



BlueScope Steel Product Solutions for Bushfire Areas NASH Bushfire Standard

Zincalume® | Galvaspan® | Zinc Hi-ten® | Colorbond® | Truecore®

The information in this guide describes the general application of TRUECORE® steel for framing and COLORBOND® steel for roofing, walling, fascia and guttering when buildings are designed using the NASH Standard for Steel Framed Construction in Bushfires Areas. For complete details and requirements of the NASH Standard, refer to www.nash.asn.au. Additional construction requirements are contained in the National Construction Code (NCC) available from www.abcb.gov.au



Bushfire Attack Levels

Bushfire Attack Levels (BALs) refer to heat flux exposure levels and are summarised below:

Bushfire Attack Level (BAL)	Classified vegetation within 100m of the site and heat flux exposure thresholds	Description of predicted bushfire attack and levels of exposure (AS 3959)
BAL-LOW		There is insufficient risk to warrant specific construction requirements
BAL-12.5	$\leq 12.5 \text{ kW/m}^2$	Ember attack
BAL-19	$> 12.5 \text{ kW/m}^2$ $\leq 19 \text{ kW/m}^2$	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux
BAL-29	$> 19 \text{ kW/m}^2$ $\leq 29 \text{ kW/m}^2$	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux
BAL-40	$> 29 \text{ kW/m}^2$ $\leq 40 \text{ kW/m}^2$	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux with some increased likelihood of exposure to flame from the fire front
BAL-FZ	$> 40 \text{ kW/m}^2$	Direct exposure to flames from fire front in addition to heat flux and ember attack

AS 3959 contains procedures for determining the Bushfire Attack Level (BAL) on a building site. However, the BAL is ultimately a matter for the Building Authority in the particular state or territory. For example, in designated bushfire prone areas in Victoria, a minimum of BAL-12.5 applies. In NSW, BALs are determined in accordance with the Planning for Bushfire Protection (NSW RFS).



Houses, together with associated garages and sheds, in bushfire areas are required, to be designed and constructed to reduce the risk of ignition from a bushfire.

The National Association of Steel Framed Housing (NASH) is an industry body that develops Standards for low-rise steel framing. The NASH Standard for Steel Framed Construction in Bushfire Areas sets out acceptable construction details for residential and low-rise buildings in bushfire prone areas. The Standard incorporates two simple and cost-effective solutions based on Bushfire Attack Levels of BAL-12.5 to BAL-FZ as defined in AS 3959. The NASH Bushfire Standard is referenced in the National Construction Code (NCC) as a Deemed-to-Satisfy (DTS) solution for the design and construction of steel framed homes in bushfire areas in all States* and Territories.

*Note that additional requirements may apply.

Benefits

The BAL for the site may be determined after initial concept design. This combined with the differing requirements for each of the BAL zones for major building elements stipulated in AS 3959 can add to the cost and complexity of building in a bushfire zone. The details in this design guide summarise simple and cost effective solutions to compliance using the NASH Bushfire Standard.

Two simple solutions

The systems in this Guide provide a single framing and cladding solution for BAL-12.5 – BAL-40 and another for BAL-FZ. Both offer simple solutions using standard materials, component clearances and workmanship. Combined with windows and doors selected for the appropriate BAL rating, the simplicity of these solutions provide greater certainty for designers, builders and home owners throughout the design and planning process while determination of the home's BAL rating is confirmed.

Cost effective

TRUECORE® steel and COLORBOND® steel won't ignite or contribute to the spread of fire and may be used wherever a non-combustible material is required. Utilising this benefit, together with an appropriate NASH bushfire design solution, enables resilient and robust homes to be built cost-effectively through reducing the amount of materials required in construction whilst still meeting the NCC bushfire performance requirements. I.E. The steel roof solution for BAL-12.5 – BAL-40, for example, requires no sarking or additional perimeter sealing which may achieve cost savings. Greater savings may be possible for the NASH bushfire solution in BAL-FZ.

Resilient

All solutions in the NASH Bushfire Standard have been designed and/or tested to be robust in realistic bushfire conditions with the involvement of several independent organisations including the CSIRO and NSW Rural Fire Service (RFS). The extensive testing undertaken provided the Australian Building Codes Board confidence to reference the Standard as a Deemed-to-Satisfy solution.

From brands you trust

Steel made by BlueScope meets relevant Australian Standards and the provisions of the National Construction Code (NCC). You can have confidence specifying TRUECORE® steel and COLORBOND® steel from BlueScope to meet these requirements.

BAL-12.5 – BAL-40 materials and systems

The following materials and systems can be utilised to comply with the Standard for each BAL. For full details, other situations and requirements, use figure numbers as a guide and refer to NASH Bushfire Standard.

Roof System	
Material	Application
COLORBOND® steel	Roof Sheeting (Conforming to AS 1562.1)
ZINCALUME® steel	Flashing (Conforming to AS 1562.1) Fascia and Gutter (Conforming to AS/NZS 3500.3) Ventilators
TRUECORE® steel	Framing (NASH Standard Pt 1 or Pt 2) Battens (NASH Standard Pt 1 or Pt 2)

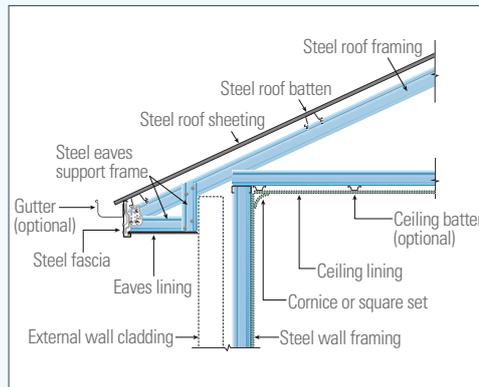


Figure 2.1: Roof system – with eave, BAL-12.5 to BAL-40

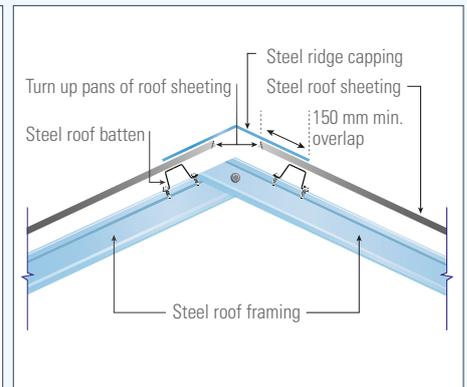


Figure 2.3: Roof system – ridge/hip details, BAL-12.5 to BAL-40

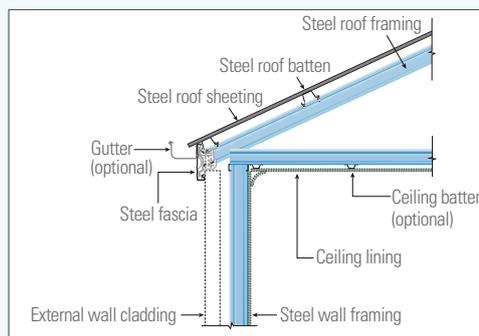


Figure 2.2: Roof system – without eave, BAL-12.5 to BAL-40

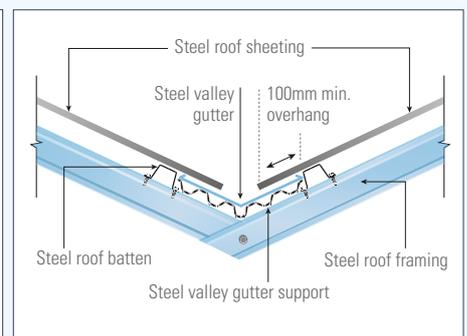


Figure 2.4: Roof system – valley details, BAL-12.5 to BAL-40

Wall System	
Material	Application
COLORBOND® steel	Wall cladding (Conforming to AS 1562.1)
ZINCALUME® steel	Flashing (Conforming to AS 1562.1) Downpipes
TRUECORE® steel	Framing (NASH Standard Pt 1 or Pt 2) Battens (NASH Standard Pt 1 or Pt 2)

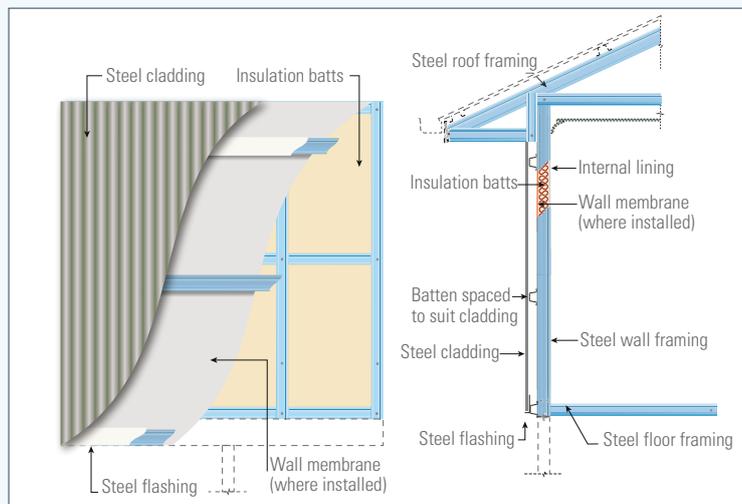


Figure 3.1(a): Wall system with eave, BAL-12.5 to BAL-40

Floor System	
Material	Application
GALVSPAN® steel	Steel Bearer (NASH Standard Pt 1 or Pt 2)
ZINC HI-TEN® steel	Floor Joist (NASH Standard Pt 1 or Pt 2)
TRUECORE® steel	
Post-galvanised steel	Steel Post (NASH Standard Pt 1 or Pt 2)

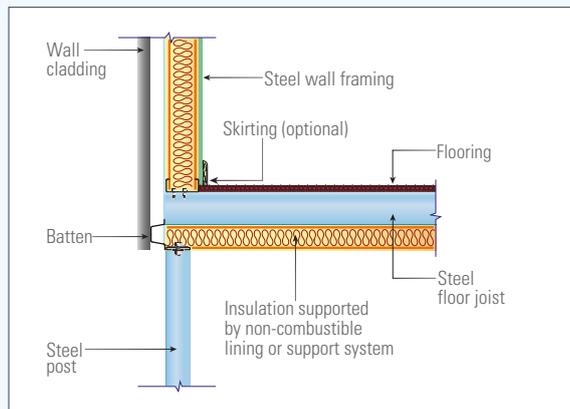


Figure 4.1: Suspended steel floor system – unenclosed, BAL-12.5 to BAL-40

BAL-FZ materials and systems

The following materials and systems can be utilised to comply with the Standard for each BAL. For full details, other situations and requirements, use figure numbers as a guide and refer to NASH Bushfire Standard.

Roof System	
Material	Application
COLORBOND® steel ZINCALUME® steel	Roof Sheeting (Conforming to AS 1562.1) Flashing (Conforming to AS 1562.1) Fascia and Gutter (Conforming to AS/NZS 3500.3) Ventilators Eaves Lining
TRUECORE® steel	Framing (NASH Standard Pt 1 or Pt 2) Battens (NASH Standard Pt 1 or Pt 2)

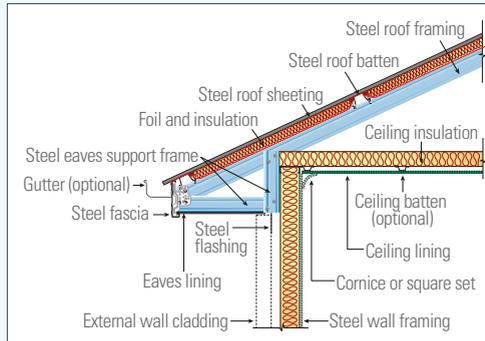


Figure 2.5: Roof system – with eave, BAL-FZ

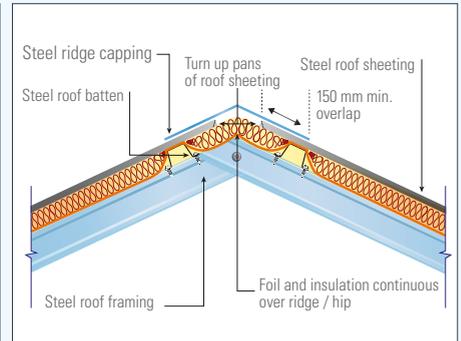


Figure 2.7: Roof system – ridge/hip details, BAL-FZ

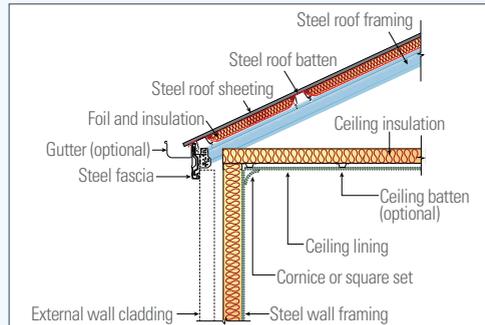


Figure 2.6: Roof system – without eave, BAL-FZ

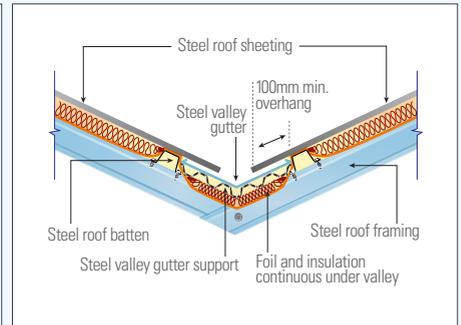


Figure 2.8: Roof system – valley details, BAL-FZ

Wall System	
Material	Application
COLORBOND® steel ZINCALUME® steel	Cladding (Conforming to AS 1562.1) Flashing (Conforming to AS 1562.1) Downpipes
TRUECORE® steel	Framing (NASH Standard Pt 1 or Pt 2) Battens (NASH Standard Pt 1 or Pt 2)

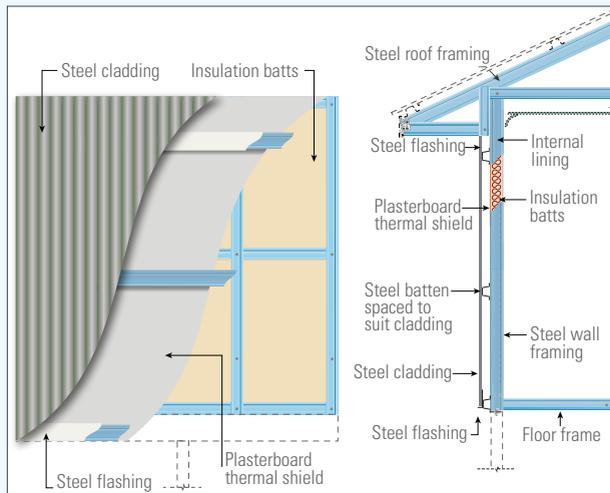


Figure 3.2(a): Wall system with eave, BAL-FZ

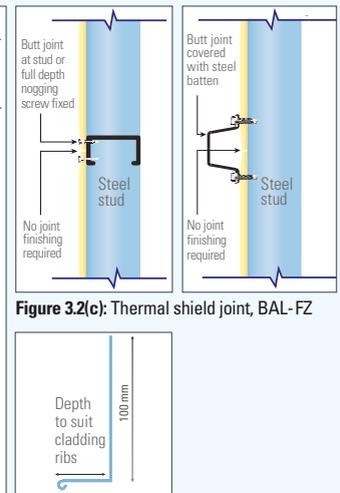


Figure 3.2(c): Thermal shield joint, BAL-FZ

Figure 3.3: Steel skirt flashing

Floor System	
Material	Application
GALVASPAN® steel	Steel Bearer (NASH Standard Pt 1 or Pt 2)
ZINC HI-TEN® steel	Floor Joist (NASH Standard Pt 1 or Pt 2)
TRUECORE® steel	Steel Post (NASH Standard Pt 1 or Pt 2)
Post-galvanised steel	Steel Post (NASH Standard Pt 1 or Pt 2)

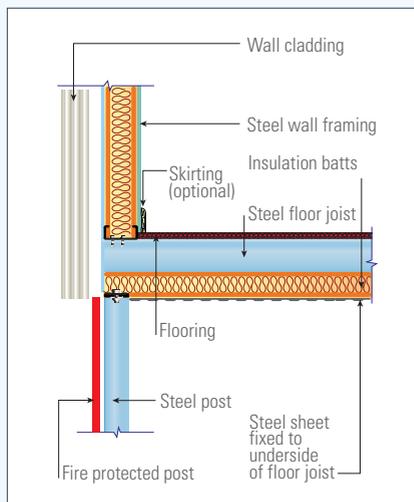


Figure 4.2: Suspended steel floor system, unenclosed, BAL-FZ

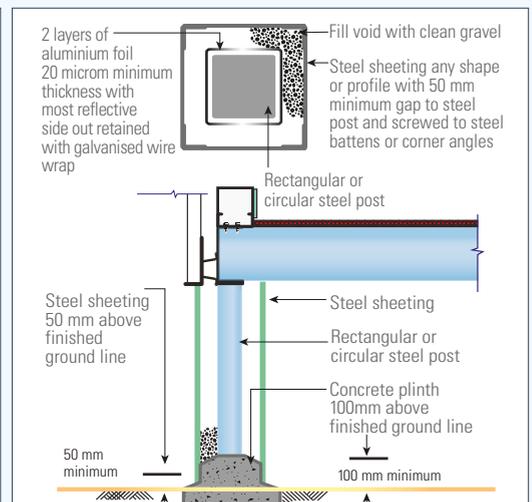


Figure 4.3(a): Reflective foil with steel shield thermal barrier

NASH Bushfire Standard Design Notes

Non-combustible construction

The NASH Bushfire Standard is based on non-combustible construction to resist bushfire attack. With minor exceptions, materials used on the building envelope must be non-combustible or deemed by the National Construction Code (NCC) to be a material which is suitable for use where non-combustible materials are required. Ancillary items such as gates, fences, trellis and screening within 900 mm of the building must be non-combustible.

Ember paths

Paths from the outside to any internal room or garage must be sealed or screened to prevent ember entry.

Note: Internal lining with material such as plasterboard or fibre cement meets the requirement.

Where screened, the screening material must be non-combustible mesh of maximum aperture 2 mm. Gaps backed by close fitting non-combustible insulation are considered sealed.

Bulk insulation

Bulk insulation specified in the Standard or used for thermal insulation must be non-combustible glass wool or mineral wool conforming to AS/NZS 4859.1. Roof and wall membranes must have a Flammability Index not greater than 5.

Note: Where insulation is specified in the Standard, its primary purpose is to protect building elements from the effects of bushfire attack. Energy efficiency measures may require higher levels of insulation than specified in the Standard.

Adjacent construction

The Standard has requirements for construction of adjacent buildings such as garages and sheds to prevent these structures presenting a secondary risk to the main building.

Other non-combustible materials may be combined, in certain situations, with steel products to conform to the Standard – refer to NASH Bushfire Standard for specific details.



More information
See the NASH Bushfire Standard
for full requirements



nash.asn.au
To purchase a copy of the
NASH Bushfire Standard



steel.com.au
For materials, colour and design
and specification tools

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