

BAL FZ BUSHFIRE MANUAL ROOFING, WALLS & EAVES

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

FIRE TESTED IN AUSTRALIA BY NATA ACCREDITED TEST LABS CSIRO
UNDER AS1530.4/2014-2029 ISO/IEC17025



AUSTRALIAN STANDARDS BUSH FIRES

- ✓ FIRECRUNCH MEETS AS3959
- ✓ FIRE TESTED CSIRO AND RESOLUTE LABS
- ✓ AS1530.1 NON COMBUSTIBILITY
- ✓ AS1530.4
- ✓ AS3837
- ✓ MEETS AS1530.8.2 UNDER NCC
- ✓ ALTERNATIVE SYSTEMS/FIRE ENGINEER CERTIFICATION UNDER NCC
- ✓ NATIONAL CONSTRUCTION CODE (BCA)



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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 AS3959.

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 m².

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 m².

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 m².

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

GUIDE 1 ROOF SECTION ONLY FCA TG19mm

Figure 1 FC/BAL FZ
Fascia Detail - Metal Roof (BAL 12.5-40) and BAL FZ Flame Zone

- ★ Install FCA entire roof area over roof trusses and fix 40mm separator battens over the top of the board into frame.
- ★ Insert suitable fire/climate zone compliant glasswool batts.
- ★ 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. 0.75 BMT as per diagram below (or 2x back-to-back 90deg 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

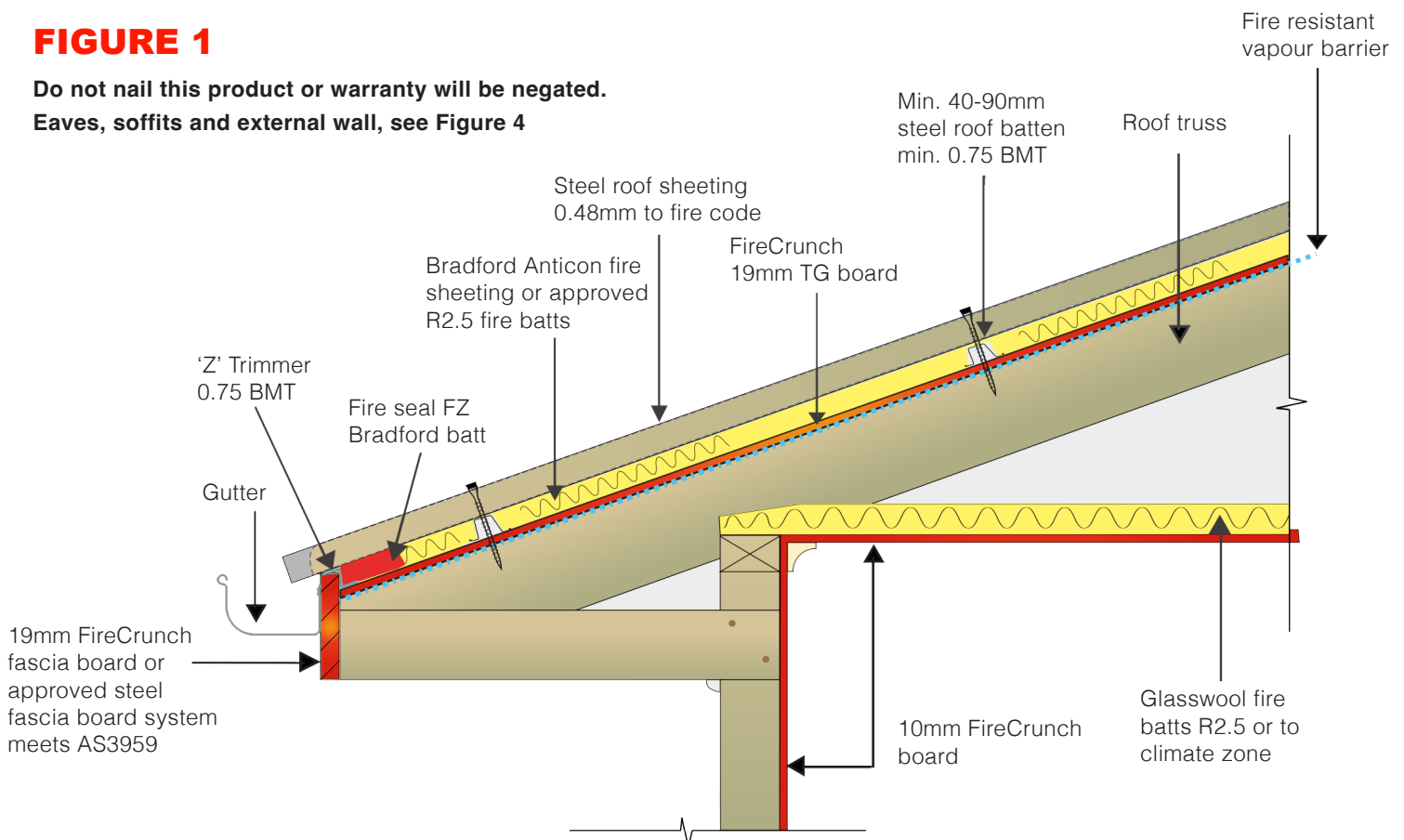
- ★ 19mm T&G roofing sheets 2700 x 600mm.
- ★ AS1530.4 recommended fire sealants per Recommended Products.
- ★ Use corrosion proof or stainless steel screw fixing as per specifications on web site.

Instructions

- ★ Lay first TG FCA sheet across truss rafters over fire resistant vapour barrier and secure fix first sheet with FCA screw fixings specified in Technical Installation Manual and Technical Reference Installation - General in Manuals & Drawings.
- ★ Gun in fire sealant to groove side, push in next sheet tongue, screw fix and continue until roof section covered. Edge seal all perimeters.

FIGURE 1

Do not nail this product or warranty will be negated.
Eaves, soffits and external wall, see Figure 4



GUIDE 2 ROOFING/VALLEY GUTTER

Figure 2 FCA/FZ

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

- ★ Install FireCrunch to the entire roof area over truss rafters.
- ★ Insert suitable fire/climate zone compliant R2.5 glasswool batts or Bradford Anticon.

Timber or steel roof truss protection - generic layout Figure 2 FCA/FZ

Requirements

- ★ 19mm T&G roofing sheets 2700 x 600mm.
- ★ AS1530.4 recommended fire sealants per *Recommended Products*.
- ★ Use corrosion proof or stainless steel screw fixing as per specifications on web site.
- ★ Insert suitable fire/climatic zone min. R2.5 glasswool insulation/Bradford Anticon.

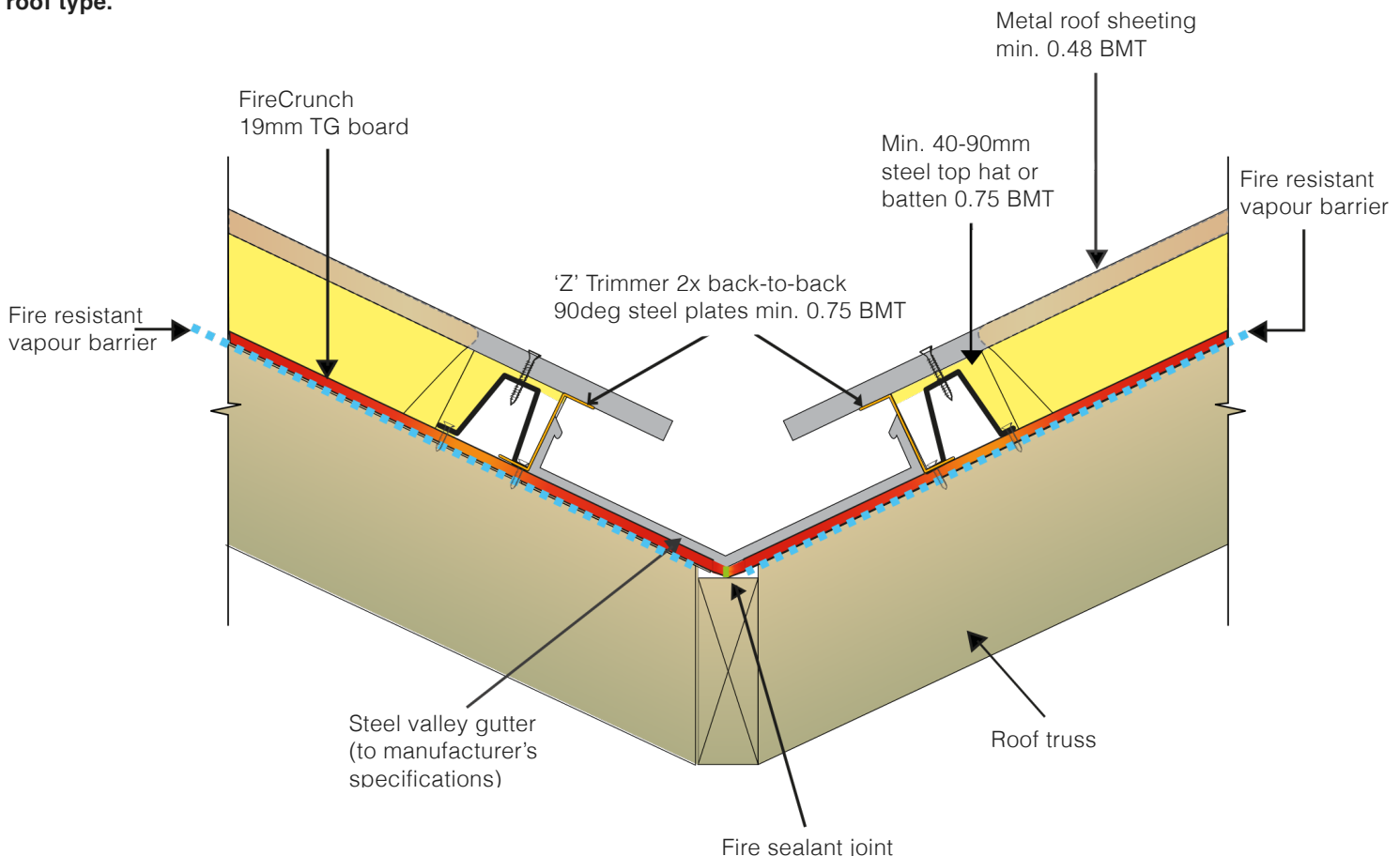
Instructions

- ★ Lay first TG FCA sheet across truss rafters over fire resistant vapour barrier and secure fix first sheet with FCA screw fixings specified in Technical Installation Manual and Technical Reference Installation - General in *Manuals & Drawings*.
- ★ 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 manufacturer's instructions.
- ★ Lay steel batten separators (min. 40mm) 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.

FIGURE 2

Do not nail this product or warranty will be negated.

NOTE: This is a generic layout. The roofer will apply their own techniques to final fixing method of roofing dependent on roof type.



GUIDE 3 ROOF CAPPING AREA

Figure 3 FCA/FZ

Hip/Ridge Detail - Steel Roof (BAL 12.5-40) and BAL FZ Flame Zone.

- ★ Install FireCrunch to the entire roof area and install min. 40mm steel battens or top hats.
- ★ Install the ridge capping to the roof profile.
- ★ For further fixing details, contact FCA Technical Support technical@firecrunch.com.au.

Timber or steel roof truss protection - generic layout Figure 3 FCA/FZ

Requirements

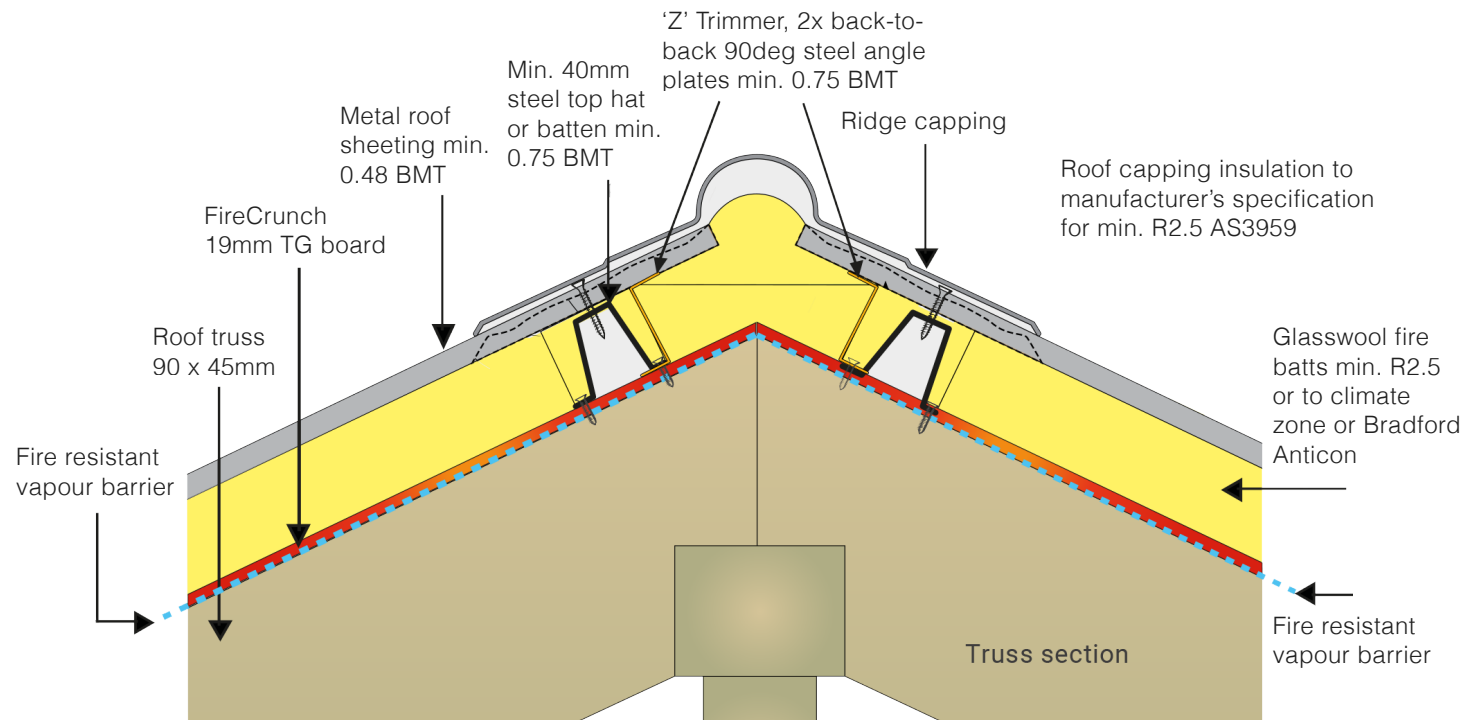
- ★ 19mm T&G roofing sheets 2700 x 600mm.
- ★ AS1530.4 recommended fire sealants per [Recommended Products](#).
- ★ Use corrosion proof or stainless steel screw fixing as per specifications on web site.

Instructions

- ★ Lay first TG FCA sheet across truss rafters over fire resistant vapour barrier and secure fix first sheet with FCA screw fixings specified in Technical Installation Manual and Technical Reference Installation - General in [Manuals & Drawings](#).
- ★ Gun in fire sealant to groove side, push in next sheet tongue, screw fix and continue until roof section covered. Edge seal all perimeters to sealant manufacturer's instructions.
- ★ Fix min. 40mm steel battens separators to the FCA TG sheets. Insert glasswool batts or Bradford Anticon screw fix steel roofing (to manufacturer's specification) through battens and FCA board into timber/steel trusses to roofers fixing specifications.
- ★ Fire seal apex joint, apply/fix steel min. 0.75 BMT cover plate to ridge joint weather/fire seal all apertures and perimeters.

FIGURE 3

Do not nail this product or warranty will be negated.



GUIDE 4 ROOF, EAVES, FASCIAS AND WALLS

Figure 4 FCA/FZ

Fascia/Eaves Detail - BAL FZ System 4

- ★ At eaves screw fix 2x 10mm sheets direct to underside of rafters and fire seal all perimeters with AS1530.4 fire sealant.
- ★ Fix with corrosion-resistant 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

Requirements

- ★ FCA 10mm 1200mm wide eave sheets and 19mm 2700x600mm TG roofing sheets cut sizes to suit.
- ★ AS1530.4 recommended fire sealant as per *Recommended Products*.
- ★ Use corrosion proof or stainless steel screw fixing as per specifications on web site.

Instructions

- ★ Lay first 19mm TG FCA sheet across trusses over fire resistant vapour barrier and secure fix first sheet with FCA screw fixings specified in Technical Installation Manual and Technical Reference Installation - General in *Manuals & Drawings*.
 - ★ 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 manufacturer's instructions.
- NOTE:** Ensure butted ends are over a truss backer for fire sealant joint.

Joint Instructions

- ★ Lay first TG FCA sheet across trusses over fire resistant vapour barrier and secure fix first sheet with FCA screw fixings specified in Technical Installation Manual and Technical Reference Installation - General in *Manuals & Drawings*.
 - ★ 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 manufacturer's instructions.
- NOTE:** Ensure butted ends are over a truss backer for fire sealant.

Eaves and Fascias

- ★ Use 2x 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 AS3959.
- ★ Eaves: Screw fix 10mm FCA sheets direct to the 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 x 50mm 90deg galvanised steel right angle plates 1.15 BMT over the sealant at position 1A.
At 1B apply a 75mm right angled 90deg 1.15 BMT to building frame and to underside of rafter and on outer side of wall frame and to underside of rafter as per diagram Figure 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 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.
- ★ Comply with Australian 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.

Seal: Use Murobond MP Primer for interiors and exteriors.



FIGURE 4

Do not nail this product or warranty will be negated.

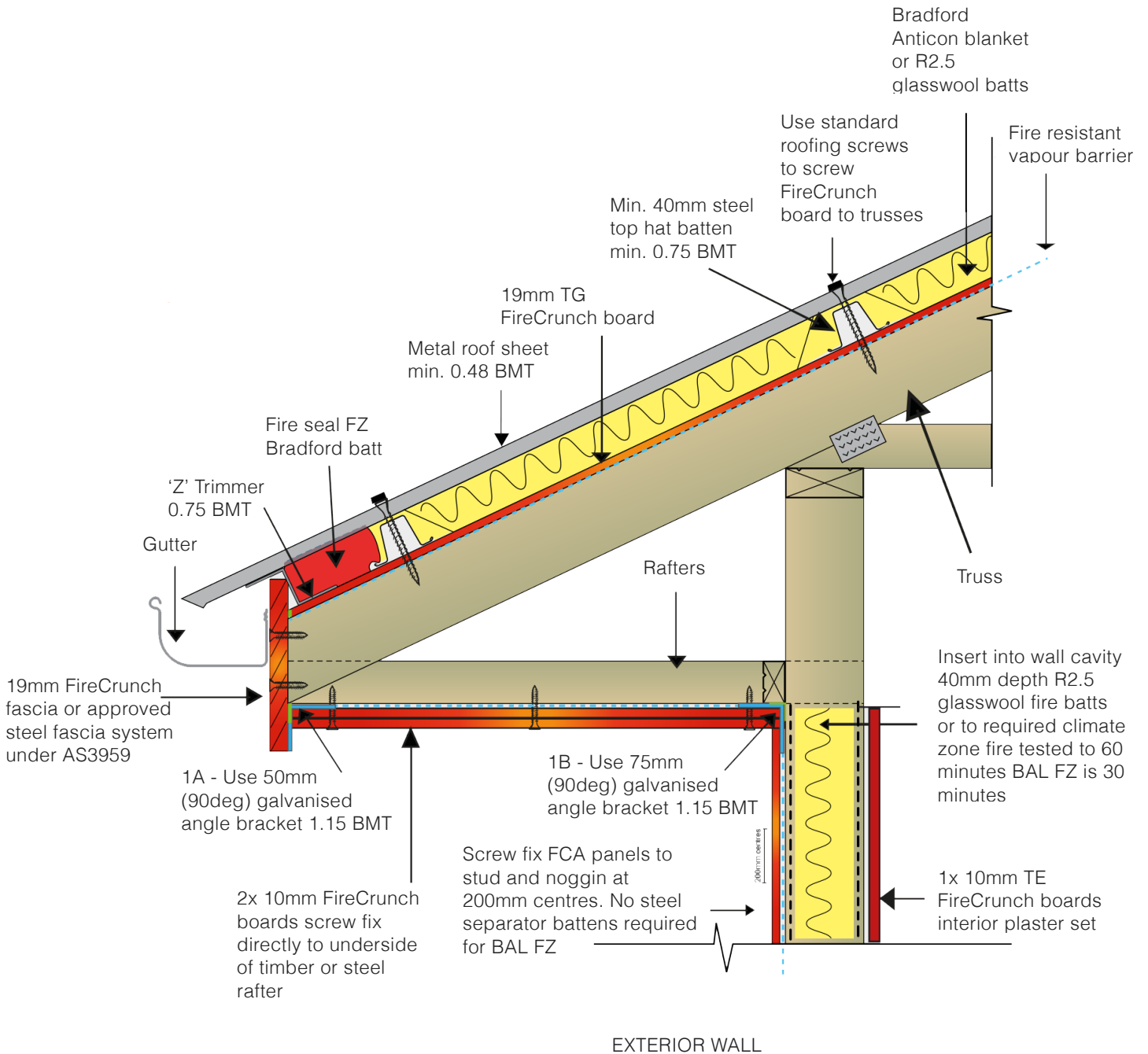
See **Recommended Products** on web site.

Fire resistant vapour barrier. Bradford Anticon blanket or R2.5 glasswool batts.

Use standard flathead self countersunk screws.

Countersink max. 2mm and 15mm from edges and 50mm from corners.

Ensure all touching corners of FCA board are fire sealed to manufacturer's specifications.



FRAME AND CLADDING TO SLAB BASE FIXINGS

GUIDE 5 SUMMARY INSTALLATION STEPS

Figure 5

FireCrunch Boards Footings and Fixings - Summary of steps to secure and weather seal the FCA boards to the base slab, footings and frame.

Instructions

- ★ Apply damp course or waterproof membrane to slab in good building practice and Australian standards NCC.
- ★ Orange line: Or to builder's preferred method.
- ★ Blue line: Adhere the galvanised steel right angle plate to concrete slab face.
- ★ Yellow line. Use Soudal T-Rex on concrete face and back of the 28x28mm steel angle plate (Blue line).
- ★ Install and fix the Blue dotted vapour barrier to building industry standards level with top of steel angle plate (Blue line).
- ★ 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-Red adhesive on the galvanised steel angle plate.
- ★ 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 the 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-Red adhesive has 15-minute flexibility so only apply sufficient adhesive for each board installed, then go to next.
- ★ The right angled plates are 2400mm long, allow 6mm creep to right as each board installed. See "General Fixing & Installation" of FireCrunch Technical Installation Manual on *Manuals & Drawings*.
- ★ 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 3x 3mm beads of AS1530.4 fire sealant screeded down the vertical stud face (5 hours flexibility).
- ★ 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 FireCrunch Technical Installation instructions.
- ★ Finally gun in AS1530.4 fire weather sealant to 6-10mm gap at base of board (Green area). These can all be done at once when all boards have been installed.

SEALER + UNDERCOAT + PAINTING OR RENDERING:



For both internal/external paint application. Failure to follow these procedures and use the specified products will void the warranty. See *Recommended Products* on web site.

- STEP 1 Ensure all surfaces are clean and dry to max 10% sheet hydration.
- STEP 2 Apply one coat of the **Murobond MP Primer**.
- STEP 3 After Murobond MP primer is dry to manufacturer's specification, apply the recommended **undercoat** for your finish top coat paint brand.
- STEP 4 Apply two coats of **water-based acrylic paint**.

Murobond MP Primer is obtainable on order from FireCrunch Australia.

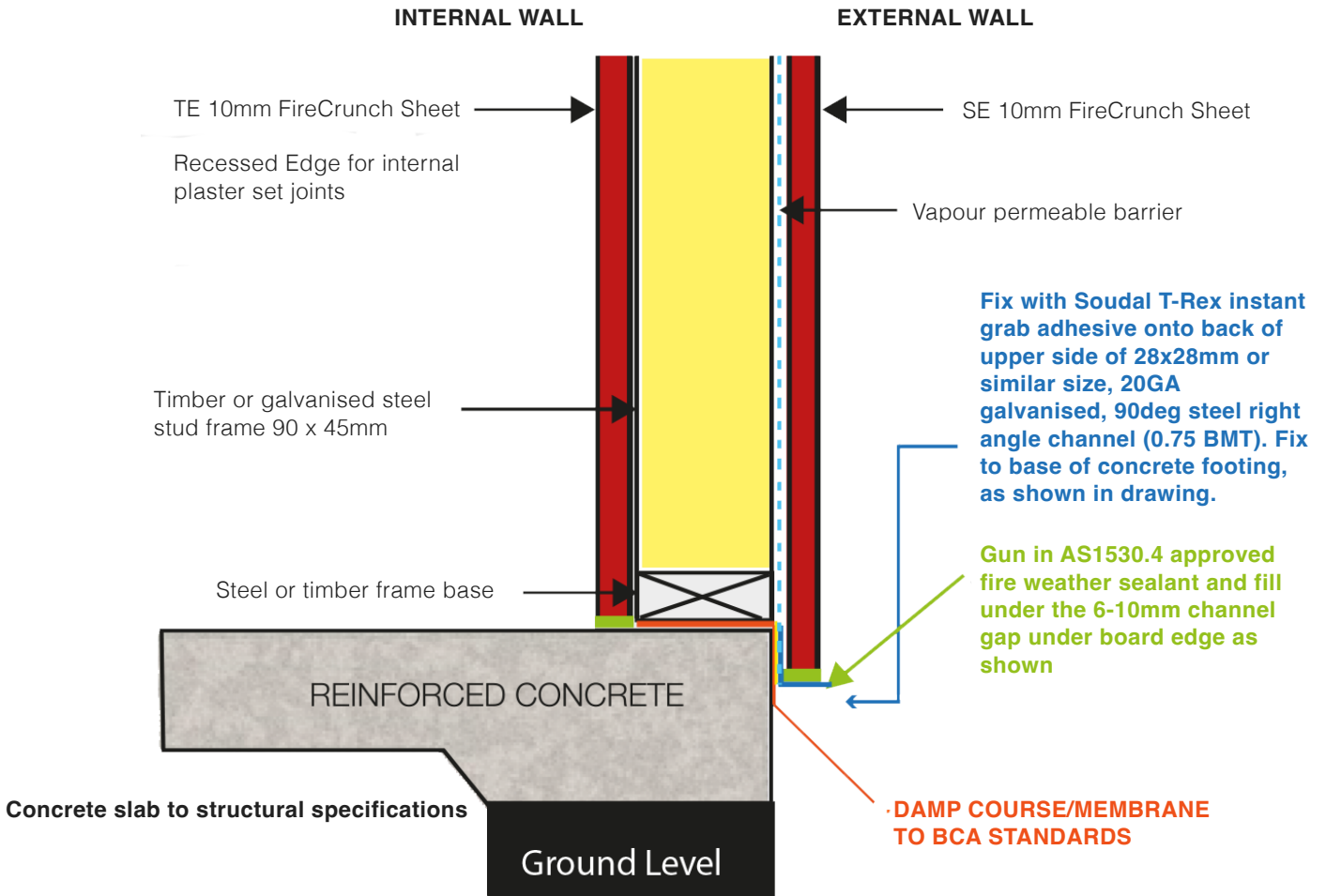
**DO NOT ALLOW FireCrunch boards to get WET or hydrate over 10% BEFORE sealing with primer.
The Murobond MP product is purchased from and supplied by FireCrunch Australasia PL (Warranty)**



FIGURE 5

Do not nail this product or warranty will be negated.

Timber Frame FRL .../60/60 R2.5 Glasswool Batt
 Steel Framing FRL .../60/60 R2.5 Glasswool Batt
 Steel Framing FRL 90/90/90 Rockwool Batt 80kg



K-ROOF MANUAL FRL 30/30/30 TO 60/60/60 AND BAL FZ

GUIDE 6 K-ROOF 19mm TG SIZE 2700 x 600mm

FireCrunch Generic Roof Components Diagram to meet AS3959, roof design. Methods will vary according to individual designs.

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 a minimum R2.5 glasswool insulation batt in the roof cavity, over the K-Roof TG 19mm.

For economic install use 450mm or 900mm rafter separations with 2700 x 600mm sheet.

On sheet install completion, and 24 hours after fire caulk applied, roll on Murobond MP primer, OPTIONAL if under steel or tiles. The steel roof installers can then begin battening over the TG19mm substrate and install the outer roofing.

FIGURE 6

**Do not nail this product or warranty will be negated.
Typical basic pitched roof structure.**

Ensure butt ends secured on rafter centre and run 3 beads of AS1530.4 fire caulk on rafter face and between butt ends, leave a 6mm gap and fill with AS1530.4 fire caulk (sealant), screed off level allow 24 hrs to cure.

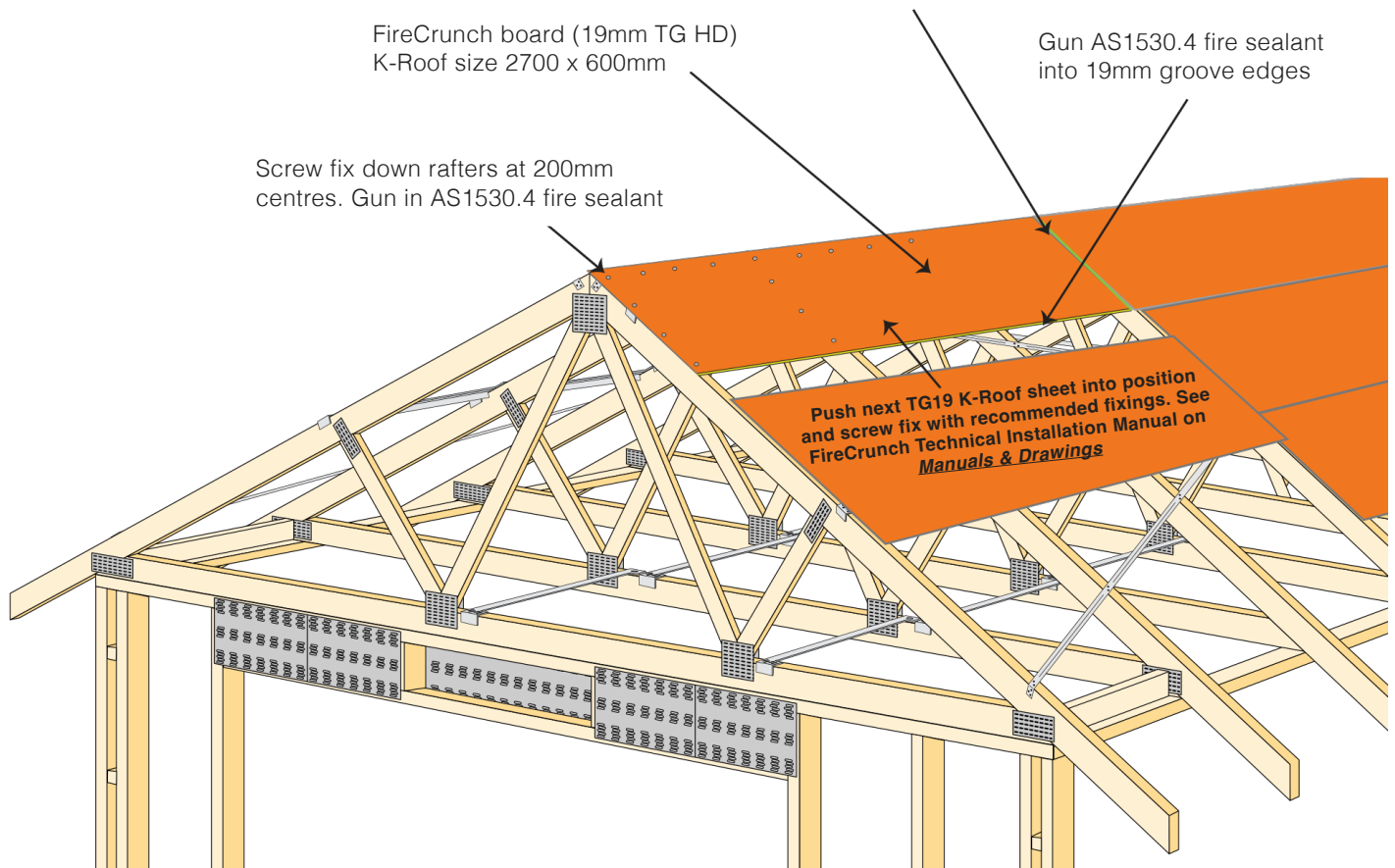


FIGURE 6A

Do not nail this product or warranty will be negated.



MUROBOND MP Primer: 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* AS1530.4 standard shown on pack.

