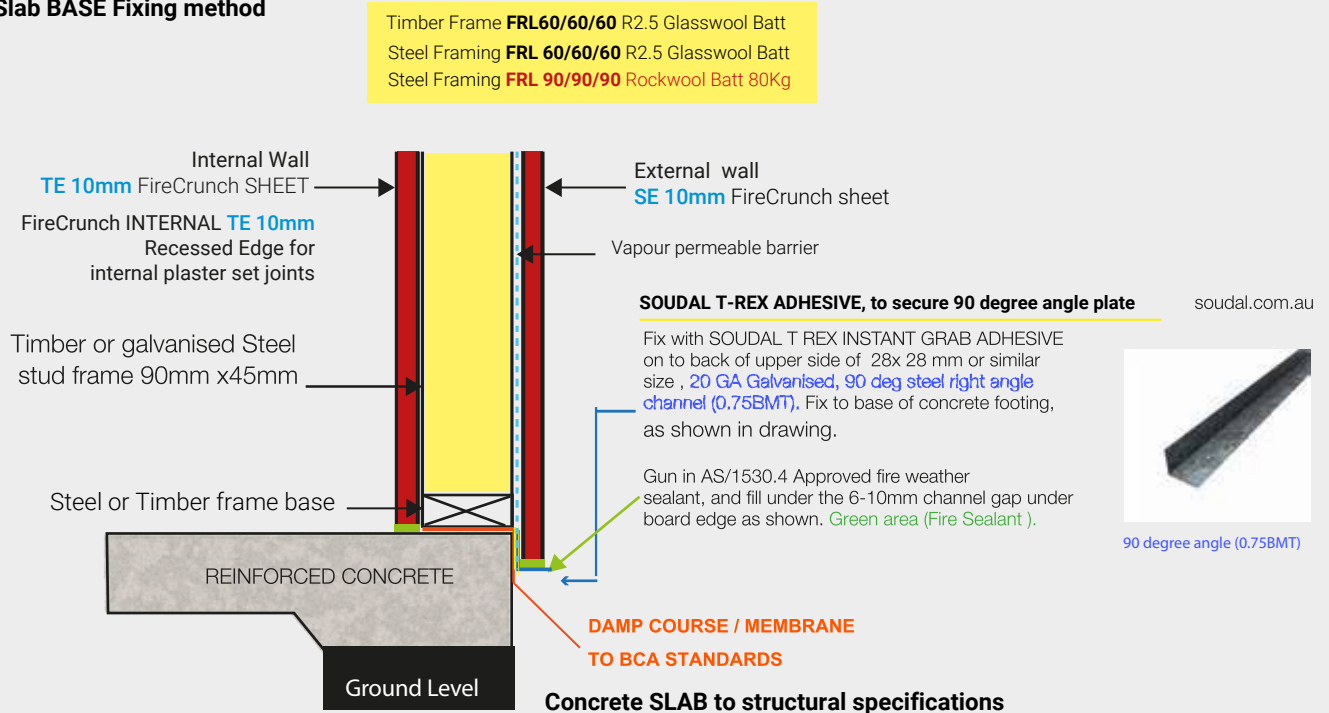
### FIRECRUNCH BOARDS FOOTINGS AND FIXINGS

**Figures 5** Use **ONLY** screws, to fix FCA board, nailing will void FCA warranty

**NOTE: Summary of steps to secure and weather seal the FCA boards to the Base Slab, footings and frame.**

- 1• APPLY DAMP COURSE OR WATERPROOF MEMBRANE TO SLAB IN GOOD BUILDING PRACTICE AND AUSTRALIAN STANDARDS NCC
- 2• SEE ORANGE LINE . OR BUILDERS PREFERRED METHOD
- 3• Adhere the galvanised steel right angle plate to concrete slab face BLUE LINE use Soudal T REX ( YELLOW LINE) on concrete FACE and back of the steel angle plate (BLUE LINE) steel plate) 28mmx 28mm.
- 4• Install and fix the (blue dotted) vapour barrier to building industry standards level with top of STEEL angle plate. BLUE LINE
- 5• Adhere the STEEL angle plate, Gun 2 beads of SOUDAL T-REX contact adhesive over outer face of steel plate and place a temporary angle blocker to prevent THE FCA board being installed, from touching the instant grab T-REX adhesive on the galvanised steel angle plate.
- 6• Commence install of the FCA board, set and screw fix at top edge first, and leave a 6mm gap between concrete and board bottom edge. Insert small temporary packer, to hold board away from T-REX adhesive on angle plate (as it is instant grab), until top fixings with 6mm vertical fire sealant gap between boards is SET and lined up. T-REX adhesive has (15 minute flexibility.) so only apply sufficient adhesive for each board installed then go to next.
- 7• The Right angled plates are 2400mm long allow 6mm creep to right as each board installed. See frame installation manual pages 34 to 37 Main Fire Manual
- 9• Once top of board secured, secure fixing on one noggin in field of sheets to ensure the 6mm fire sealant gap between board joint is aligned vertically over a vertical backing stud which has previously had 3 /3mm beads of **AS/1530.4 fire sealant screeded down the vertical stud face ( 5 hours flexibility).**
- 10• Then remove temporary packer, press lower section of board to the T-REX on the outer face of angled steel plate and screw fix the rest of board to upper frame, staggered each side of each adjoining board at 200mm centres into vertical stud facings as per fire manual instructions. [https://firecrunch.com.au/wp-content/uploads/2020/01/2020\\_FireCrunch\\_Fire-Manual.pdf](https://firecrunch.com.au/wp-content/uploads/2020/01/2020_FireCrunch_Fire-Manual.pdf)
- 11• Finally gun in AS/1530.4 fire weather sealant to 6mm /10mm gap at base of board ( Green area) these can all be done at once when all boards have been installed

### Slab BASE Fixing method



**DO NOT ALLOW FIRECRUNCH Boards to get WET or Hydrate over 10% BEFORE Sealing with AquaCrunch Sealer.**

**AquaCrunch Sealer + Undercoat + PAINTING or Rendering :** FireCrunch is a fire and finish board which delivers a minimum class 4 finish. For paint application, ( INTERNAL / EXTERNAL ) ( WARRANTY) first ensure surface is dust free and clean, seal with **AquaCrunch VAPOUR PERMEABLE sealer (interior and exteriors)**, 2nd : you must then apply **Dulux Precision MAX ADHESION undercoat**, then apply **Dulux** paints or texture top coats.

AquaCrunch sealer primer is obtainable on order from FireCrunch Australia. A Top Class 4 /5 commercial finish is then obtained.

<https://www.firecrunch.com.au/recommended-products/>





## Guide 6 : FireCrunch K-Roof manual FRL 30/30/30 to 60/60/60 K-Roof 19mmTG size 2700mm x 600mm

### TYPICAL BASIC PITCHED ROOF STRUCTURE

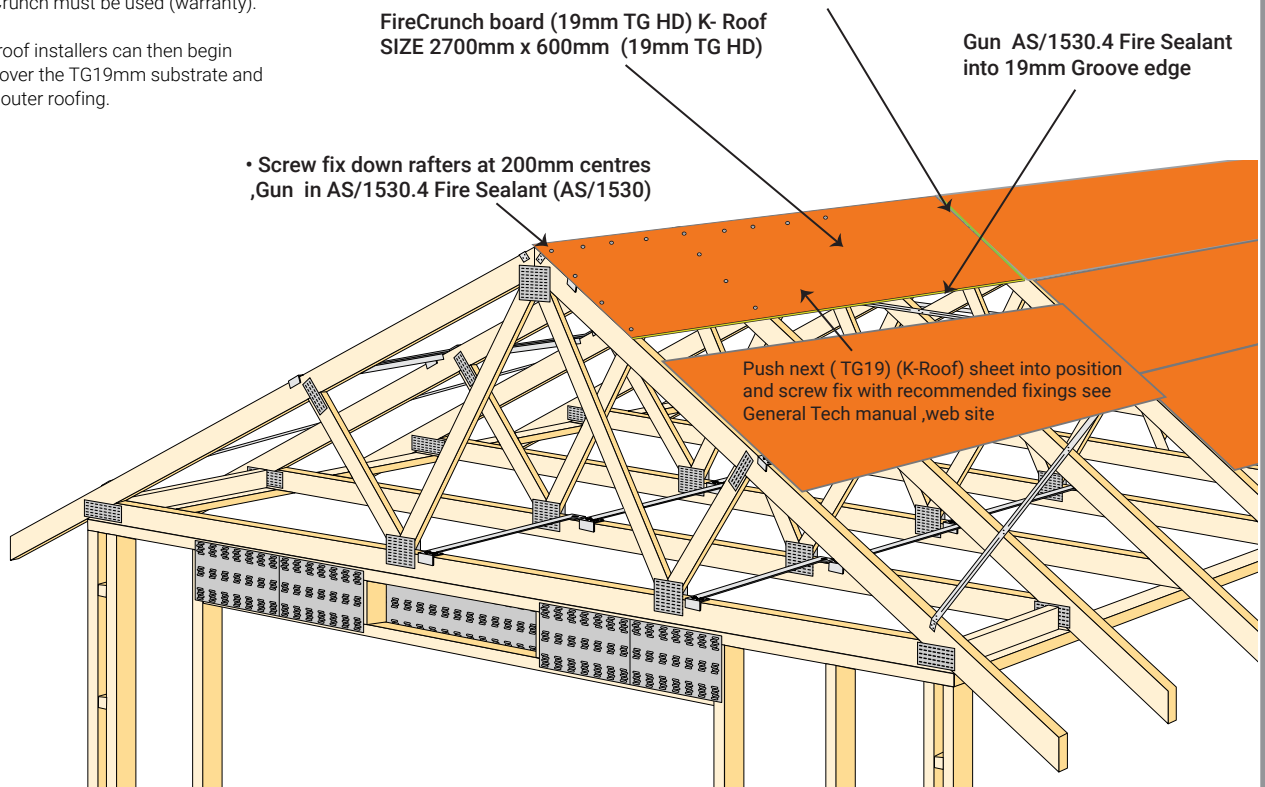
Can be either steel or timber framed to achieve max BAL FZ FRL 30/30/30 UP TO 60/60/60 using (MGP10) RADIATA PINE , LVL or similar with K Roof TG 19mm  
Use CSR Anticon or a 90mm R 2.5 glass wool insulation batt in the roof cavity, over the K Roof TG 19mm.

**For economic install use 450mm or 900mm rafter separations with 2700x600 sheet**

On sheet install completion, and 24 hours after fire caulk applied, roll on AquaCrunch low micron prime/sealer, even if not painting the AquaCrunch must be used (warranty).

The steel roof installers can then begin battening over the TG19mm substrate and install the outer roofing.

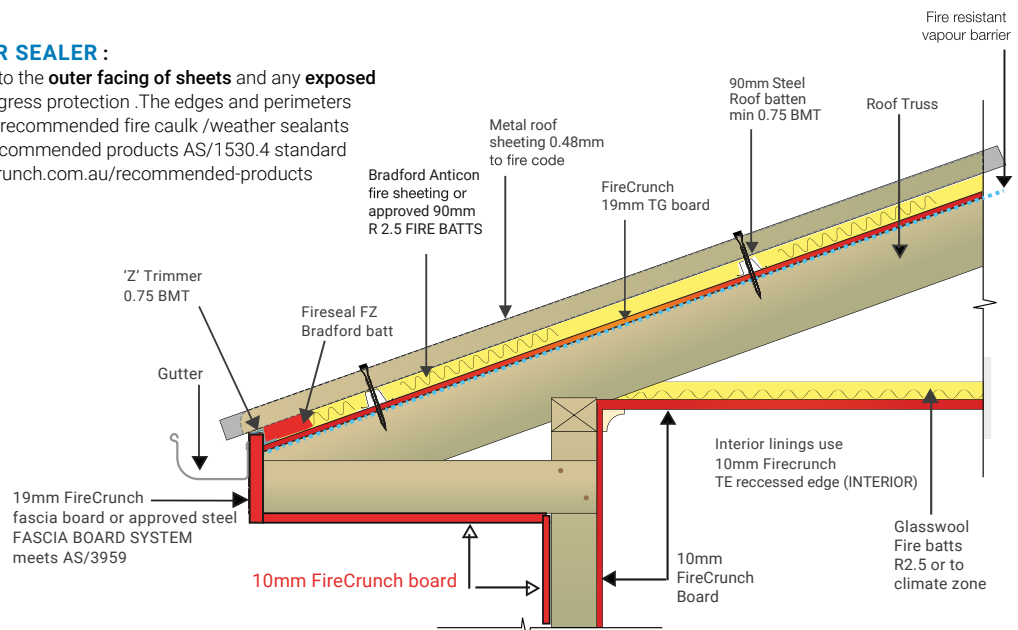
Ensure butt ends secured on rafter centre and run 3 beads of AS/1530.4 Firecaulk on rafter face and between butt ends , leave a 6mm gap and fill with AS/1530.4 fire caulk (sealant), screed off level allow 24 hrs to cure before priming with Aquacrunch (warranty)



**FIRECRUNCH GENERIC ROOF COMPONENTS DIAGRAM**  
to meet AS /3959, roof design . Methods will vary according to individual designs

#### AQUACRUNCH PRIMER SEALER :

requires a single roll on coat to the **outer facing of sheets** and any **exposed edges**, this provides water ingress protection .The edges and perimeters are fire /weather sealed with recommended fire caulk /weather sealants also on the web site under recommended products AS/1530.4 standard shown on pack . <https://firecrunch.com.au/recommended-products>



**Note: Do not nail this product or warranty will be negated, screw fix only.**

