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6.8 WATER AND GAS SUPPLY PIPES

Above-ground, exposed water supply pipes shall be metal.

External gas pipes and fittings above ground shall be of steel or copper construction having a minimum wall thickness in accordance with gas regulations or 0.9 mm whichever is the greater. The metal pipe shall extend a minimum of 400 mm within the building and 100 mm below ground.

NOTE: Refer to State and Territory gas regulations, AS/NZS 5601.1 and AS/NZS 4645.1.

C6.8 *Concern is raised for the protection of bottled gas installations. Location, shielding and venting of the gas bottles needs to be considered.*

SECTION 7 CONSTRUCTION REQUIREMENTS FOR BAL—29

7.1 GENERAL

A building assessed in Section 2 as being BAL—29 shall conform with Section 3 and Clauses 7.2 to 7.8.

Any element of construction or system that satisfies the test criteria of AS 1530.8.1 may be used in lieu of the applicable requirements contained in Clauses 7.2 to 7.8 (see Clause 3.8).

NOTE: BAL—29 is primarily concerned with protection from ember attack and radiant heat greater than 19 kW/m^2 up to and including 29 kW/m^2.

7.2 SUB-FLOOR SUPPORTS

This Standard does not provide construction requirements for subfloor supports where the subfloor space is enclosed with—

(a) a wall that conforms with Clause 7.4, except that sarking is not required where specified in Clause 7.4.1(c); or

(b) a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium; or

(c) a combination of Items (a) and (b).

Where the subfloor space is unenclosed, the support posts, columns, stumps, piers and poles shall be—

(i) of non-combustible material; or

(ii) of bushfire-resisting timber (see Appendix F); or

(iii) a combination of Items (i) and (ii).

NOTE: This requirement applies to the subject building only and not to verandas, decks, steps, ramps and landings (see Clause 7.7).

C7.2 *Combustible materials stored in the subfloor space may be ignited by embers and impact the building.*

7.3 FLOORS

7.3.1 General

This Standard does not provide construction requirements for concrete slabs on the ground.

7.3.2 Elevated floors

7.3.2.1 *Enclosed subfloor space*

This Standard does not provide construction requirements for elevated floors, including bearers, joists and flooring, where the subfloor space is enclosed with—

(a) a wall that conforms with Clause 7.4; except that sarking is not required where specified in Clause 7.4.1(c); or

(b) a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium; or

(c) a combination of Items (a) and (b).

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7.3.2.2 *Unenclosed subfloor space*

Where the subfloor space is unenclosed, the bearers, joists and flooring, less than 400 mm above finished ground level, shall be one of the following:

(a) Materials that conform with the following:

(i) Bearers and joints shall be—

(A) non-combustible; or

(B) bushfire-resisting timber (see Appendix F); or

(C) a combination of Items (A) and (B).

(ii) Flooring shall be—

(A) non-combustible; or

(B) bushfire-resisting timber (see Appendix F); or

(C) timber (other than bushfire- resisting timber), particleboard or plywood flooring where the underside is lined with sarking-type material or mineral wool insulation; or

(D) a combination of any of Items (A), (B) or (C).

or

(b) A system conforming with AS 1530.8.1.

This Standard does not provide construction requirements for elements of elevated floors, including bearers, joists and flooring, if the underside of the element is 400 mm or more above finished ground level.

7.4 WALLS

7.4.1 General

The exposed components of external walls shall be as follows:

(a) Non-combustible material including the following provided the minimum thickness is 90 mm:

(i) Full masonry or masonry veneer walls with an outer leaf of clay, concrete, calcium silicate or natural stone.

(ii) Precast or in situ walls of concrete or aerated concrete.

(iii) Earth wall including mud brick.

or

(b) Timber logs of a species with a density of 680 kg/m^3 or greater at a 12% moisture content; of a minimum nominal overall thickness of 90 mm and a minimum thickness of 70 m (see Clause 3.11); and gauge planed.

or

(c) Cladding that is fixed externally to a timber-framed or a steel-framed wall that is sarked on the outside of the frame, and is—

(i) fibre-cement a minimum of 6 mm in thickness; or

(ii) steel sheet; or

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(iii) bushfire-resisting timber (see Appendix F); or

(iv) a combination of any of Items (i), (ii) or (iii).

or

(d) A combination of any of Items (a), (b) or (c).

7.4.2 Joints

All joints in the external surface material of walls shall be covered, sealed, overlapped, backed or butt-jointed.

7.4.3 Vents and weepholes

Except for exclusions provided in Clause 3.6, vents and weepholes in external walls shall be screened with a mesh made of corrosion-resistant steel, bronze or aluminium.

7.5 EXTERNAL GLAZED ELEMENTS, ASSEMBLIES AND DOORS

7.5.1 Bushfire shutters

Where fitted, bushfire shutters shall conform with Clause 3.7 and be made from—

(a) non-combustible material; or

(b) bushfire-resisting timber (see Appendix F); or

(c) a combination of Items (a) and (b).

7.5.2 Screens for windows and doors

Where fitted, screens for windows and doors shall have a mesh or perforated sheet made of corrosion-resistant steel, bronze or aluminium.

The frame supporting the mesh or perforated sheet shall be made from—

(a) metal; or

(b) bushfire-resisting timber (see Appendix F).

Screen assemblies shall be attached using metal fixings.

7.5.3 Windows and sidelights

Windows assemblies shall—

(a) be completely protected by a bushfire shutter that conforms with Clause 3.7 and Clause 7.5.1;

or

(b) conform with the following:

(i) *Frame material* Window frames and window joinery shall be made from—

(A) bushfire-resisting timber (see Appendix F); or

(B) metal; or

(C) metal-reinforced uPVC and the reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel.

(ii) *Hardware* Externally fitted hardware that supports the sash in its functions of opening and closing shall be metal.

C7.5.3 *Components other than metal may be used provided they are shielded by the metal components of the window/door frame.*

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Trims or other components may use material other than metal.

(iii) *Glazing* Glazing shall be toughened glass a minimum of 5 mm thickness or glass blocks with no restriction on glazing methods.

NOTE: Where double-glazed assemblies are used, the requirements apply to the external pane of the glazed assembly only.

(iv) *Seals and weather strips* There are no specific requirements for seals and weather strips at this BAL level.

(v) *Screens* Where glazing is less than 400 mm from the ground or less than 400 mm above decks, carport roofs, awnings and similar elements or fittings having an angle less than 18 degrees to the horizontal and extending more than 110 mm in width from the window frame (see Figure D3, Appendix D), the glazing shall be screened externally with a screen that conforms with Clause 3.6 and Clause 7.5.2.

(vi) *In all other cases except for Clause 7.5.3(b)(v)* The openable portions of windows shall be screened internally or externally with screens that conform with Clause 3.6 and Clause 7.5.2.

7.5.4 Doors—Side-hung external doors (including French doors, panel fold and bi-fold doors)

Side-hung external doors, including French doors, panel fold and bi-fold doors, shall—

(a) be completely protected by bushfire shutters that conform with Clause 3.7 and Clause 7.5.1;

or

(b) be completely protected externally by screens that conform with Clause 3.6 and Clause 7.5.2;

or

(c) conform with the following:

(i) *Door panel material* Materials shall be—

(A) non-combustible; or

(B) solid timber, laminated timber or reconstituted timber, having a minimum thickness of 35 mm for the first 400 mm above the threshold; or

(C) for fully framed glazed door panels, the framing shall be made from metal or from bushfire-resisting timber (see Appendix F) or uPVC.

(ii) *Door frame material* Door frame material shall be—

(A) bushfire resisting timber (see Appendix F); or

(B) metal; or

(C) metal-reinforced uPVC. The reinforcing members shall be made from aluminium, stainless steel, or corrosion resistant steel.

(iii) *Hardware* Externally fitted hardware that supports the panel in its functions of opening and closing shall be metal.

Trims or other components may be use materials other than metal.

(iv) *Glazing* Where doors incorporate glazing, the glazing shall be toughened glass a minimum of 6 mm in thickness.

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(v) *Seals and weather strips* Weather strips, draught excluders or draught seals shall be installed.

(vi) *Screens* There is no requirement to screen the openable part of the door at this BAL level.

(vii) Doors shall be tight-fitting to the door frame and to an abutting door, if applicable.

7.5.5 Doors—Sliding doors

Sliding doors shall—

(a) be completely protected by a bushfire shutter that conforms with Clause 3.7 and Clause 7.5.1;

or

(b) be completely protected externally by screens that conform with Clause 3.6 and Clause 7.5.2;

or

(c) conform with the following:

(i) *Frame material* The material for door frames, including fully framed glazed doors, shall be—

(A) bushfire-resisting timber (see Appendix F); or

(B) metal; or

(C) metal-reinforced uPVC and the reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel.

(ii) *Hardware* Externally fitted hardware that supports the panel in its functions of opening and closing shall be metal.

Trims or other components may use materials other than metal.

(iii) *Glazing* Where doors incorporate glazing, the glazing shall be toughened glass a minimum of 6 mm in thickness.

(iv) *Seals and weather strips* There are no specific requirements for seals and weather strips at this BAL level.

(v) *Screens* There is no requirement to screen the openable part of the sliding door at this BAL level.

(vi) *Sliding panels* Sliding panels shall be tight-fitting in the frames.

7.5.6 Doors—Vehicle access doors (garage doors)

The following applies to vehicle access doors:

(a) Vehicle access doors shall be made from—

(i) non-combustible material; or

(ii) bushfire-resisting timber (see Appendix F); or

(iii) fibre-cement sheet, a minimum of 6 mm thickness; or

(iv) a combination of any of Items (i), (ii) or (iii).

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(b) All vehicle access doors shall be protected with suitable weather strips, draught excluders, draught seals or brushes. Door assemblies fitted with guide tracks do not need edge gap protection.

NOTES:

1 Refer to AS/NZS 4505 for door types.

2 Gaps of door edges or building elements should be protected as per Section 3.

C7.5.6(b) *These guide tracks do not provide a direct passage for embers into the building.*

(c) Weather strips, draught excluders, draught seals or brushes to protect edge gaps or thresholds shall be manufactured from materials having a flammability index not exceeding five.

(d) Vehicle access doors with ventilation slots shall be protected in accordance with Clause 3.6.

C7.5.6 *Components other than metal may be used provided they are shielded by the metal components of the door assembly.*

7.6 ROOFS (INCLUDING PENETRATIONS, EAVES, FASCIAS AND GABLES, AND GUTTERS AND DOWNPIPES)

7.6.1 General

The following applies to all types of roofs and roofing systems:

(a) Roof tiles, roof sheets and roof-covering accessories shall be non-combustible.

(b) The roof/wall and roof/roof junction shall be sealed or otherwise protected in accordance with Clause 3.6.

(c) Roof ventilation openings, such as gable and roof vents, shall be fitted with ember guards made of non-combustible material or a mesh or perforated sheet conforming with Clause 3.6 and made of corrosion-resistant steel, bronze or aluminium.

(d) A pipe or conduit that penetrates the roof covering shall be non-combustible.

(e) Only evaporative coolers manufactured in accordance with AS/NZS 60335.2.98 shall be used. Evaporative coolers with an internal damper to prevent the entry of embers into the roof space need not be screened externally.

7.6.2 Tiled roofs

Tiled roofs shall be fully sarked. The sarking shall—

(a) be located on top of the roof framing, except that the roof battens may be fixed above the sarking;

(b) cover the entire roof area including ridges and hips; and

(c) extend into gutters and valleys.

7.6.3 Sheet roofs

Sheet roofs shall—

(a) be fully sarked in accordance with Clause 7.6.2, except that foil-backed insulation blankets may be installed over the battens; or

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(b) have any gaps sealed at the fascia or wall line, hips and ridges by—

(i) a mesh or perforated sheet that conforms with Clause 3.6 and that is made of corrosion-resistant steel, bronze or aluminium; or

(ii) mineral wool; or

(iii) other non-combustible material; or

(iv) a combination of any of Items (i), (ii) or (iii).

C7.6.3 *Sarking is used as a secondary form of ember protection for the roof space to account for minor gaps that may develop in sheet roofing.*

7.6.4 Veranda, carport and awning roof

The following applies to veranda, carport and awning roofs:

(a) A veranda, carport or awning roof forming part of the main roof space [see Figure D1(a), Appendix D] shall meet all the requirements for the main roof, as specified in Clauses 7.6.1 to 7.6.6.

(b) A veranda, carport or awning roof separated from the main roof space by an external wall [see Figures D1(b) and D1(c), Appendix D] conforming with Clause 7.4 shall have a non-combustible roof covering and the complete support structure shall be—

(i) of non-combustible material; or

(ii) bushfire-resisting timber (see Appendix F); or

(iii) timber rafters lined on the underside with fibre-cement sheeting a minimum of 6 mm in thickness, or with material conforming with AS 1530.8.1; or

(iv) a combination of any of Items (i), (ii) or (iii).

7.6.5 Roof penetrations

The following applies to roof penetrations:

(a) Roof penetrations, including roof lights, roof ventilators, roof-mounted evaporative cooling units, aerials, vent pipes and supports for solar collectors or the like, shall be sealed. The material used to seal the penetration shall be non-combustible.

(b) Openings in vented roof lights, roof ventilators or vent pipes shall conform with Clause 3.6 and be made of corrosion-resistant steel, bronze or aluminium.

This requirement does not apply to a room sealed gas appliance.

NOTE: A gas appliance designed such that air for combustion does not enter from, or combustion products enter into, the room in which the appliance is located.

In the case of gas appliance flues, ember guards shall not be fitted.

NOTE: AS/NZS 5601 contains requirements for gas appliance flue systems and cowls. Advice can be obtained from manufacturers and State and Territory gas technical regulators.

(c) All overhead glazing shall be Grade A safety glass conforming with AS 1288.

(d) Glazed elements in roof lights and skylights may be of polymer provided a Grade A safety glass diffuser, conforming with AS 1288, is installed under the glazing. Where glazing is an insulating glazing unit (IGU), Grade A toughened safety glass of minimum 4 mm thickness shall be used in the outer pane of the IGU.

(e) Flashing elements of tubular skylights shall be non-combustible. However, they may be of an alternate material, provided the integrity of the roof covering is maintained by an under-flashing made of non-combustible material.

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(f) Evaporative cooling units shall be fitted with non-combustible butterfly closers as close as practicable to the roof level, or the unit shall be fitted with non-combustible covers with a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.

A1 (g) External single plane glazed elements of roof lights and skylights, where the pitch of the glazed element is 18 degrees or less to the horizontal, shall be protected with ember guards made from a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.

(h) Eaves lighting shall be adequately sealed and not compromise the performance of the element.

7.6.6 Eaves linings, fascias and gables

The following applies to eaves linings, fascias and gables:

(a) Gables shall conform with Clause 7.4.

(b) Fascias and bargeboards shall—

(i) where timber is used, be made from bushfire-resisting timber (see Appendix F); or

(ii) where made from metal, be fixed at 450 mm centres; or

(iii) be a combination of Items (i) and (ii).

(c) Eave linings shall be—

(i) fibre-cement sheet, a minimum 4.5 mm in thickness; or

(ii) bushfire-resisting timber (see Appendix F); or

(iii) a combination of Items (i) and (ii).

(d) Eave penetrations shall be protected as for roof penetrations as specified in Clause 7.6.5.

(e) Eave ventilation openings shall be fitted with ember guards in accordance with Clause 3.6 and made of corrosion-resistant steel, bronze or aluminium.

(f) Joints in eaves linings, fascias and gables may be sealed with plastic joining strips or timber storm moulds.

7.6.7 Gutters and downpipes

This Standard does not provide requirements for downpipes.

If installed, gutter and valley leaf guards shall be non-combustible.

With the exception of box gutters, gutters shall be metal or uPVC.

Box gutters shall be non-combustible and flashed at the junction with the roof, with non-combustible materials.

7.7 VERANDAS, DECKS, STEPS AND LANDINGS

7.7.1 General

Decking may be spaced.

There is no requirement to enclose the subfloor spaces of verandas, decks, steps, ramps or landings.

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C7.7.1 *Spaced decking is nominally spaced at 3 mm (in accordance with standard industry practice); however, due to the nature of timber decking with seasonal changes in moisture content, that spacing may range from 0 mm–5 mm during service. It should be noted that recent research studies have shown that gaps at 5 mm spacing afford opportunity for embers to become lodged in between timbers, which may contribute to a fire. Larger gap spacing of 10 mm may preclude this from happening but such a spacing regime may not be practical for a timber deck.*

7.7.2 Enclosed subfloor spaces of verandas, decks, steps, ramps and landings

7.7.2.1 *Materials to enclose a subfloor space*

The subfloor spaces of verandas, decks, steps, ramps and landings are deemed to be 'enclosed' when—

(a) the material used to enclose the subfloor space conforms with Clause 7.4, except that sarking is not required where specified in Clause 7.4.1(c); and

(b) all openings are protected in accordance with Clause 3.6 and made of corrosion-resistant steel, bronze or aluminium.

7.7.2.2 *Supports*

This Standard does not provide construction requirements for support posts, columns, stumps, stringers, piers and poles.

7.7.2.3 *Framing*

This Standard does not provide construction requirements for the framing of verandas, pergolas, decks, ramps or landings (i.e. bearers and joists).

7.7.2.4 *Decking, stair treads and the trafficable surfaces of ramps and landings*

Decking, stair treads and the trafficable surfaces of ramps and landings shall be—

(a) of non-combustible material; or

(b) of bushfire-resisting timber (see Appendix F); or

(c) a combination of Items (a) and (b).

7.7.3 Unenclosed subfloor spaces of verandas, decks, steps, ramps and landings

7.7.3.1 *Supports*

Support posts, columns, stumps, stringers, piers and poles shall be—

(a) of non-combustible material; or

(b) of bushfire-resisting timber (see Appendix F); or

(c) a combination of Items (a) and (b).

7.7.3.2 *Framing*

Framing of verandas, decks, ramps or landings (i.e. bearers and joists) shall be—

(a) of non-combustible material; or

(b) of bushfire-resisting timber (see Appendix F); or

(c) a combination of Items (a) and (b).

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7.7.3.3 *Decking, stair treads and the trafficable surfaces of ramps and landings*

Decking, stair treads and the trafficable surfaces of ramps and landings shall be—

(a) of non-combustible material; or

(b) of bushfire-resisting timber (see Appendix F); or

(c) a combination of Items (a) and (b).

7.7.4 Balustrades, handrails or other barriers

Those parts of the handrails and balustrades less than 125 mm from any glazing or any combustible wall shall be—

(a) of non-combustible material; or

(b) bushfire-resisting timber (see Appendix F); or

(c) a combination of Items (a) and (b).

Those parts of the handrails and balustrades that are 125 mm or more from the building have no requirements.

7.7.5 Veranda posts

Shall be made from—

(a) non-combustible material; or

(b) bushfire-resisting timber (see Appendix F); or

(c) a combination of any of Items (a) or (b).

7.8 WATER AND GAS SUPPLY PIPES

Above-ground, exposed water supply pipes shall be metal.

External gas pipes and fittings above ground shall be of steel or copper construction having a minimum wall thickness in accordance with gas regulations or 0.9 mm whichever is the greater. The metal pipe shall extend a minimum of 400 mm within the building and 100 mm below ground.

NOTE: Refer to State and Territory gas regulations, AS/NZS 5601.1 and AS/NZS 4645.1.

C7.8 *Concern is raised for the protection of bottled gas installations. Location, shielding and venting of the gas bottles needs to be considered.*