



Reinforced Autoclaved Aerated Concrete

Part 3: Construction



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 - Building Designers Association of Australia
 - Cement Concrete & Aggregates Australia
 - Concrete Institute of Australia
 - Consult Australia
 - CSIRO
 - Engineers Australia
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Australian Standard[®]

Reinforced Autoclaved Aerated Concrete

Part 3: Construction

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PREFACE

This Standard was prepared by the Standards Australia Committee BD-106, Autoclaved Aerated Concrete (AAC).

The objective of this Standard is to provide construction details and specifications that conform with the requirements of AS 5146.1, *Reinforced autoclaved aerated concrete, Part 1: Structures* and AS 5146.2, *Reinforced autoclaved aerated concrete, Part 2: Design*.

Statements expressed in mandatory terms in Notes to Figures and Tables are deemed to be requirements of this Standard.

Standards Australia draws attention to the fact that it is claimed that methods to conform with requirements of this document may involve the use of various patents concerning wall construction given in Clauses 4.4.2, 5.4.1, 5.4.2 and 5.4.3 and Figures in Clauses 5.4.1 (B, C, D, E, I and J) and 5.4.2 (B, C, D, E, J and K).

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The term 'informative' is used in Standards to define the application of the appendix to which it applies. An 'informative' appendix is only for information and guidance.

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STANDARDS AUSTRALIA

Australian Standard Reinforced Autoclaved Aerated Concrete

Part 3: Construction

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard sets out requirements for construction using Reinforced Autoclaved Aerated Concrete (Reinforced AAC) members conforming with AS 5146.1 and AS 5146.2, including associated fixings, flashings and control joints. This Standard does not cover the construction of structures consisting of unreinforced autoclaved aerated concrete blocks.

The systems described in Part 3 of this Standard nominate specific thicknesses of AAC panel. The Standard does not provide for the systems in Part 3 to be modified so as to include panel thicknesses other than those nominated.

NOTES:

- 1 The term 'Reinforced AAC structures' refers to buildings that incorporate 'Reinforced AAC members', such as walls, floors, roofs, beams and the like made of Reinforced AAC. In this Standard, the term 'components' refers to items made from other materials, such as bolts, fixings, flashings and the like.
- 2 The forms of construction and detailing prescribed in Sections 2 and 3, together with Sections 4, 5, 6, 7 or 8 for the applications described therein, satisfy the requirements of AS 5146.1. However, they are not the only forms of construction or details capable of doing so. Other construction and details may be assessed separately for conformance with AS 5146.1.
- 3 This Standard should not be interpreted in a way that prevents the design and construction of structures that use alternative materials or methods of design or construction not specifically referred to herein. However, the design and construction of such structures are outside the scope of this Standard.
- 4 This Standard is based on the assumption that the design information is conveyed to the builders via comprehensive documentation such as drawings, details and specifications.

1.2 APPLICATION

For the applications stated herein, construction in accordance with this Standard satisfies the durability, fire resistance, serviceability, strength, stability and resistance to water penetration requirements of AS 5146.1 and AS 5146.2, and the Standards referenced therein.

Sections 4, 5, 6, 7 and 8 of this Standard provide details specific to durability, fire resistance, serviceability, strength, stability and resistance to water penetration requirements of Reinforced AAC members, and associated fixings, flashings and control joints, in all classes of building defined in the National Construction Code, Volumes One and Two, except Class 10b and 10c structures.

The wind resistance of external walls provided in Section 3 are applicable only to buildings that incorporate a lining capable of resisting wind pressure exerted from inside the building, where the cavity between the lining and the cladding is sealed and where windows and doors in the external walls incorporate seals.

1.3 NORMATIVE REFERENCES

The following are the normative documents referenced in this Standard:

NOTE: Documents referenced for informative purposes are listed in the Bibliography in AS 5146.1.

AS

- 1397 Continuous hot-dip metallic coated steel sheet and strip—Coatings of zinc and zinc alloyed with aluminium and magnesium
- 1530 Methods for fire tests on building materials, components and structures
- 1530.4 Part 4: Fire-resistance tests for elements of construction
- 1684 Residential timber-framed construction (series)—Timber framing span tables
- 2601 The demolition of structures
- 2870 Residential slabs and footings
- 3566 Self-drilling screws for the building and construction industries
- 3566.1 Part 1: General requirements and mechanical properties
- 3566.2 Part 2: Corrosion resistance requirements
- 3600 Concrete structures
- 3660 Termite management (series)
- 3959 Construction of buildings in bushfire-prone areas
- 4055 Wind loads for housing
- 4654 Waterproofing membranes for external above-ground use
- 4654.1 Part 1: Materials
- 4654.2 Part 2: Design and installation
- 5146 Reinforced autoclaved aerated concrete
- 5146.1 Part 1: Structures
- 5146.2 Part 2: Design

AS/NZS

- 1170 Structural design actions
- 1170.0 Part 0: General principles
- 1170.1 Part 1: Permanent, imposed and other actions
- 1170.2 Part 2: Wind actions
- 2699 Built in components for masonry construction
- 2699.2 Part 2: Connectors and accessories
- 2699.3 Part 3: Lintels and shelf angles (durability requirements)
- 2904 Damp-proof courses and flashings
- 4671 Steel reinforcing materials
- 4600 Cold-formed steel structures

Australian Building Codes Board

NCC National Construction Code

NASH

Residential and Low-rise Steel Framing, Part 2: Design Solutions

Steel-framed Construction in Bushfire Areas

1.4 DEFINITIONS

For the purposes of this Standard, the definitions below apply:

1.4.1 Autoclaved Aerated Concrete (AAC)

Material manufactured from binders such as cement and/or lime combined with fine siliceous-based material, cell generating material and water.

NOTE: The raw materials are mixed together and cast into moulds where the mix is allowed to rise and set into cakes. After this part of the process, the cake is cut into the required sizes of members and cured with high-pressure steam in autoclaves.

1.4.2 Built-in components for Reinforced AAC construction

Metal items used for connecting Reinforced AAC to its supporting structure including, but not limited to the following:

- (a) Anchors.
- (b) Connectors.
- (c) Shelf angles.
- (d) Lintel bars.
- (e) Bolts and fixings.

1.4.3 Characteristic value

Characteristic values are as follows:

- (a) For strength properties, the value of the material property that is exceeded by 95% of the material.
- (b) For coefficients of expansion and contraction, the value that is exceeded by 5% of the material.

1.4.4 Declared value

The value of a particular property of Reinforced AAC, determined in accordance with one of the methods in AS 5146.2.

1.4.5 Exposure environments

1.4.5.1 Industrial

Environments within 1 km of major industrial complexes producing significant acidic pollution.

NOTE: There are only a few such regions in Australia; e.g. around Port Pirie.

1.4.5.2 Marine

Areas from 100 m up to 1 km from a non-surf coast and from 1 km up to 10 km from breaking surf.

NOTE: The distances specified are from the mean high-water mark. Sheltered bays such as Port Phillip Bay and Sydney Harbour are considered to be non-surf coast.

1.4.5.3 Mild

Environments more than 50 km from the coast, and not classed as industrial, which are divided as follows:

- (a) *Mild-tropical* Environments more than 50 km from the coast and falling within the tropical climatic zone shown in Figure 1.4.5.
- (b) *Mild-temperate* Environments more than 50 km from the coast and falling within the temperate climatic zone shown in Figure 1.4.5.

- (c) *Mild-arid* Environments more than 50 km from the coast and falling within the arid climatic zone shown in Figure 1.4.5.

1.4.5.4 *Moderate*

Areas with light industrial pollution or very light marine influence, or both.

NOTE: Moderate areas include built-up areas within 50 km of the coast and more than 1 km from a non-surf coast and more than 10 km from breaking surf, including suburban areas of cities such as Melbourne, Adelaide and Hobart, many areas of Sydney, Perth and Brisbane, and many inland cities.

1.4.5.5 *Severe marine*

Areas up to 100 m from a non-surf coast and up to 1 km from breaking surf.

NOTE: The distances specified are from the mean high-water mark.

1.4.5.6 *Special*

Environments that are not defined in Clauses 1.4.5.1 to 1.4.5.5, which have durability requirements different to those set out in Table 2.5.

NOTE: Special environments are often more aggressive than severe marine environments, thus requiring greater protection of some or all of the components than would be afforded by conformance with the requirements of Table 2.5 for a severe marine environment.

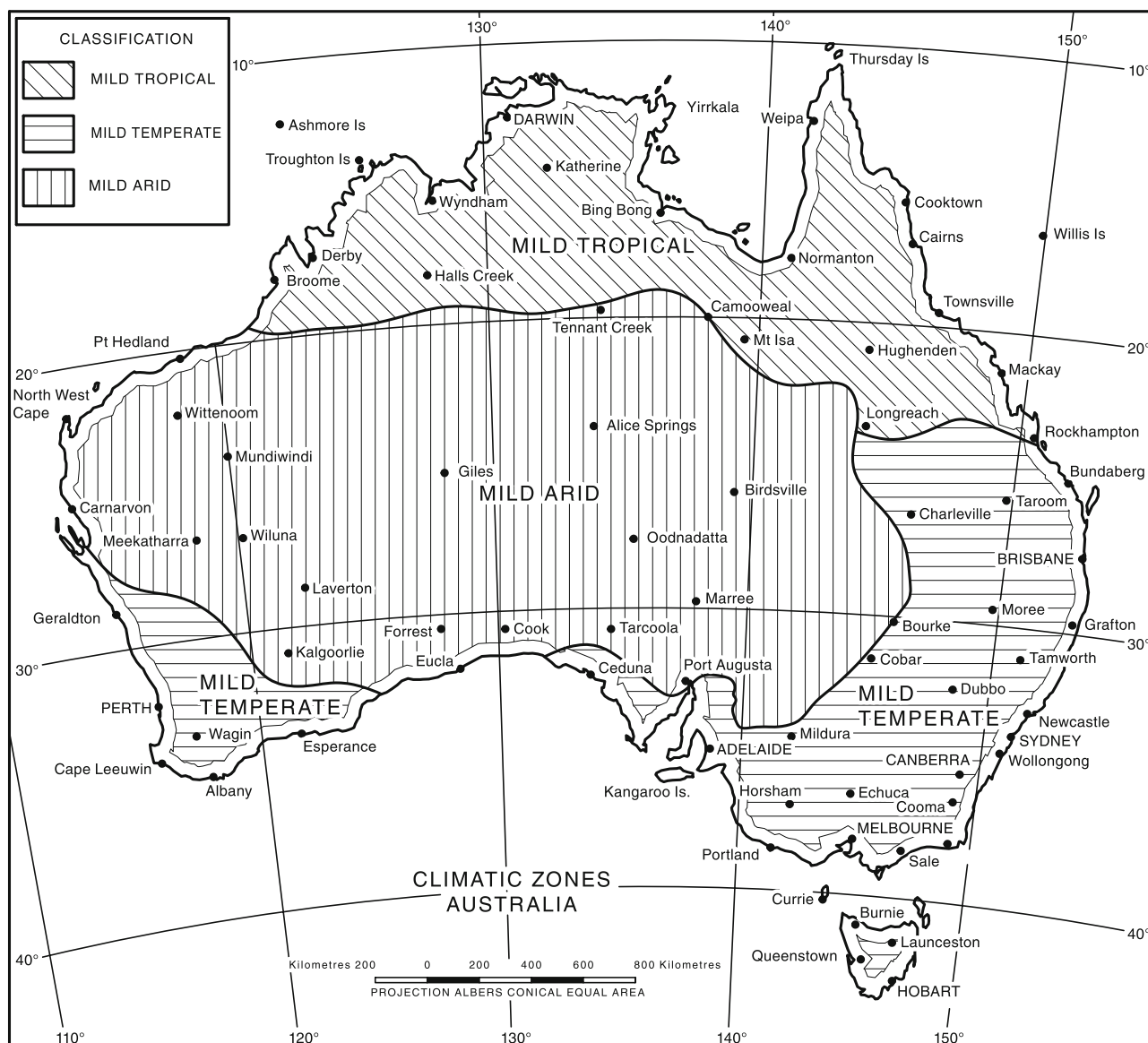


FIGURE 1.4.5 CLIMATIC ZONES FOR MILD EXPOSURE ENVIRONMENTS

1.4.6 Fire Resistance Level (FRL)

The fire-resistance level that a member can provide, in terms of structural adequacy, integrity and insulation, as defined in the NCC.

1.4.7 Reinforced AAC

Member consisting of AAC into which reinforcement has been cast.

1.4.8 Reinforcement

Steel mesh, cages and/or bars incorporated into AAC to form Reinforced AAC members.

SECTION 2 GENERAL REQUIREMENTS

2.1 GENERAL

Reinforced AAC members and structures shall be constructed such that the durability, fire resistance, serviceability, strength, stability and resistance to water penetration requirements of AS 5146.1 are met.

Construction and detailing in accordance with Sections 2 and 3, together with Sections 4, 5, 6, 7 or 8 for the applications described therein, satisfy the requirements of AS 5146.1.

2.2 EXCLUSIONS

The following are outside the scope of this Standard, and are therefore not covered by this specification:

- (a) The design process.
- (b) Site control and supervision.
- (c) Quality assurance.
- (d) Workplace health and safety.
- (e) The construction of other building elements (such as concrete and steel supporting structures and the like).

NOTE: Separate documentation should be used in the control of these matters (see Appendix A for additional information).

2.3 REINFORCED AAC MEMBERS AND STRUCTURES

Reinforced AAC members and structures shall conform with the requirements of AS 5146.1 and AS 5146.2.

2.3.1 Panel robustness and handling

Reinforced AAC members shall be assessed for robustness under the following conditions and need to maintain adequate strength when—

- (a) subject to a lateral pressure of 0.5 kPa;
- (b) when handled on flat under panel self-weight;
- (c) incorporate reinforcement conforming with Clause 2.13.1; and
- (d) be fixed to supports by connections that can transmit a load equivalent to 0.5 kPa (uniformly distributed over the exposed face of the wall) while the wall is simultaneously exposed to the fire.

2.4 CONNECTORS

Reinforced AAC members shall be fixed to structures by connectors or screws with structural capacity to transmit the factored loads applied by the Reinforced AAC members.

2.5 DURABILITY

Reinforced AAC members and structures shall resist deterioration within the exposure environment throughout its intended life, without the need for undue maintenance.

Where Reinforced AAC members or structures are used within 1 km of a non-surf coast or within 10 km of breaking surf, the ends or any cut surfaces of Reinforced AAC members shall be sealed with anti-corrosion sealant.

Reinforced AAC members and structures, and associated built-in components, conforming with AS 5146.2 and Table 2.5, satisfy the durability requirements.

Where Reinforced AAC members are located in an aggressive environment (and indicated in Table 2.5 as 'special protection required'), they shall be protected by a coating system that provides protection specific to the particular corrosive agents in that environment.

TABLE 2.5
DURABILITY REQUIREMENTS

Exposure environment	Interior or exterior	Soil contact	Minimum coating required on Reinforced AAC	Durability grade connectors and other built-in components (see Note 1)
Mild-arid	Interior	No contact	Nil	R1
	Exterior	No contact	Coating conforming with Clause 2.8.4	R1
		Non-aggressive soil	Coating conforming with Clause 2.8.4	R3
		Aggressive soil (see Note)	Membrane to Clause 2.8.5	R4
Mild-temperate	Interior	No contact	Nil	R1
	Exterior	No contact	Coating conforming with Clause 2.8.4	R1
		Non-aggressive soil	Coating conforming with Clause 2.8.4	R3
		Aggressive soil (see Note)	Membrane to Clause 2.8.5	R4
Mild-tropical	Interior	No contact	Nil	R1
	Exterior	No contact	Coating conforming with Clause 2.8.4	R2
		Non-aggressive soil	Coating conforming with Clause 2.8.4	R3
		Aggressive soil (see Note)	Membrane to Clause 2.8.5	R4
Moderate	Interior	No contact	Nil	R1
	Exterior	No contact	Coating conforming with Clause 2.8.4	R1
		Non-aggressive soil	Coating conforming with Clause 2.8.4	R3
		Aggressive soil (see Note)	Membrane to Clause 2.8.5	R4
Industrial	Interior	No contact	Nil	R1
	Exterior	No contact	Coating conforming with Clause 2.8.4	R3
		Non-aggressive soil	Coating conforming with Clause 2.8.4	R3
		Aggressive soil (see Note)	Membrane to Clause 2.8.5	R4
Marine (see Note 3)	Interior	No contact	Nil	R1
	Exterior	No contact	Coating conforming with Clause 2.8.4	R4
		Any soil (see Note)	Membrane to Clause 2.8.5	R4
Severe marine (see Note 4)	Interior	No contact	Nil	R1
	Exterior	No contact	Coating conforming with Clause 2.8.4	R4
		Any soil (see Note 2)	Membrane to Clause 2.8.5	R4
Special	Any	Any	Outside the scope of this Standard	R5

NOTES TO TABLE 2.5:

- 1 The means for demonstrating conformance with the required durability class of connectors and accessories, and lintels and shelf angles are given in AS/NZS 2699.2 and AS/NZS 2699.3 respectively. Connectors and other built-in components (excluding screws and battens) shall be classified as R1, R2, R3, R4 or R5 durability grade in accordance with AS/NZS 2699.2 and AS/NZS 2699.3. The corrosion resistance of screws is specified in Clause 2.13.3 of this Standard and the corrosion protection of battens is specified in Clause 2.13.4 of this Standard.
- 2 For the purposes of this Standard, the following combinations of soil and groundwater constitute 'aggressive soils':
 - (a) Acid sulphate soils with a sulphate concentration in the soil (expressed as SO_4) is in excess of 5000 ppm.
 - (b) Acid sulphate soils in the presence of groundwater where the sulphate concentration in the groundwater (expressed as SO_4) is in excess of 1000 ppm.
 - (c) Soils in marine or severe marine environments.
- 3 It is common to find more than one chemical in the service environment and the effect of these chemicals may be modified in the presence of others. For example, sulphate ions become aggressive at levels of 600 ppm to 1000 ppm when combined with magnesium or ammonium ions. In the presence of chloride ions, however, attack by sulphate ions generally exhibits little disruptive expansion with the exception of conditions of wetting and extreme drying where crystallization can cause surface fretting of concrete. Chemical concentrations relate only to the proportion of chemical present that is water soluble.
- 4 All external elements in contact with freshwater or subject to non-saline wetting and drying shall be treated as for a marine environment.
- 5 All external elements in contact with saline or contaminated water or subject to saline wetting and drying shall be treated as for a severe marine environment.
- 6 Inaccessible surfaces of separating walls (party walls), or the internal surface of coated external walls, which are enclosed, are considered to be 'internal' walls and thus do not require coating.
- 7 Inaccessible surfaces of external boundary walls are considered to be 'external' walls and thus are required to be coated.
- 8 Requirements for special environments, which are particularly aggressive, depend on the nature of the corrosive agents and cannot be defined in this Standard. Coatings shown by test, or known by experience, to be resistant to the particular corrosive agent shall be used.

2.6 FIRE RESISTANCE

2.6.1 General

The Fire Resistance Level (FRL) of Reinforced AAC members and structures shall be in accordance with AS 1530.4 or as specified in this Standard and AS 5146.2.

2.6.2 Fire resistance of non-loadbearing walls

A non-loadbearing Reinforced AAC wall that is required to provide fire resistance shall have a panel thickness not less than the greater of—

- (a) the value given in Tables 2.6.2(A) and 2.6.2(B) corresponding to the required FRL; and
- (b) one-fortieth of the clear distance between panel supports.

TABLE 2.6.2(A)
MINIMUM PANEL THICKNESS OF REINFORCED
AAC PANELS WITH A DRY DENSITY BETWEEN
400 kg/m³ AND 750 kg/m³ AS A COMPONENT
OF AN EXTERNAL WALL SYSTEM

Standard fire resistance	Minimum panel thickness mm
120/120/120	50
180/180/180	75

NOTE: 50 mm Reinforced AAC panels is limited to houses and low rise multi-residential.

TABLE 2.6.2(B)
MINIMUM PANEL THICKNESS OF REINFORCED
AAC PANELS WITH A DRY DENSITY BETWEEN
400 kg/m³ AND 750 kg/m³ AS A COMPONENT
OF AN INTERTENANCY WALL SYSTEM

Standard fire resistance	Minimum panel thickness mm
60/60/60	50
90/90/90	75
120/120/120	75
180/180/180	100
240/240/240	150

2.7 BUSHFIRE RESISTANCE

2.7.1 General

When constructed in a bushfire-prone area, Reinforced AAC members and structures shall have the bushfire resistance necessary to withstand the relevant Bushfire Attack Level (BAL) specified in AS 3959.

2.7.2 Bushfire resistance up to BAL FZ

Walls constructed of 50 mm–75 mm thick Reinforced AAC panels in accordance with the following, satisfy the requirements of AS 3959 for Bushfire Attack Level FZ (BAL FZ):

- (a) Support and fixing shall be in accordance with Section 3.
- (b) All joints in the external surface material of walls shall be covered, sealed, overlapped, backed or butt-jointed to prevent gaps greater than 3 mm.
 NOTE: Alternatively, sarking-type material may be applied over the frame prior to fixing any external cladding.
- (c) Vents and weepholes in external walls shall be screened with a mesh with a maximum aperture of 2 mm, made of corrosion-resistant steel or bronze.

NOTES:

- 1 AAC cladding above the floor level should be a closed system and would have no vents or weepholes. AAC cladding below the floor level may incorporate vents and weepholes if required.
- 2 Control of gaps between wall elements, other than for weatherproofing or vermin control, is not required when non-combustible wall construction is used.

2.8 PREVENTION OF MOISTURE PENETRATION

2.8.1 Damp-proof barriers

Reinforced AAC structures that are in contact with the ground shall incorporate damp-proof barriers to prevent the upward passage of moisture.

Damp-proof barriers and termite shields consisting of metal and metal-cored material shall not be used in locations with saline groundwater or locations subject to rising salt damp.

Damp-proof barriers shall conform with AS/NZS 2904 and the following:

- (a) Embossed black polyethylene film of high impact resistance and low slip, with a nominal thickness of 0.5 mm prior to embossing, and meeting the requirements of AS/NZS 2904.
- (b) Polyethylene-coated metal damp-proof barriers with an aluminium core not less than 0.1 mm thick, coated both sides with bitumen adhesive enclosed in polyethylene film not less than 0.1 mm thick on each face, and a nominal total thickness of not less than 0.5 mm prior to embossing.
- (c) Bitumen-impregnated materials, of not less than 2.5 mm thick, that meet the requirements of AS/NZS 2904, when used in walls that are not higher than 7.8 m above the level of the damp-proof barriers.
- (d) Termite shields (with no penetrations) continuous throughout the wall or pier.

2.8.2 Flashings

Reinforced AAC structures exposed to the weather shall incorporate flashings in locations where it is necessary to provide a barrier to prevent moisture from entering into the interior of a building from the exterior, as follows:

- (a) Metal and metal-cored flashings shall not be used in locations that expose them to saline ground water or rising salt damp.
- (b) Metal flashings shall be compatible with the materials with which they are in contact, and shall not give rise to electrolytic action. If there is potential for electrolytic action to occur, flashings shall be isolated by inner materials.
- (c) Flashings intended to hold their shape shall be manufactured from rigid material (e.g. metal cored material).

Subject to the limitations above, flashings shall conform with AS/NZS 2904 and the following:

- (i) Flashing in concealed locations (e.g. cavity flashings) shall be one of the following:
 - (A) Uncoated annealed lead having a mass not less than 10 kg/m², in lengths not exceeding 1.5 m, except that it shall not be used on any roof that is used to catch potable water.
 - (B) Uncoated copper having a mass not less than 2.8 kg/m² and having a thickness of 0.3 mm to 0.5 mm.
 - (C) Bitumen-coated metal (normally aluminium) with a total coated thickness of 0.6 mm to 1.0 mm.
 - (D) Zinc-coated steel with a thickness not less than 0.6 mm.
 - (E) Embossed/quilted polyethylene sheet with an average thickness not less than 0.5 mm.

- (ii) Flashings in exposed locations (e.g. flashings from the roof to wall) shall be one of the following:
- (A) Uncoated annealed lead having a mass not less than 20 kg/m² in lengths not exceeding 1.5 m, except that it shall not be used on any roof that is used to catch potable water.
 - (B) Uncoated copper having a mass not less than 2.8 kg/m² and a thickness of 0.3 mm to 0.5 mm.
 - (C) Bitumen-coated metal (normally aluminium) with a total coated thickness of 0.6 mm to 1.0 mm.
 - (D) Zinc-coated steel not less than 0.6 mm thick.

2.8.3 Installation of damp-proof barriers and flashings

A surface upon which a sheet of damp-proof barrier or flashing is to be laid shall be as smooth as necessary to prevent puncturing and to prevent keying of supported Reinforced AAC members if they are required to be able to slip on the surface.

Where joints in damp-proof barriers or flashings cannot be avoided, the material shall be lapped or sealed against moisture penetration. The length of lapping shall be not less than 150 mm.

Damp-proof barriers and flashings shall not be breached or punctured during construction. They may be pierced and sealed if steel starter bars are required to pass through.

Damp-proof barriers shall be built-in to project from both faces of the wall. On completion of the construction, the projections shall be either cut off flush with the external face of the finished wall or turned down.

Flashings, including over-flashings, shall be built-in with projections that are of a size and orientation to direct the moisture from the Reinforced AAC in the required manner and fixed to the wall frames at not less than 600 mm spacing.

Over-flashings shall overlap under-flashings by at least 50 mm.

Any render finish subsequently applied to the surface shall not be allowed to bridge a damp-proof barrier or make ineffective any other moisture protection measures.

2.8.4 External coatings

When used to provide weatherproofing in accordance with the NCC requirements or durability in accordance with Table 2.5, external coating systems shall—

- (a) be water-resistant;
- (b) be vapour-permeable;
- (c) be capable of bridging up to a 1 mm crack in the substrate;
- (d) consist of a base levelling coat, and texture and finish coats; and
- (e) when the panel thickness is less than 75 mm, contain an embedded fibreglass mesh reinforcing coat with a maximum aperture of 10 mm by 10 mm and a minimum weight of 145 g per m².

The following coating system conforms with Table 2.5, except in exposure environments where 'special protection' is required:

- (i) *Surface preparation* Clean, patch and remove any dags. Remove all surface contaminants such as oil, grease, dust (including salt residue in coastal areas) by hosing down with fresh potable water before application of the coating system. AAC substrate shall be allowed to reach equilibrium moisture content prior to application of the coating.

- (ii) *Base levelling coat* Temper dry the AAC substrate with a light spray to reduce excessive suction. Apply the base-levelling coat with a hawk and stainless steel trowel evenly over the surface to a thickness not less than 2 mm and up to 6 mm to level irregularities. Render shall not cover control joints. Follow up with a poly float to level out the product. Dry for at least 6 h to 8 h before application of the first coat.

NOTE: The base levelling coat may be omitted in circumstances when aesthetic considerations do not demand a smooth surface.

- (iii) *First (texture) coat* Apply with either a roller or trowel over the surface ensuring a wet edge is maintained over the application area. Protect from rain in first 24 h.
- (iv) *Second (finish) coat* Apply with a 12 mm nap roller over the surface ensuring a wet edge is maintained over the application area. Protect from rain in first 24 h. Ensure adequate batch tint lots to achieve coverage over single elevations to ensure colour consistency.

NOTE: The inaccessible surfaces of separating walls (party walls), which are enclosed, are considered to be 'internal' walls and thus do not require coating.

2.8.5 External membranes

When used to provide weatherproofing in accordance with the NCC requirements or durability in accordance with Table 2.5, external membrane systems shall—

- (a) be water-proof;
- (b) be capable of bridging up to a 1 mm crack in the substrate; and
- (c) consist of a base levelling coat and membrane.

The following membrane system conforms with Table 2.5, except in exposure environments where 'special protection' is required:

- (i) *Surface preparation* Clean, patch and remove any dags. Remove all surface contaminants such as oil, grease, dust (including salt residue in coastal areas) by hosing down with fresh potable water before application of the membrane system. AAC substrate shall be allowed to reach equilibrium moisture content prior to application of the membrane.
- (ii) *Base levelling coat* Temper dry the AAC substrate with a light spray to reduce excessive suction. Apply the base-levelling coat with a hawk and stainless steel trowel evenly over the surface to a thickness not less than 2 mm and up to 6 mm to level irregularities. Render shall not cover control joints. Follow up with a poly float to level out the product. Dry for at least 6 h to 8 h before application of the first coat.
- (iii) External membranes shall conform with AS 4654.1 and be installed in accordance with AS 4654.2.

2.9 CONTROL JOINTS AND ARTICULATION JOINTS

2.9.1 Vertical control joints

2.9.1.1 Location

Vertical control joints or articulation joints shall be built into a wall at the following locations:

- (a) Centres not exceeding 6.0 m.
- (b) For external and inter-tenancy walls of houses and low-rise multi-residential buildings, at centres not more than the values given in Table 2.9.1.
- (c) At the position where a wall changes height by more than 20%.
- (d) At a change in thickness of a wall.

- (e) At control joints or construction joints in supporting concrete slabs.
- (f) At the junctions of walls constructed of different materials.
- (g) At corners, as measured from the inside edge, as follows:
 - (i) At the corner of itself.
 - (ii) At a maximum of 1.2 m one side of a corner.

or

 - (iii) At a maximum of 2.4 m on each side of a corner.

2.9.1.2 Requirements

Vertical control joints and articulation joints shall conform with the following:

- (a) Control joints and articulation joints shall be a minimum of 10 mm wide and shall consist of an expanded polystyrene tube or bead backing rod and a polyurethane multipurpose external grade material gunned into the joint to form a 10 mm wide × 5 mm deep flexible seal. Control joints and articulation joints shall incorporate de-bonding tape. For walls requiring resistance against fire or bushfire, a fire rated sealant suitable for the degree of fire resistance shall be used.
- (b) Where an articulation joint is adjacent to a door or window frame, there shall be provision to ensure the movement does not disrupt the function of the door or window.
- (c) Articulation joints and control joints shall be clean and free from any hard or incompressible material, dags, mortar or other obstructions, for the full width and depth of the joint before joint-filling material is inserted.
- (d) Any material used to fill joints shall be of a type that will not inhibit the performance of the joints during the life of the structure.
- (e) Joints shall be vertical and not toothed.
- (f) Joints shall extend to the full height of the Reinforced AAC.

Joints may be omitted below the damp-proof barriers, provided there is not more than 600 mm of Reinforced AAC below the damp-proof barriers at the position of the joint.

TABLE 2.9.1
SPACING OF ARTICULATION JOINTS
FOR EXTERNAL AND INTER-TENANCY WALLS
IN HOUSES AND LOW-RISE MULTI-RESIDENTIAL
BUILDINGS

Site class	Joint spacing, m
A, S	6.0
M, M-D	5.5
H1, H1-D	5.0
H2, H2-D	4.5

NOTE: Site class as defined in AS 2870. For further information and guidance on site classification, refer to AS 2870.

2.9.2 Horizontal control joints

2.9.2.1 Location

Horizontal control joints shall be built into a wall at the following locations:

- (a) At the position where the Reinforced AAC members continue vertically past a suspended floor, except for the building system contained in Clause 5.1(a)(ii).
- (b) At the position where the ends of two or more adjacent panels are aligned.

2.9.2.2 Requirements

Horizontal control joints shall conform with the following:

- (a) Control joints shall be a minimum of 10 mm wide and shall consist of an expanded polystyrene tube or bead backing rod and a polyurethane multipurpose external grade material gunned into the joint to form a 10 mm wide $\times$ 5 mm deep flexible seal. Control joints shall incorporate de-bonding tape. For walls requiring resistance against fire or bushfire, a fire rated sealant suitable for the degree of fire resistance shall be used.
- (b) Where an articulation joint is adjacent to a door or window frame, there shall be provision to ensure the movement does not disrupt the function of the door or window.
- (c) Articulation joints and control joints shall be clean and free from any hard or incompressible material, dags, mortar or other obstructions, for the full width and depth of the joint before joint-filling material is inserted.
- (d) Any material used to fill joints shall be of a type that will not inhibit the performance of the joints during the life of the structure.
- (e) Joints shall be horizontal and shall follow any steps in suspended floor levels that are greater than the depth of the suspended floor zone.
- (f) Joints shall extend to the full length of the suspended floor.
- (g) For building systems contained in Clause 5.1(a)(i) and 5.1(a)(iii) articulation joints may also be:
 - (i) 13 mm thick mineral fibre strips with a density not less than 110 kg/m³. Strips shall be no less than the width of the panel thickness.
 - (ii) Formed by back-to-back steel C-sections fixed together with 10–16 $\times$ 16 mm wafer head screws at 600 mm maximum centres where the sections shall be no less than 0.75 mm BMT have a flange width no less than 32 mm and have a depth no less than the panel's thickness. One side of the steel section shall be covered with no less than 300 mm wide strip of 16 mm fire-rated plasterboard that is fixed to the AAC panel using 10 g $\times$ 50 mm bugle head laminating screws at no more than 400 mm centres.

2.9.3 Control joints in floors

2.9.3.1 Location

Control joints shall be built into floors up to 100 mm thick at centres not exceeding 8 m.

2.9.3.2 Requirements

Control joints shall conform with the following:

- (a) Control joints shall be a minimum of 10 mm wide and shall consist of an expanded polystyrene tube or bead backing rod and a polyurethane multipurpose external grade material gunned into the joint to form a 10 mm wide $\times$ 5 mm deep flexible seal. Control joints shall incorporate de-bonding tape. For walls requiring resistance

against fire or bushfire, a fire rated sealant shall be suitable for the degree of fire resistance required.

- (b) Any material used to fill joints shall be of a type that will not inhibit the performance of the joints during the life of the structure.
- (c) Joints shall extend to the full length of the floor.

2.9.4 Joints at arches

Articulation and control joints shall not be placed at or adjacent to arches.

Control joints in AAC arches shall be saw-cut to half the depth of the AAC and positioned at the centre of the arch.

2.9.5 Separation from slabs, beams or columns

Where Reinforced AAC members support concrete slabs, beams or columns, they shall—

- (a) resist compressive stress including any stress concentrations; and
- (b) incorporate a slip joint to allow for differential movement such as concrete shrinkage.

For applications where a moderate degree of relative movement is required, slip joints shall consist of one layer of rigid damp-proof barrier over a flat rigid surface.

NOTE: Such applications include Reinforced AAC walls with a flat smooth top surface supporting concrete slabs under a 6 m span.

For applications where a high degree of relative movement is required, slip joints shall consist of one of the following:

- (i) Two layers of rigid damp-proof barrier.
or
- (ii) Two layers of flexible rigid damp-proof barrier over a level surface of solid Reinforced AAC.
or
- (iii) Other proprietary systems that have demonstrated slip performance.

NOTE: Such applications include Reinforced AAC walls supporting concrete slabs which span further than 6 m.

2.10 INSTALLATION

2.10.1 Holes and chases

Holes and chases shall not be made in Reinforced AAC, except at positions specified in the design documents.

2.10.2 Cutting of members

Reinforced AAC members shall not be cut during construction, except at positions specified in the design documents.

2.10.3 Bolts and anchors

Bolts and anchors may be set or drilled into the Reinforced AAC members, provided their installation does not adversely affect performance.

2.10.4 Attachment to face of walls

Where timber floors or roofs are supported by a wall plate, or similar member attached to the face of a Reinforced AAC member, anchors shall be spaced at not more than 600 mm centres and shall be of a capacity necessary to transfer the vertical shear into the wall.

2.10.5 Shelf angles and lintels

Where shelf angles or lintels are installed, the bearing length specified in the design documents shall be provided at each end.

The gap between the vertical leg of steel shelf angles or steel angle lintels and supported Reinforced AAC members shall be packed with mortar or the glue used on AAC panels.

NOTE: This packing is to prevent rotation of the shelf angle or lintel under load.

2.10.6 Extending panels

Reinforced AAC walls may be extended up to 200 mm by gluing additional pieces to them using thin-bed adhesive, provided—

- (a) both parts are supported by timber or steel battens (or similar);
- (b) the overall length between control or articulation joints does not exceed the values specified in Clause 2.9;
- (c) the extension does not occur at the same position in adjacent panels where Clause 2.9.1.1(g) or 2.9.2.1(b) would apply; and
- (d) the extension does not occur at the same position in adjacent panels where Clause 2.9.2.1(b) would apply.

2.10.7 Provision for timber shrinkage and expansion

For Reinforced AAC veneer construction, a gap in accordance with Table 2.10.7 shall be left between the timber frame and the Reinforced AAC members to accommodate timber shrinkage.

TABLE 2.10.7
PROVISION FOR TIMBER SHRINKAGE OR EXPANSION

Location in timber framed buildings	Approximate total shrinkage mm			
	Single storey		Two storey	
	Slab to lower floor	Timber to lower floor	Slab to lower floor	Timber to lower floor
Fully seasoned timber frames (bearers, joists and wall frame)	0	0	0	0
Seasoned softwood wall frames, unseasoned softwood joists, bearers in line	0	10	10	20
Unseasoned softwood wall frames, seasoned joists and bearers	5	5	11	11
Unseasoned hardwood wall frames, seasoned joists and bearers	9	9	22	22
Unseasoned hardwood wall frames, unseasoned softwood joists and bearers in-line	9	19	32	42
Seasoned softwood wall frames, unseasoned hardwood joists and bearers	0	22	20	42

2.11 TOLERANCES

Reinforced AAC structures shall be built to the specified dimensions within the tolerances given in Table 2.11.

TABLE 2.11
TOLERANCES IN REINFORCED AAC CONSTRUCTION

Item	Tolerance
(a) Horizontal position of any Reinforced AAC element specified or shown in plan at its base or at each storey level	±15 mm
(b) Relative displacement between loadbearing walls in adjacent storeys intended to be in vertical alignment	±10 mm
(c) Maximum deviation from plumb within a storey from a vertical line through the base of the member	The lesser of ±10 mm per 3 m of height or 0.05 times the thickness of the leaf
(d) Maximum deviation from plumb in the total height of the building (from the base)	±25 mm
(e) Maximum horizontal or vertical deviation of a surface from a plane surface (bow)	±5 mm
(f) Maximum vertical gap between adjoining panels other than at control joints and articulation joints	5 mm

2.12 TEMPORARY BRACING AND PROTECTION

2.12.1 Temporary bracing

During construction, Reinforced AAC structures shall be braced or otherwise stabilized to resist wind and other lateral forces, in such a manner that the structural integrity of the member and structure is not impaired.

2.12.2 Physical damage

During construction, Reinforced AAC members and built-in elements shall be protected to avoid damage and surface contamination.

2.12.3 Weather protection

During construction, the top surface of Reinforced AAC members shall be covered to prevent the entry of rainwater.

2.13 MATERIALS AND FIXINGS IN PARTICULAR APPLICATIONS

2.13.1 Reinforced AAC members in walls

When used in wall applications as specified in Sections 4, 5 and 8 of this Standard, Reinforced AAC wall panels shall conform with the following:

- (a) Panel thickness shall be 50 mm, 75 mm or greater.
- (b) Panel width shall be not greater than 600 mm.
- (c) Longitudinal reinforcement shall be not less than four off 4 mm diameter, Class L steel wires in accordance with AS/NZS 4671, placed centrally in the panel.
- (d) Transverse reinforcement shall be not less than four off 3 mm diameter, Class L steel wires welded to the longitudinal reinforcement in accordance with AS/NZS 4671.
- (e) Declared density class, determined in accordance with AS 5146.2, shall be 400, 450, 500, 550, 600, 650, 700 or 750.
- (f) Declared compressive strength class, determined in accordance with AS 5146.2, shall be AAC 2.5 or greater.
- (g) Declared characteristic bending capacity, determined in accordance with AS 5146.2, shall be not less than Table 2.13.1.

TABLE 2.13.1
AAC MEMBERS IN WALLS
CHARACTERISTIC BENDING CAPACITY

Panel thickness	Bending capacity determined in accordance with AS 5146.2
50 mm	0.18 kN.m per metre width of wall
75 mm	0.50 kN.m per metre width of wall

2.13.2 Reinforced AAC members in floors

When used in the floor applications specified in Section 6 of this Standard, Reinforced AAC floor panels shall conform with the following:

- (a) Panel thickness shall be 50 mm, 75 mm or greater.
- (b) Panel width shall be not greater than 600 mm.
- (c) Longitudinal reinforcement shall be not less than four off 4 mm diameter, Class L steel wires in accordance with AS/NZS 4671, placed centrally in the panel.
- (d) Transverse reinforcement shall be not less than four off 3 mm diameter, Class L steel wires welded to the longitudinal reinforcement in accordance with AS/NZS 4671.
- (e) Declared density class, determined in accordance with AS 5146.2, shall be 500, 550, 600, 650, 700 or 750.
- (f) Declared compressive strength class, determined in accordance with AS 5146.2 shall, be AAC 3 or greater for general areas of dwellings. If required, hard floor surface materials, such as tiles, shall be installed on the top surface to meet the concentrated loads required by AS/NZS 1170.

NOTE: Refer to AS/NZS 1170.1 which provides concentrated load requirements for other types of floor activities/occupancies. Hard floor surface materials, such as tiles, may be necessary to meet the specified concentrated loads.

- (g) When the panel thickness is less than 75 mm, panels shall be overlaid with a structural flooring material that satisfies the loading requirements of AS 1170.1 laid perpendicular to the direction of the AAC panel.
- (h) Declared characteristic bending capacity, determined in accordance with AS 5146.2, shall be not less than Table 2.13.2.
- (i) The ends of all AAC panels shall have structural support.

TABLE 2.13.2
AAC MEMBERS IN FLOORS
CHARACTERISTIC BENDING CAPACITY

Panel thickness	Bending capacity determined in accordance with AS 5146.2
50 mm	0.21 kN.m per metre width of floor
75 mm	0.50 kN.m per metre width of floor

2.13.3 Screws

Screws shall conform with the following:

- (a) Screws used to fix battens, Reinforced AAC wall panels and Reinforced AAC floor panels shall conform with Table 2.13.3 for the applications shown therein and be in accordance with AS 3566.1 and AS 3566.2.
- (b) Screws for fixing external panels and the supporting battens (in conjunction with the specified coating) shall be—
 - (i) at least Class 3 for moderate and mild exposure environments;
 - (ii) at least Class 4 for severe marine further than 100 m from breaking surf, marine and industrial exposure environments; and
 - (iii) Class 4 stainless steel for severe marine exposure environments within 100 m of breaking surf.
- (c) Screws for internal applications and the supporting components shall be Class 3 for all exposure environments.

NOTE: Increasing the class of screws for internal applications to match the external application is recommended to reduce confusion during construction.

TABLE 2.13.3
SCREW TYPES

Application		Panel orientation	Screw requirements
External Walls	To fix light gauge steel batten [0.42 mm base metal thickness (BMT)] to timber frame	Vertical	2/12–11 × 35 mm Hex Head Type 17 screw (Class 3 or 4) where the batten provides structural support to the AAC panel.
		Horizontal	
	To fix light gauge steel top hat batten (0.42 mm BMT) to light gauge steel frame (0.55 mm BMT)	Vertical	2/10–16 × 16 mm Hex Head Self-drilling screw (Class 3 or 4).
		Horizontal	
	To fix 50 mm–75 mm Reinforced AAC wall panel to light gauge steel batten (0.42 mm BMT) from outside the building	Vertical	14–10 Bugle Head or Hex Head Type 17 screw (Class 3 or 4). Screw length shall be 15 mm longer than the panel thickness.
	To fix 50 mm–75 mm Reinforced AAC wall panel through light gauge steel batten (0.42 mm BMT) into stud (0.55 mm BMT) from outside the building	Horizontal	For timber studs 14–10 MP Bugle Head Type 17 screw (Class 3 or 4). Screw length shall be 60 mm longer than the panel thickness. For 0.55 BMT steel studs 14–10 Hex Head self-drilling screw (Class 3 or 4). Screw length shall be 40 mm longer than the panel thickness.
	To fix 50 mm–75 mm Reinforced AAC wall panel to light gauge steel top hat batten (0.42 mm BMT) from inside the building	Vertical	14–10 Hex Head Type 17 screw (Class 3 or 4). Screw length shall be 10 mm shorter than the panel thickness.
		Horizontal	Not suitable.
	To fix light gauge steel batten (0.42 mm BMT) to concrete	Vertical	Two mechanical fixings with an ultimate pull out and shear capacity of 0.5 kN.
		Horizontal	

(continued)

TABLE 2.13.3 (continued)

Application		Panel orientation	Screw requirements
Inter-tenancy Walls	To fix aluminium bracket to top and bottom plate	Vertical	For timber plates, 2/25 × 2.5 mm galvanized nails or 2/12–11 × 35 mm hex head type 17 screws (Class 3 or 4).
		Horizontal	For steel plates, 2/10–16 × 16 mm wafer head/hex head screws (Class 3 or 4).
	To fix aluminium bracket to AAC panel	Vertical	2/14–10 hex head screws (Class 3 or 4). Screw length shall be 10 mm shorter than the panel thickness.
		Horizontal	
	To fix aluminium bracket to steel universal column or C-channel	Horizontal	2/12–16 × 20 mm hex head self-drilling screw (Class 3 or 4).
Flooring	To fix Reinforced AAC floor panel to timber joists	—	14–10 MP Bugle Head Type 17 screw (Class 3 or 4). Screw length shall be 25 mm longer than the panel thickness.
	To fix Reinforced AAC floor panel to light gauge steel joists (1.2 mm BMT)	—	14–10 Hex Head Type 17 screw (Class 3 or 4). Screw length shall be 20 mm longer than the panel thickness.

NOTES:

- 1 The specified length of screws may be varied to suit the particular application.
- 2 Screw identification is as per the following example:

14–10 × 90 mm MP Bugle Head Type 17 screw (Class 3 or 4)

where

‘14’ is the gauge of the screw, where the gauge is defined as follows:

Gauge	Diameter mm
8	4.2
10	4.8
12	5.5
14	6.3
16	6.8
18	7.5
20	8.1

‘–10’ is the number of ‘threads per inch’ (i.e. number of threads per length of 25.4 mm).

‘× 90’ is the length of screw, measured from the point to the underside of the head where the head does not penetrate the substrate (hex head) and to the outside of the head where the head penetrates the substrate (bugle head).

‘MP Bugle Head’ is a description of the head.

‘Type 17’ is a description of the profile at the point.

‘Class 3 or 4’ is a description of the durability class.

2.13.4 Battens

For vertical panel orientation, battens shall be light gauge steel sections not less than 24 mm deep × 30 mm wide × 0.42 mm BMT Top Hat, Grade (G550) or equivalent, conforming with AS/NZS 4600. Cold-formed sections and accessories shall be manufactured from AM150, Z275 or AZ150 galvanized steel (Grade G550) conforming with AS 1397.

For horizontal panel orientation battens shall be light gauge steel sections not less than 24 mm deep $\times$ 40 mm wide $\times$ 0.42 mm BMT lipped C Channel, Grade (G550) or equivalent, conforming with AS/NZS 4600. Cold-formed sections and accessories shall be manufactured from AM150, Z275 or AZ150 galvanized steel (Grade G550) conforming with AS 1397.

The cavity width shall not be less than 20 mm except where sheet bracing is located within the cavity where the batten depth may be reduced to a minimum of 16 mm.

All steel shall be legibly and durably marked with the reference AS 1397, the base steel thickness and the designation of the steel base and coating.

2.13.5 Wall framing

Wall framing supporting AAC wall panels shall be in accordance AS 1684 for timber or NASH or AS/NZS 4600 for steel where the steel shall have a minimum thickness of 0.55 mm BMT.

2.13.6 Connectors and accessories

Connectors and accessories shall have corrosion resistance in accordance with AS/NZS 2699.2.

2.13.7 Lintels and shelf angles

Lintels and self angles shall have corrosion resistance in accordance with AS/NZS 2699.3.

2.13.8 Fixing Reinforced AAC wall panels and battens

Each external Reinforced AAC wall and parapet panel shall be fixed—

- (a) in accordance with Tables 3.3(A) to 3.3(I) by the specified number of screws conforming with Table 2.13.3;
- (b) such that—
 - (i) there are at least two screws per panel at centres not exceeding 400 mm; and
 - (ii) the distance to the panel edge is not less than the panel thickness or more than 150 mm.

Battens shall be fixed at centres not exceeding 600 mm by two screws as specified in Table 2.13.3.

2.13.9 Fixing Reinforced AAC floor panels

Reinforced AAC floor panels shall be fixed as follows:

- (a) All joists and other bearing surfaces shall be level and flat, providing continuous support for the Reinforced AAC floor panels.
- (b) The minimum end bearing length shall be the greater of 60 mm and the clear span/80.
- (c) The minimum edge bearing length shall be 50 mm.
- (d) Panels shall only be cut on-site as detailed on the design documents.
- (e) To every supporting joist using two screws in accordance with Table 2.13.3, together with adhesive placed between the panels and the joists, in accordance with Section 6.
- (f) Panels 150 mm or thicker shall be fixed by a ring anchor, together with adhesive placed between the panels and the joists, in accordance with Section 7 and the following:
 - (i) Ring anchor reinforcement shall be a minimum of N12 in accordance with AS/NZS 4671, unless specified otherwise.

- (ii) Where required, grout for the ring anchor system shall have a nominal composition of one part Portland cement: three parts sand: two parts 6 mm maximum coarse aggregate. The grout shall have a slump of 200 mm and a minimum characteristic compression strength (f'_{cg}) of 15 MPa at 28 days.
- (iii) Additives to reduce the grout shrinkage shall only be used in accordance with the manufacturer's instructions.
- (iv) Reinforcement shall be placed on chairs to ensure that it is not in contact with the panel when grout is placed and to ensure grout fully surrounds the reinforcement.
- (v) Before grouting, the notch shall be cleared of all loose material and reinforcement cleaned of all foreign material.
- (vi) Before grouting, the notch shall be moistened with water.
- (vii) Grout shall be rodded to ensure filling of notch and groove.
- (viii) Propping of panels may be required to accommodate minor misalignments until 24 h after ring anchor grout is poured.
- (ix) All propping shall be removed from floor panels before any walls are erected on the floor.
- (x) Traffic on floor panels shall be avoided for a period of 48 h after the ring anchor grout is poured.

2.13.10 Thin-bed adhesive joints

Thin bed adhesive shall be applied to the entire edge surface of all joints between Reinforced AAC panels, other than control or articulation joints. The joint shall be 2–3 mm wide.

The thin-bed adhesive shall—

- (a) have a characteristic tensile strength equal to or greater than the characteristic tensile strength (f_{ctk}) of the AAC; and
- (b) be C1E classification in accordance with AS ISO 13007.1.

SECTION 3 STRUCTURAL CAPACITIES OF REINFORCED AAC MEMBERS, BATTENS AND FIXINGS

3.1 SCOPE OF SECTION

This Section provides the structural capacities of Reinforced AAC walls and facades for use in houses, multi-residential and commercial buildings, detailed in accordance with Sections 4, 5, 6, 7 and 8.

NOTES:

- 1 The structural capacities stated herein for the Reinforced AAC members, battens and their fixings are determined in accordance with AS 5146.1 and AS 5146.2, and the Standards referenced therein.
- 2 The structural capacities stated herein, are for out-of-plane loads only.
- 3 In addition to the stated out-of-plane capacities, the Reinforced AAC members, battens and their fixings are capable of supporting their own self-weight and the weight of coatings and any other permanent fixtures. They are not designed to resist additional imposed gravity loads unless specifically stated.
- 4 The Reinforced AAC members, battens and their fixings are supported within buildings consisting of timber, steel or concrete structural supporting frames, slabs and footings, capable of resisting applicable horizontal and vertical loads.

3.2 RACKING RESISTANCE

All racking resistance shall be provided by the supporting structure in such a manner that ensures in-plane racking loads are not conveyed to the Reinforced AAC members.

3.3 LOAD CAPACITY OF REINFORCED AAC WALLS AND FACADES

Reinforced AAC wall panels shall be screw fixed to light-gauge steel battens that are fixed to vertical timber studs (refer to AS 1684) or steel studs (refer to NASH or AS/NZS 4600) with a minimum thickness of 0.55 BMT.

Panels within 1200 mm of each end of each external wall of a building (i.e. the two 600 mm wide panels closest to the corners) are subject to higher local wind pressures and suctions, and therefore require more battens and more screw fixing than other panels.

Tables 3.3(A), 3.3(B), 3.3(C), 3.3(D), 3.3(E), 3.3(F), 3.3(G), 3.3(H) and 3.3(I) provide requirements regarding resistance of the following system to out-of-plane pressures and suctions due to wind loading determined in accordance with AS/NZS 1170.0 and AS/NZS 1170.2 or AS 4055, as follows:

- (a) 50 mm, 75 mm and greater thick Reinforced AAC wall panels.
 - (b) Battens and cavity width in accordance with Clause 2.13.4.
 - (c) 24 mm deep × 30 mm wide × 0.42 mm BMT Top Hat (Grade G550) cold-formed light gauge steel horizontal battens conforming with AS/NZS 4600, manufactured from AM150, Z275 or AZ150 galvanized steel (Grade G550) conforming with AS 1397.
- or*
- (d) 24 mm deep × 40 mm wide × 0.42 mm BMT lipped C channel (Grade G550) cold-formed light gauge steel vertical battens conforming with AS/NZS 4600, manufactured from AM150, Z275 or AZ150 galvanized steel (Grade G550) conforming with AS 1397.

and

- (e) Fixed from the outside of the building through the Reinforced AAC panels into the light gauge battens behind in accordance with Table 2.13.3.

TABLE 3.3(A)
SPAN OF VERTICALLY ORIENTED PANELS SUPPORTED
AT BASE (SUCH AS SLAB EDGE OR SHELF ANGLE)

AS 4055 wind category	Maximum ultimate wind pressure, suction kPa		Stud spacing mm	Maximum span of panel, mm							
				Panel thickness, mm							
				50				75			
				Panel location				Panel location			
				Typical		Corner		Typical		Corner	
	Over 1200 mm from corners	Within 1200 mm of corners		Span	Cant.	Span	Cant.	Span	Cant.	Span	Cant.
N2	+0.67, −0.62	−1.25	600	1200	250	1200	250	1200	250	1200	250
N3	+1.05, 0.98	−1.95	600	1200	250	950	250	1200	250	1000	250
N3, C1	+1.05, 0.98	−1.95	450	1200	250	950	250	1200	250	1000	250
N4, C2	+1.56, −1.45	−2.90	450	1050	250	750	150	1200	250	900	150
N5, C3	+2.30, −2.14	−4.27	450	850	150	600	150	1200	250	600	150

NOTES:

- 1 All battens shall be spaced evenly, with end battens installed the lesser of 150 mm (typical) and the panel cantilever span from the ends of the Reinforced AAC panels.
- 2 If a Reinforced AAC panel or sill block is to be installed above or below window openings, additional top hat battens shall be used in these locations.
- 3 Local suctions within 1200 mm of the corners of a building necessitate additional battens.
- 4 The wind resistance of external walls is applicable only to buildings that incorporate a lining capable of resisting wind pressure exerted from inside the building, where the cavity between the lining and the cladding is sealed and where windows and doors in the external walls incorporated seals.

TABLE 3.3(B)
NUMBER OF SCREWS PER PANEL AT EACH BATTEN LOCATION
VERTICALLY ORIENTED PANELS SUPPORTED AT BASE
(SUCH AS SLAB EDGE OR SHELF ANGLE)

Wind category	Maximum ultimate wind pressure, suction kPa		Stud spacing mm	Number of screws per panel per batten fixed from outside the building			
				Panel thickness, mm			
	Over 1200 mm from corners	Within 1200 mm of corners		50		75	
				Batten location		Batten location	
				Typical	Corner	Typical	Corner
N2	+0.67, −0.62	−1.25	600	2	2	2	2
N3	+1.05, 0.98	−1.95	600	3	3	3	3
N3, C1	+1.05, 0.98	−1.95	450	3	3	3	3
N4, C2	+1.56, −1.45	−2.90	450	3	4	3	4
N5, C3	+2.30, −2.14	−4.27	450	3	4	3	4

Wind category	Maximum ultimate wind pressure, suction kPa		Stud spacing mm	Number of screws per panel per batten fixed from inside the building			
				Panel thickness, mm			
	Over 1200 mm from corners	Within 1200 mm of corners		50		75	
				Batten location		Batten location	
				Typical	Corner	Typical	Corner
N2	+0.67, −0.62	−1.25	600	3	6	2	2
N3	+1.05, −0.98	−1.95	600	5	7	3	3
N3, C1	+1.05, −0.98	−1.95	450	5	7	3	3
N4, C2	+1.56, −1.45	−2.90	450	Not suitable	Not suitable	3	4
N5, C3	+2.30, −2.14	−4.27	450	Not suitable	Not suitable	4	5

NOTES:

- 1 For fire-rated construction, a minimum of 3 screws per batten is required.
- 2 Type of screw used is the 14-10 Hex head Type 17 screw, fixed from inside the building, or 14-10 MP Bugle Head Batten screw, fixed from outside the building. Screw length as per Table 2.13.3.
- 3 Local suctions within 1200 mm of the corners of a building necessitate additional battens.
- 4 The wind resistance of external walls is applicable only to buildings that incorporate a lining capable of resisting wind pressure exerted from inside the building, where the cavity between the lining and the cladding is sealed and where windows and doors in the external walls incorporated seals.

TABLE 3.3(C)
SPAN OF VERTICALLY ORIENTED PANELS SUSPENDED AT GABLE ENDS

AS 4055 wind category	Maximum ultimate wind pressure, suction kPa		Stud spacing mm	Maximum span of panel, mm							
				Panel thickness, mm							
				50				75			
				Panel location				Panel location			
				Typical		Corner		Typical		Corner	
	Over 1200 mm from corners	Within 1200 mm of corners		Span	Cant.	Span	Cant.	Span	Cant.	Span	Cant.
N2	+0.67, −0.62	−1.25	600	800	150	750	150	800	150	750	150
N3	+1.05, −0.98	−1.95	600	800	150	600	150	800	150	600	150
N3, C1	+1.05, −0.98	−1.95	450	800	150	650	150	800	150	650	150
N4, C2	+1.56, −1.45	−2.90	450	800	150	450	100	800	150	450	100
N5, C3	+2.30, −2.14	−4.27	450	600	150	350	100	600	150	350	100

NOTES:

- 1 All battens shall be spaced evenly, with end battens installed the lesser of 150 mm (typical) and the panel cantilever span from the ends of the Reinforced AAC panels.
- 2 If a Reinforced AAC panel or sill block is to be installed above or below window openings, additional top hat battens shall be used in these locations.
- 3 Local suctions within 1200 mm of the corners of a building necessitate additional battens.
- 4 The wind resistance of external walls is applicable only to buildings that incorporate a lining capable of resisting wind pressure exerted from inside the building, where the cavity between the lining and the cladding is sealed and where windows and doors in the external walls incorporated seals.

TABLE 3.3(D)
NUMBER OF SCREWS PER PANEL AT EACH BATTEN LOCATION—
VERTICALLY ORIENTED PANELS SUSPENDED AT GABLE ENDS

Wind category	Maximum ultimate wind pressure, suction kPa		Stud spacing mm	Number of screws per panel per batten			
				Panel thickness, mm			
				50		75	
	Panel location			Panel location			
	Over 1200 mm from corners	Within 1200 mm of corners		Typical	Corner	Typical	Corner
N2	+0.67, −0.62	−1.25	600	2	3	2	3
N3	+1.05, 0.98	−1.95	600	3	4	3	4
N3, C1	+1.05, 0.98	−1.95	450	3	4	3	4
N4, C2	+1.56, −1.45	−2.90	450	4	4	4	4
N5, C3	+2.30, −2.14	−4.27	450	4	4	4	4

NOTES:

- 1 Battens shall be installed horizontally with panels to span vertically. Number of screw per panel per batten information is not suitable for soffits or any other areas where the panel is not vertical.
- 2 Type of screw used is the 14-10 MP Bugle Head Batten screw, fixed from outside the building. Screw length as per Table 2.13.3.
- 3 Local suctions within 1200 mm of the corners of a building necessitate additional battens.
- 4 The wind resistance of external walls is applicable only to buildings that incorporate a lining capable of resisting wind pressure exerted from inside the building, where the cavity between the lining and the cladding is sealed and where windows and doors in the external walls incorporated seals.

TABLE 3.3(E)

**SPAN OF VERTICALLY ORIENTED PANELS SUSPENDED FROM FRAMING
(SUCH AS SECOND AND THIRD STOREY CONSTRUCTIONS)**

AS 4055 wind category	Maximum ultimate wind pressure, suction kPa		Stud spacing mm	Maximum span of panel, mm							
				Panel thickness, mm							
	Over 1200 mm from corners	Within 1200 mm of corners		50				75			
				Panel locations				Panel location			
				Typical		Corner		Typical		Corner	
				Span	Cant.	Span	Cant.	Span	Cant.	Span	Cant.
N2	+0.67, −0.62	−1.25	600	1000	250	1000	250	1000	250	1000	250
N3	+1.05, 0.98	−1.95	600	1000	250	950	150	1000	250	1000	250
N3, C1	+1.05, 0.98	−1.95	450	1000	250	950	150	1000	250	1000	250
N4, C2	+1.56, −1.45	−2.90	450	1000	250	750	150	1000	250	750	150
N5, C3	+2.30, −2.14	−4.27	450	750	150	600	150	750	150	600	150

NOTES:

- 1 All battens shall be spaced evenly, with end battens installed the lesser of 150 mm (typical) and the panel cantilever span from the ends of the Reinforced AAC panels.
- 2 If a Reinforced AAC panel or sill block is to be installed above or below window openings, additional top hat battens shall be used in these locations.
- 3 Local suctions within 1200 mm of the corners of a building necessitate additional battens.
- 4 The wind resistance of external walls is applicable only to buildings that incorporate a lining capable of resisting wind pressure exerted from inside the building, where the cavity between the lining and the cladding is sealed and where windows and doors in the external walls incorporated seals.

TABLE 3.3(F)
NUMBER OF SCREWS PER PANEL AT EACH BATTEN LOCATION—
VERTICALLY ORIENTED PANELS SUSPENDED FROM FRAMING
(SUCH AS SECOND AND THIRD STOREY CONSTRUCTIONS)

Wind category	Maximum ultimate wind pressure, suction kPa		Stud spacing mm	Number of screws per panel per batten fixed from outside the building			
				Panel thickness, mm			
	Over 1200 mm from corners	Within 1200 mm of corners		50		75	
				Batten location		Batten location	
				Typical	Corner	Typical	Corner
N2	+0.67, −0.62	−1.25	600	2	3	2	3
N3	+1.05, −0.98	−1.95	600	3	4	3	4
N3, C1	+1.05, −0.98	−1.95	450	3	4	3	4
N4, C2	+1.56, −1.45	−2.90	450	4	4	4	4
N5, C3	+2.30, −2.14	−4.27	450	4	4	4	4
Wind category	Maximum ultimate wind pressure, suction kPa		Stud spacing mm	Number of screws per panel per batten fixed from inside the building			
				Panel thickness, mm			
	Over 1200 mm from corners	Within 1200 mm of corners		50		75	
				Batten location		Batten location	
				Typical	Corner	Typical	Corner
N2	+0.67, −0.62	−1.25	600	Not suitable	Not suitable	2	3
N3	+1.05, −0.98	−1.95	600	Not suitable	Not suitable	3	4
N3, C1	+1.05, −0.98	−1.95	450	Not suitable	Not suitable	3	4
N4, C2	+1.56, −1.45	−2.90	450	Not suitable	Not suitable	4	4
N5, C3	+2.30, −2.14	−4.27	450	Not suitable	Not suitable	Not suitable	Not suitable

NOTES:

- 1 For fire-rated construction, a minimum of 3 screws per panel per batten are required.
- 2 Type of screw used is the 14-10 Hex head Type 17 screw, fixed from inside the building, or 14-10 MP Bugle Head Batten screw, fixed from outside the building. Screw length as per Table 2.13.3.
- 3 Local suctions within 1200 mm of the corners of a building necessitate additional battens.
- 4 The wind resistance of external walls is applicable only to buildings that incorporate a lining capable of resisting wind pressure exerted from inside the building, where the cavity between the lining and the cladding is sealed and where windows and doors in the external walls incorporated seals.

TABLE 3.3(G)
NUMBER OF SCREWS PER PANEL AT EACH BATTEN LOCATION—
HORIZONTALLY ORIENTED PANELS SUPPORTED AT BASE
(SUCH AS SLAB EDGE OR SHELF ANGLE)

Wind category	Maximum ultimate wind pressure, suction kPa		Batten spacing mm	Number of screws per panel per batten			
				Panel thickness, mm			
	50			75			
	Panel location			Panel location			
	Typical	Corner		Typical	Corner		
N2	+0.67, −0.62	−1.25	900	2	2	2	2
N3, C1	+1.05, −0.98	−1.95	900	2	Not suitable	2	2
N4, C2	+1.56, −1.45	−2.90	900	2	Not suitable	2	3
N5, C3	+2.30, −2.14	−4.27	900	Not suitable	Not suitable	2	4
N2	+0.67, −0.62	−1.25	600	2	2	2	2
N3, C1	+1.05, −0.98	−1.95	600	2	2	2	2
N4, C2	+1.56, −1.45	−2.90	600	2	3	2	2
N5, C3	+2.30, −2.14	−4.27	600	Not suitable	Not suitable	2	3
N2	+0.67, −0.62	−1.25	450	2	2	2	2
N3, C1	+1.05, −0.98	−1.95	450	2	2	2	2
N4, C2	+1.56, −1.45	−2.90	450	2	2	2	2
N5, C3	+2.30, −2.14	−4.27	450	2	3	2	2

NOTES:

- 1 Battens shall be installed vertically onto studs with panels to span horizontally. Number of screw per panel per batten information is not suitable for soffits or any other areas where the panel is not vertical.
- 2 Type of screw used is the 14-10 MP Bugle Head Batten screw for timber studs or 14-10 Hex Head Self-drilling screw for steel studs, fixed from outside the building. Screw length as per Table 2.13.3.
- 3 Local suctions within 1200 mm of the corners of a building necessitate additional battens.
- 4 The wind resistance of external walls is applicable only to buildings that incorporate a lining capable of resisting wind pressure exerted from inside the building, where the cavity between the lining and the cladding is sealed and where windows and doors in the external walls incorporated seals.

TABLE 3.3(H)
NUMBER OF SCREWS PER PANEL AT EACH BATTEN LOCATION—
HORIZONTALLY ORIENTED PANELS SUSPENDED AT GABLE ENDS

Wind category	Maximum ultimate wind pressure, suction kPa		Batten spacing mm	Number of screws per panel per batten			
				Panel thickness, mm			
				50		75	
	Panel location			Panel location			
	Over 1200 mm from corners	Within 1200 mm of corners		Typical	Corner	Typical	Corner
N2	+0.67, −0.62	−1.25	900	3	3	3	3
N3, C1	+1.05, −0.98	−1.95	900	3	Not suitable	3	3
N4, C2	+1.56, −1.45	−2.90	900	3	Not suitable	3	3
N5, C3	+2.30, −2.14	−4.27	900	Not suitable	Not suitable	3	4
N2	+0.67, −0.62	−1.25	600	3	3	3	3
N3, C1	+1.05, −0.98	−1.95	600	3	3	3	3
N4, C2	+1.56, −1.45	−2.90	600	3	3	3	3
N5, C3	+2.30, −2.14	−4.27	600	Not suitable	Not suitable	3	3
N2	+0.67, −0.62	−1.25	450	3	3	3	3
N3, C1	+1.05, −0.98	−1.95	450	3	3	3	3
N4, C2	+1.56, −1.45	−2.90	450	3	3	3	3
N5, C3	+2.30, −2.14	−4.27	450	3	3	3	3

NOTES:

- 1 Battens shall be installed vertically onto studs with panels to span horizontally. Number of screw per panel per batten information is not suitable for soffits or any other areas where the panel is not vertical.
- 2 Type of screw used is the 14-10 MP Bugle Head Batten screw for timber studs or 14-10 Hex Head Self-drilling screw for steel studs, fixed from outside the building. Screw length as per Table 2.13.3.
- 3 Local suction within 1200 mm of the corners of a building necessitate additional battens.
- 4 The wind resistance of external walls is applicable only to buildings that incorporate a lining capable of resisting wind pressure exerted from inside the building, where the cavity between the lining and the cladding is sealed and where windows and doors in the external walls incorporated seals.

TABLE 3.3(I)
NUMBER OF SCREWS PER PANEL AT EACH BATTEN LOCATION
HORIZONTALLY ORIENTED PANELS SUSPENDED FROM FRAMING
(SUCH AS SECOND AND THIRD STOREY CONSTRUCTIONS)

Wind category	Maximum ultimate wind pressure, suction kPa		Batten spacing mm	Number of screws per panel per batten			
				Panel thickness, mm			
	50			75			
	Panel location			Panel location			
	Typical	Corner		Typical	Corner		
N2	+0.67, −0.62	−1.25	900	3	3	3	3
N3, C1	+1.05, −0.98	−1.95	900	3	Not suitable	3	3
N4, C2	+1.56, −1.45	−2.90	900	3	Not suitable	3	3
N5, C3	+2.30, −2.14	−4.27	900	Not suitable	Not suitable	3	4
N2	+0.67, −0.62	−1.25	600	3	3	3	3
N3, C1	+1.05, −0.98	−1.95	600	3	3	3	3
N4, C2	+1.56, −1.45	−2.90	600	3	3	3	3
N5, C3	+2.30, −2.14	−4.27	600	Not suitable	Not suitable	3	3
N2	+0.67, −0.62	−1.25	450	3	3	3	3
N3, C1	+1.05, −0.98	−1.95	450	3	3	3	3
N4, C2	+1.56, −1.45	−2.90	450	3	3	3	3
N5, C3	+2.30, −2.14	−4.27	450	3	3	3	3

NOTES:

- 1 Battens shall be installed vertically onto studs with panels to span horizontally. Number of screw per panel per batten information is not suitable for soffits or any other areas where the panel is not vertical.
- 2 Type of screw used is the 14-10 MP Bugle Head Batten screw for timber studs or 14-10 Hex Head Self-drilling screw for steel studs, fixed from outside the building. Screw length as per Table 2.13.3.
- 3 Local suctions within 1200 mm of the corners of a building necessitate additional battens.
- 4 The wind resistance of external walls is applicable only to buildings that incorporate a lining capable of resisting wind pressure exerted from inside the building, where the cavity between the lining and the cladding is sealed and where windows and doors in the external walls incorporated seals.

3.4 LOAD CAPACITY OF REINFORCED AAC FLOORS

The resistance of the following floor system to vertical gravity loads, as determined in accordance with AS/NZS 1170.0 and AS/NZS 1170.1 or Table 3.4, as follows:

- (a) 50 mm to 75 mm thick Reinforced AAC floor panels.
- (b) Screw specifications shall be in accordance with Table 2.13.3.

TABLE 3.4
VERTICAL LOAD CAPACITY OF REINFORCED AAC FLOOR PANELS

Continuous Reinforced AAC panel	Max. continuous panel span (joist spacing)	Typical loading type	Load
50 mm floor panel	450 mm	Balcony loads for domestic housing	2.0 kPa distributed or 1.8 kN point load over 350 mm ² area
75 mm floor panel	600 mm	Balcony loads for domestic housing	2.0 kPa distributed or 1.8 kN point load over 350 mm ² area
75 mm floor panel	450 mm	Commercial loads	Refer to AS 1170.1

NOTE: There shall be provision to prevent and/or control cracking of any brittle floor coverings, such as tiles, particularly at 600 mm joist spacing.

SECTION 4 75 mm REINFORCED AAC WALLS IN HOUSES AND LOW-RISE MULTI- RESIDENTIAL BUILDINGS

4.1 SCOPE OF SECTION

This Section sets out requirements for the construction of 50 mm and 75 mm thick Reinforced AAC wall panels, for use in the external walls of houses and low-rise multi-residential buildings with a closed cavity.

The building system shall consist of the following:

- (a) 50 mm and 75 mm thick Reinforced AAC wall panels designed in accordance with AS 5146.1 and AS 5146.2 and constructed in accordance with Section 2 and Clauses 4.2, 4.3 and 4.4 (see Note 1).
- (b) Control joints and flashings spaced and detailed in accordance with Section 2 and Clauses 4.2 and 4.3 (see Note 1).
- (c) Screw fixings of the type and spacing specified in Section 2, Section 3 and Clauses 4.2 and 4.3, securing the Reinforced AAC wall panels to battens (see Note 1).
- (d) Light gauge steel battens fixed by screws to timber or steel structural supporting frames (see Note 1).
- (e) Timber, steel or concrete structural supporting frames and slabs, including bracing capable of resisting applicable horizontal and vertical loads, conforming with AS 1684, AS/NZS 4600, NASH Standard – Residential and Low-rise Steel Framing, Part 2 or AS 3600 as appropriate (see Note 2).
- (f) Reinforced concrete slab-on-ground or reinforced concrete footings conforming with AS 2870 or AS 3600 (see Note 2).

NOTES:

- 1 This Standard includes requirements for the construction of the Reinforced AAC wall panels, the screws fixing the Reinforced AAC wall panels to the battens, the light gauge steel top hat battens and the screws fixing the battens to the structural frame.
- 2 The design of the timber or steel structural frame (including all bracing), concrete slabs and footings and other building components are excluded from the scope of this Standard.

4.2 PANEL ORIENTATION

Reinforced AAC wall panels for use in the external walls of houses and low-rise multi-residential buildings shall be oriented in one of the following arrangements:

- (a) Vertically aligned where—
 - (i) the length of the panels are oriented vertically; and
 - (ii) the ends of the panels are aligned with adjacent panels except where changes in wall heights occur.
- (b) Vertically staggered where—
 - (i) the length of the panels are oriented vertically; and
 - (ii) the end of the panels overlap adjacent panels by a minimum of one third of the nominal panel length.

- (c) Horizontally where—
 - (i) the length of the panels are oriented horizontally; and
 - (ii) the ends of the panel overlap adjacent panels by a minimum of one third of the nominal panel length but not less than 700 mm.

Where more than one panel orientation method is used on a single wall elevation, the change in panel orientation shall be isolated by a control joint. This is except for the situation shown in Figure 4.4.1(F) where a vertical panel orientation includes a bottom row of horizontal panels. The batten supports for this situation shall be installed for the orientation that makes up the majority of the wall as shown in Figure 4.4.1(F).

4.3 CUSTOMIZED DETAILS

For each building, details shall be prepared and reproduced on design documents. Such details shall be based on Sections 2 and 3 and Figures in Clause 4.3, and shall be modified and supplemented if necessary.

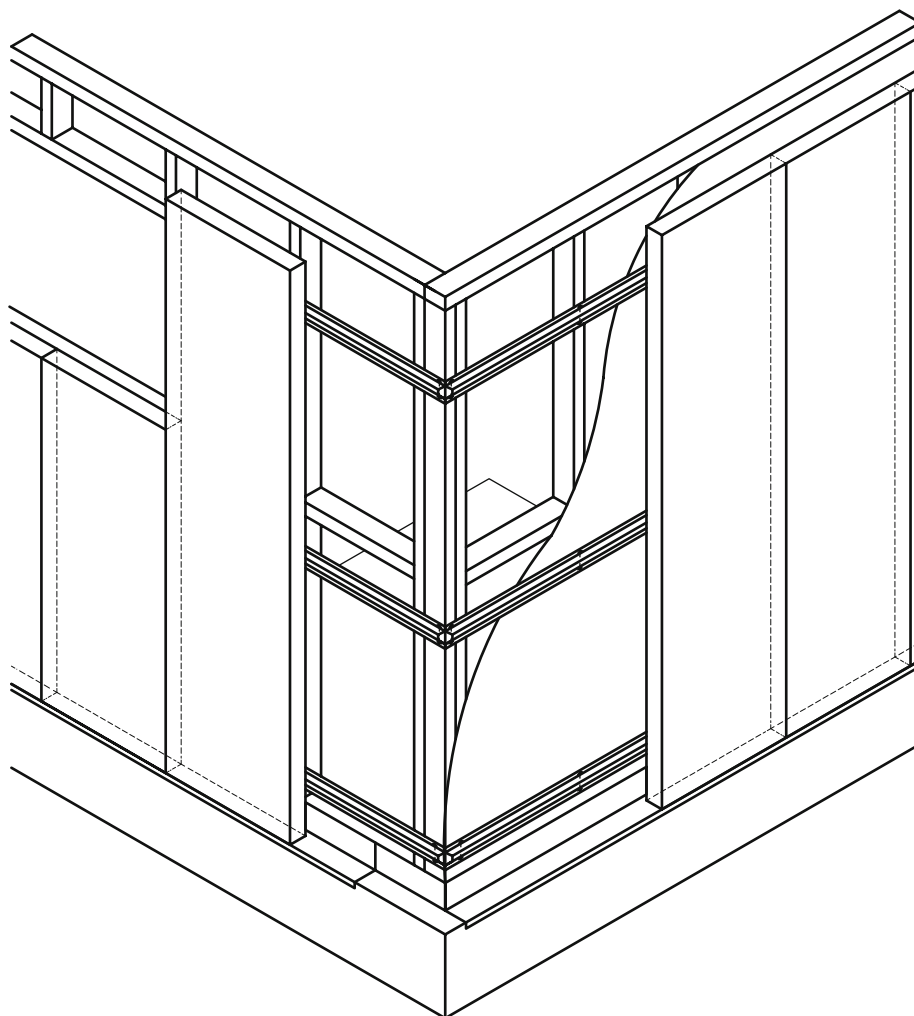
The number, spacing and fixing of top-hat battens shall be in accordance with Clause 3.3 and shall be shown in the documents.

The location of control joints, slip joints and flashings shall be in accordance with Section 2, and shall be shown in the documents. The top-hat supports shall be specified as applicable.

4.4 STANDARDS DETAILS

4.4.1 Vertically aligned Reinforced AAC external walls

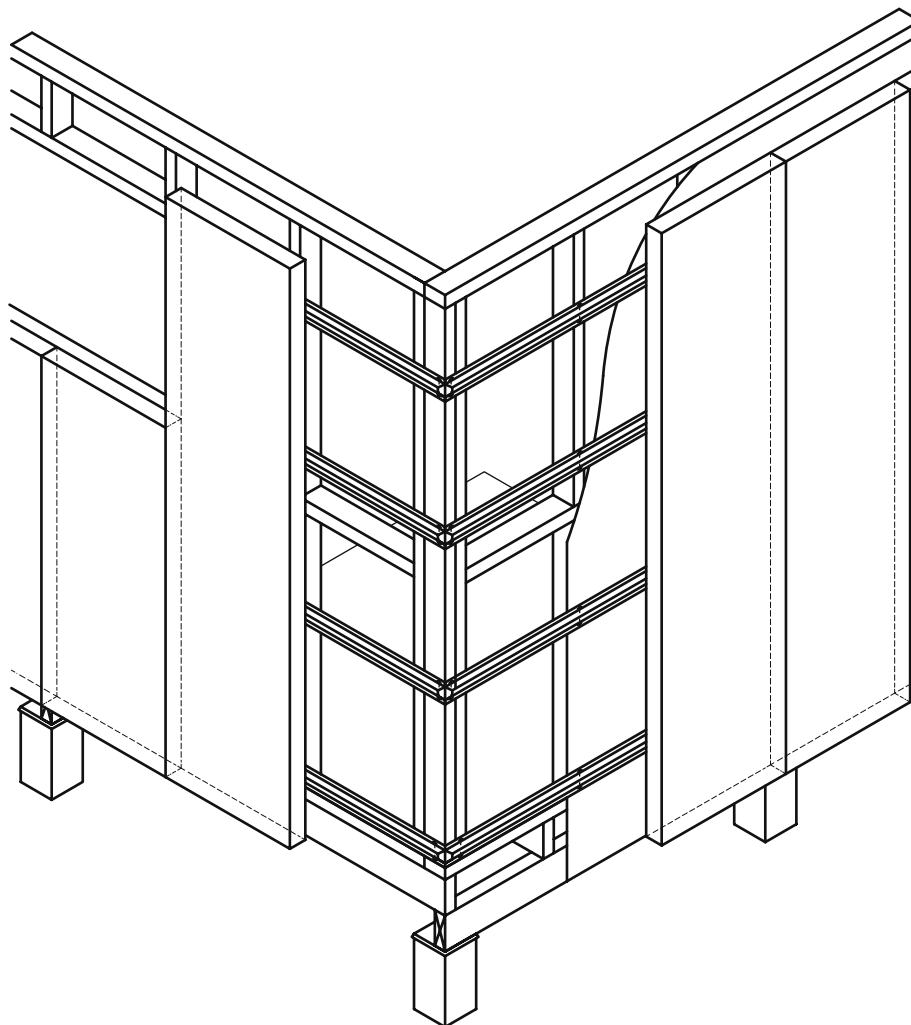
Figures 4.4.1(A) to 4.4.1(ZZ) provide a range of details that meet the requirements of Clause 4.1.



NOTES:

- 1 Details are applicable to 50 mm and 75 mm Reinforced AAC wall panels.
- 2 For number of top hats and screws, see Tables 3.3(A) to 3.3(F).
- 3 Additional top hats may be required. For suspended panels, see Tables 3.3(C) to 3.3(E).
- 4 These details have not shown the set-out of top hats to accommodate control joint locations.

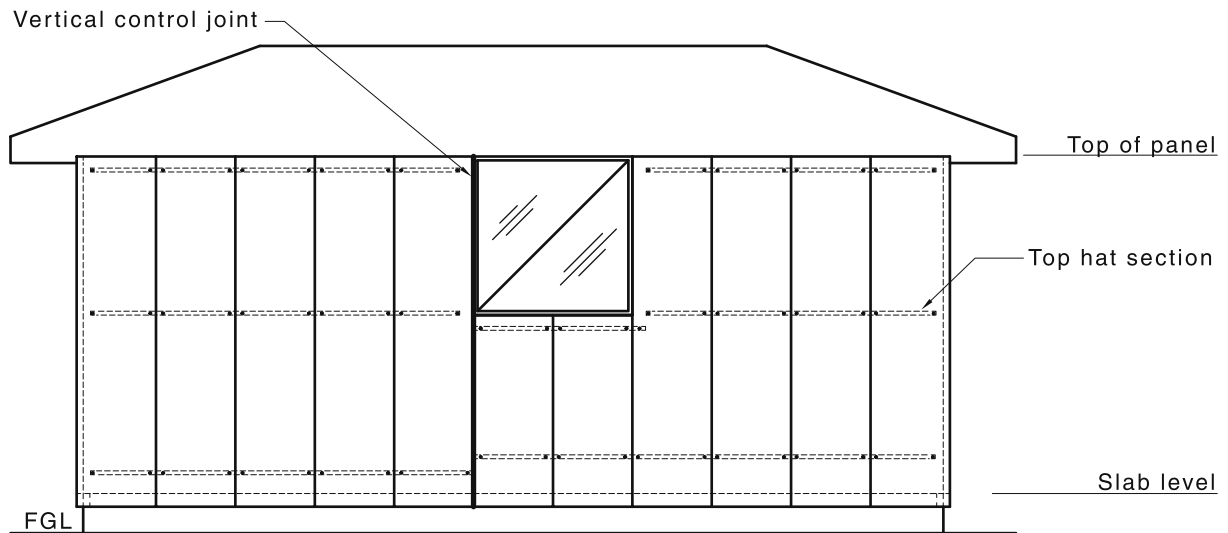
FIGURE 4.4.1(A) SINGLE STOREY CONSTRUCTION—VERTICALLY ALIGNED REINFORCED AAC PANELS SUPPORTED AT BASE—ISOMETRIC VIEW



NOTES:

- 1 Details are applicable to 50 mm and 75 mm Reinforced AAC wall panels.
- 2 For number of top hats and screws, see Tables 3.3(A) to 3.3(F).
- 3 Additional top hats may be required. For suspended panels, see Tables 3.3(C) to 3.3(E).
- 4 These details have not shown the set-out of top hats to accommodate control joint locations.
- 5 Refer to AS 3959 for subfloor requirements.

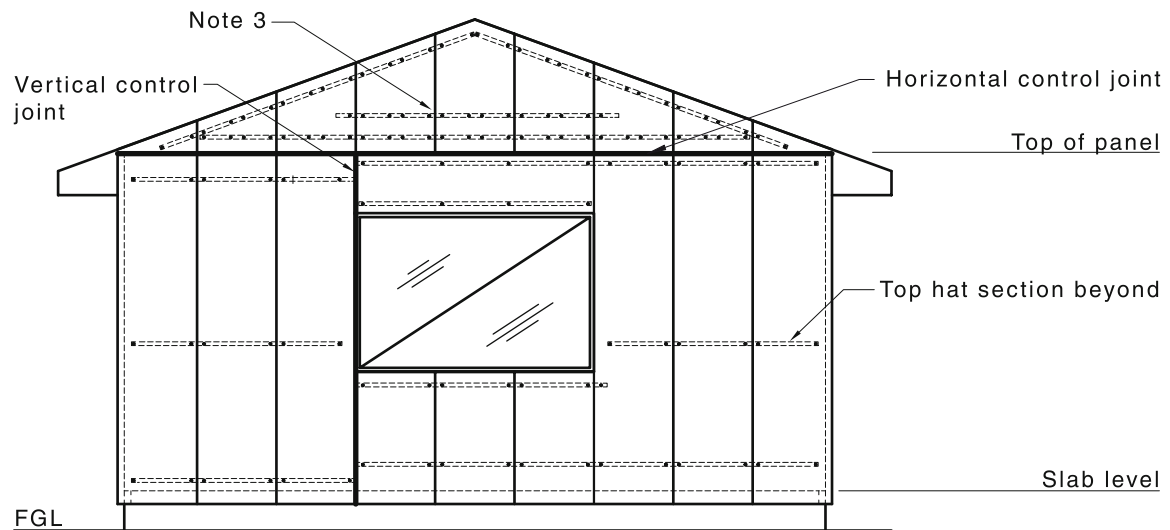
FIGURE 4.4.1(B) SINGLE STOREY CONSTRUCTION—VERTICALLY ALIGNED
SUSPENDED REINFORCED AAC PANELS—ISOMETRIC VIEW



NOTES:

- 1 Details are applicable to 50 mm and 75 mm Reinforced AAC wall panels.
- 2 For number of top hats and screws, see Tables 3.3(A) to 3.3(F).
- 3 Additional top hats may be required. For suspended panels, see Tables 3.3(C) to 3.3(E).
- 4 These details have not shown the set-out of top hats to accommodate control joint locations.

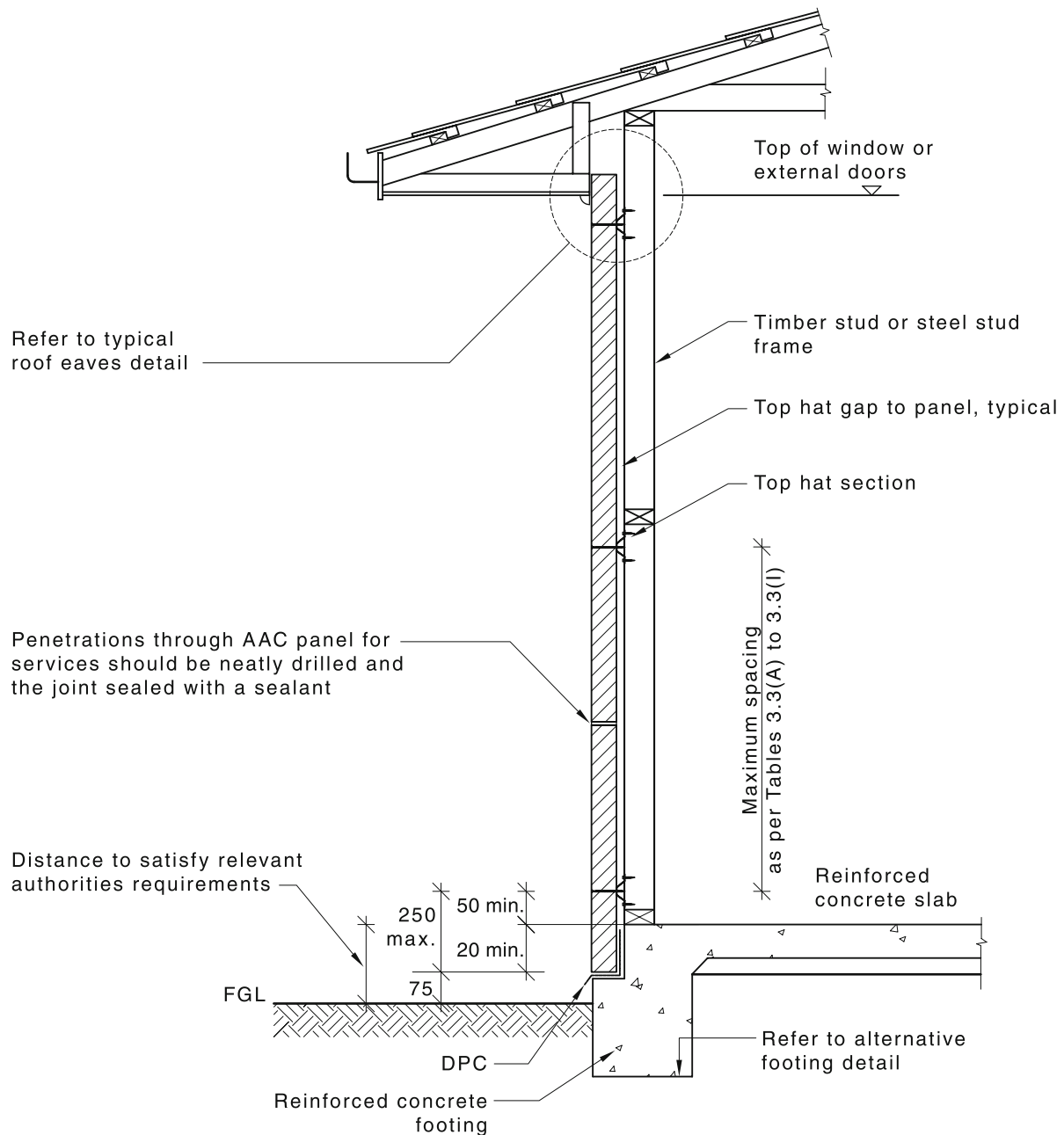
FIGURE 4.4.1(C) SINGLE STOREY CONSTRUCTION—VERTICALLY ALIGNED REINFORCED AAC PANELS HIP ROOF ELEVATION



NOTES:

- 1 Details are applicable to 50 mm and 75 mm Reinforced AAC wall panels.
- 2 For number of top hats and screws, see Tables 3.3(A) to 3.3(F).
- 3 Additional top hats may be required. For suspended panels, see Tables 3.3(C) to 3.3(E).
- 4 These details have not shown the set-out of top hats to accommodate control joint locations.

FIGURE 4.4.1(D) SINGLE STOREY CONSTRUCTION—VERTICALLY ALIGNED REINFORCED AAC PANELS GABLE ROOF ELEVATION

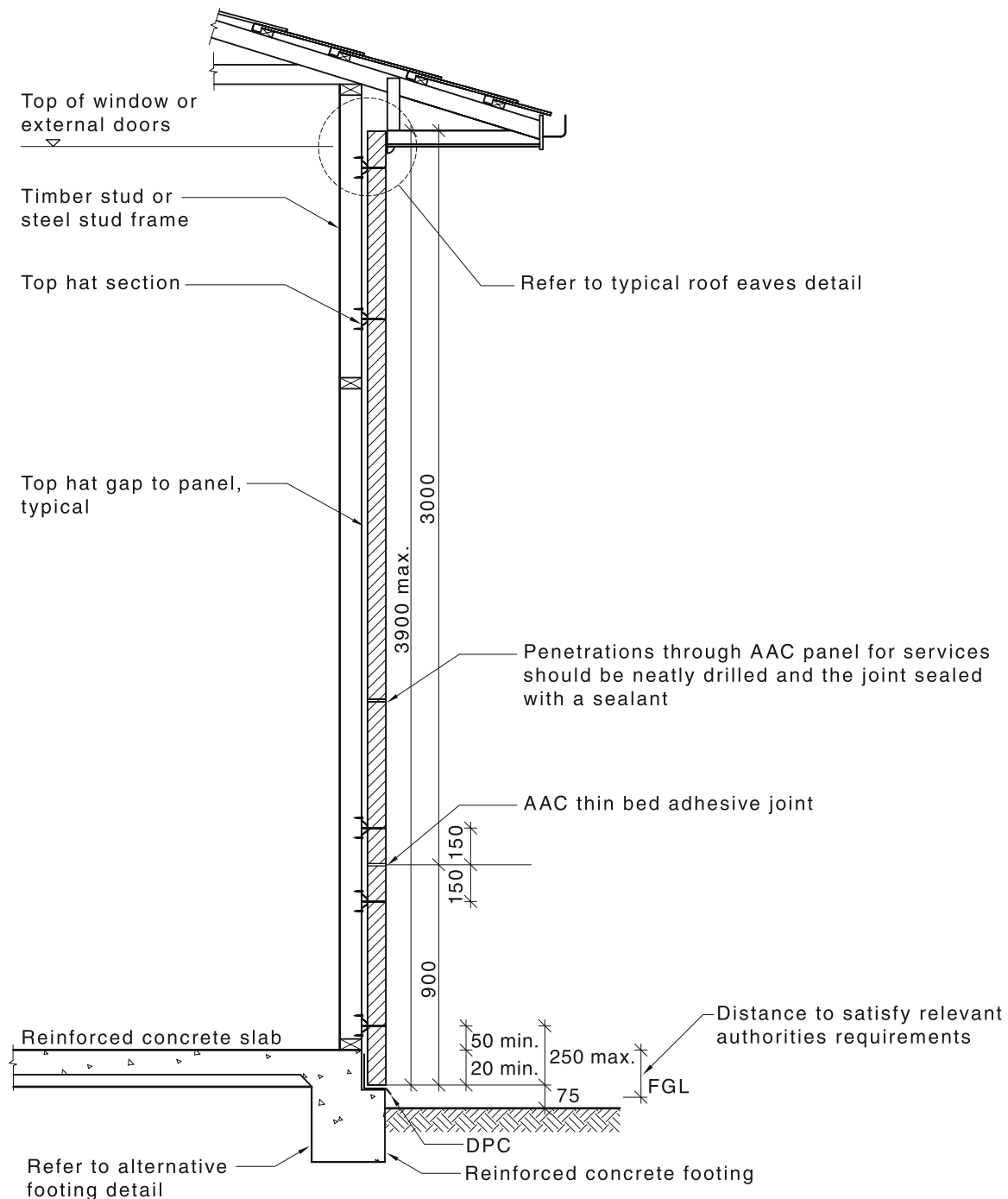


DIMENSIONS IN MILLIMETRES

NOTES:

- 1 Details are applicable to 50 mm and 75 mm Reinforced AAC wall panels.
- 2 For number of top hats and screws, see Tables 3.3(A) to 3.3(F).
- 3 Additional top hats may be required. For suspended panels, see Tables 3.3(C) to 3.3(E).
- 4 These details have not shown the set-out of top hats to accommodate control joint locations.
- 5 The termite management system shall conform with AS 3660.
- 6 The maximum that the panel shall overhang the slab edge is $\frac{1}{3}$ of the panel thickness.

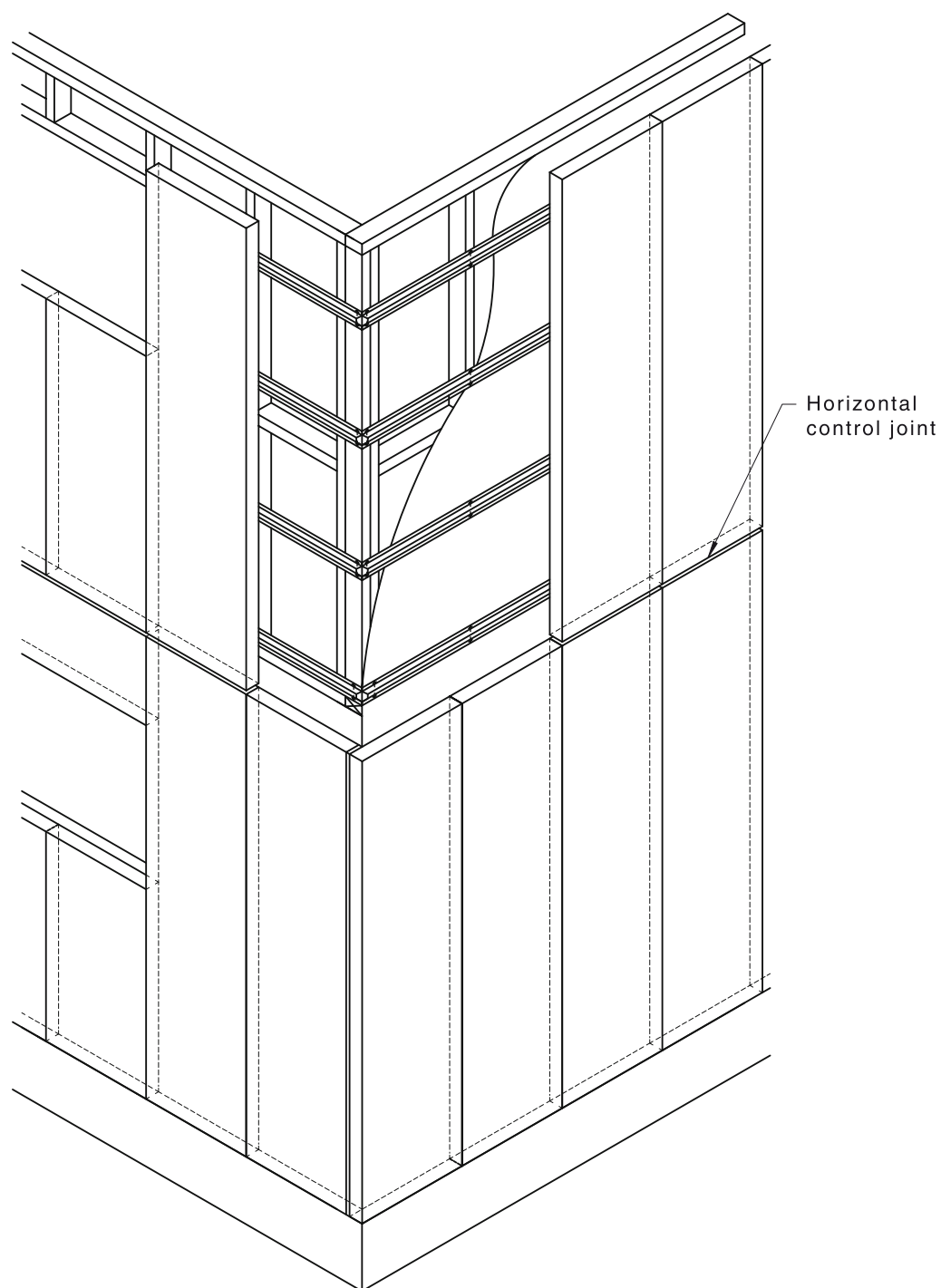
FIGURE 4.4.1(E) SECTION THROUGH SINGLE STOREY CONSTRUCTION—VERTICALLY ALIGNED REINFORCED AAC PANELS



NOTES:

- 1 Detail is applicable and 75 mm Reinforced AAC wall panels.
- 2 For number of top hats and screws, see Tables 3.3(A) to 3.3(F).
- 3 Additional top hats may be required. For suspended panels, see Tables 3.3(C) to 3.3(E).
- 4 These details have not shown the set-out of top hats to accommodate control joint locations.
- 5 The termite management system shall conform with AS 3660.
- 6 The maximum that the panel shall overhang the slab edge is $\frac{1}{3}$ of the panel thickness.

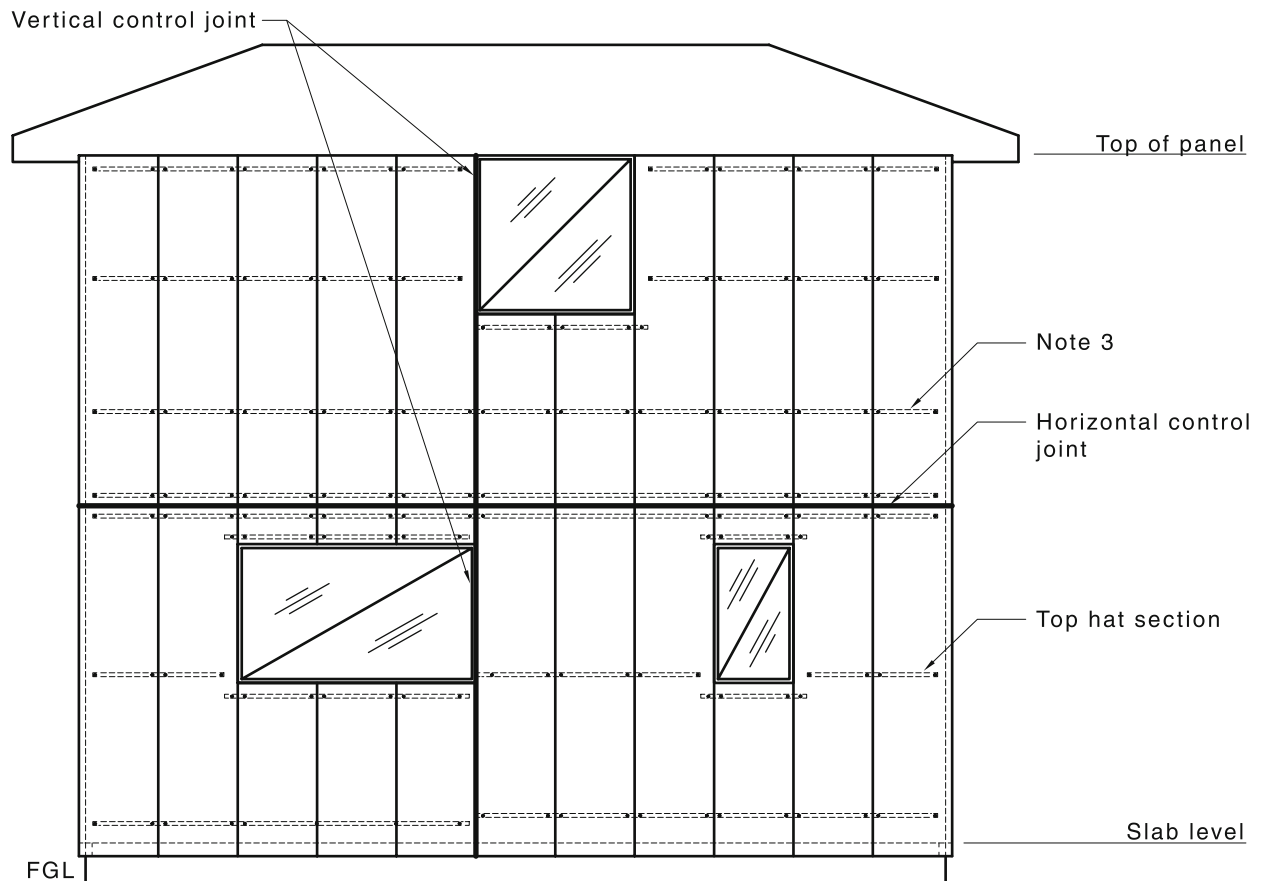
FIGURE 4.4.1(F) SECTION THROUGH SINGLE STOREY CONSTRUCTION—VERTICALLY ALIGNED REINFORCED AAC PANELS—WALL UP TO 3900 mm HIGH



NOTES:

- 1 Details are applicable to 50 mm and 75 mm Reinforced AAC wall panels.
- 2 For number of top hats and screws, see Tables 3.3(A) to 3.3(F).
- 3 Additional top hats may be required. For suspended panels, see Tables 3.3(C) to 3.3(E).

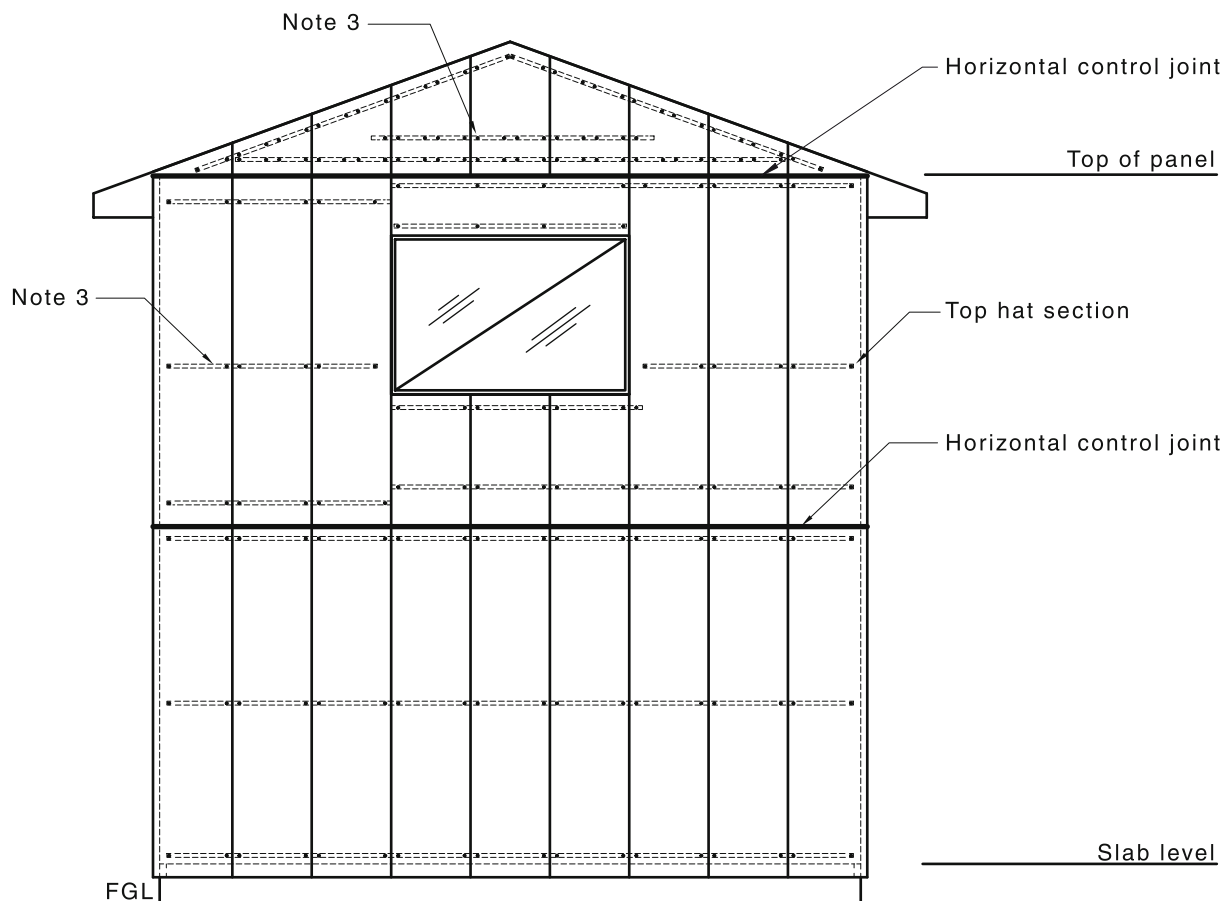
FIGURE 4.4.1(G) TWO STOREY CONSTRUCTION—VERTICALLY ALIGNED REINFORCED AAC PANELS—ISOMETRIC VIEW



NOTES:

- 1 Details are applicable to 50 mm and 75 mm Reinforced AAC wall panels.
- 2 For number of top hats and screws, see Tables 3.3(A) to 3.3(F).
- 3 Additional top hats may be required. For suspended panels, see Tables 3.3(C) to 3.3(E).

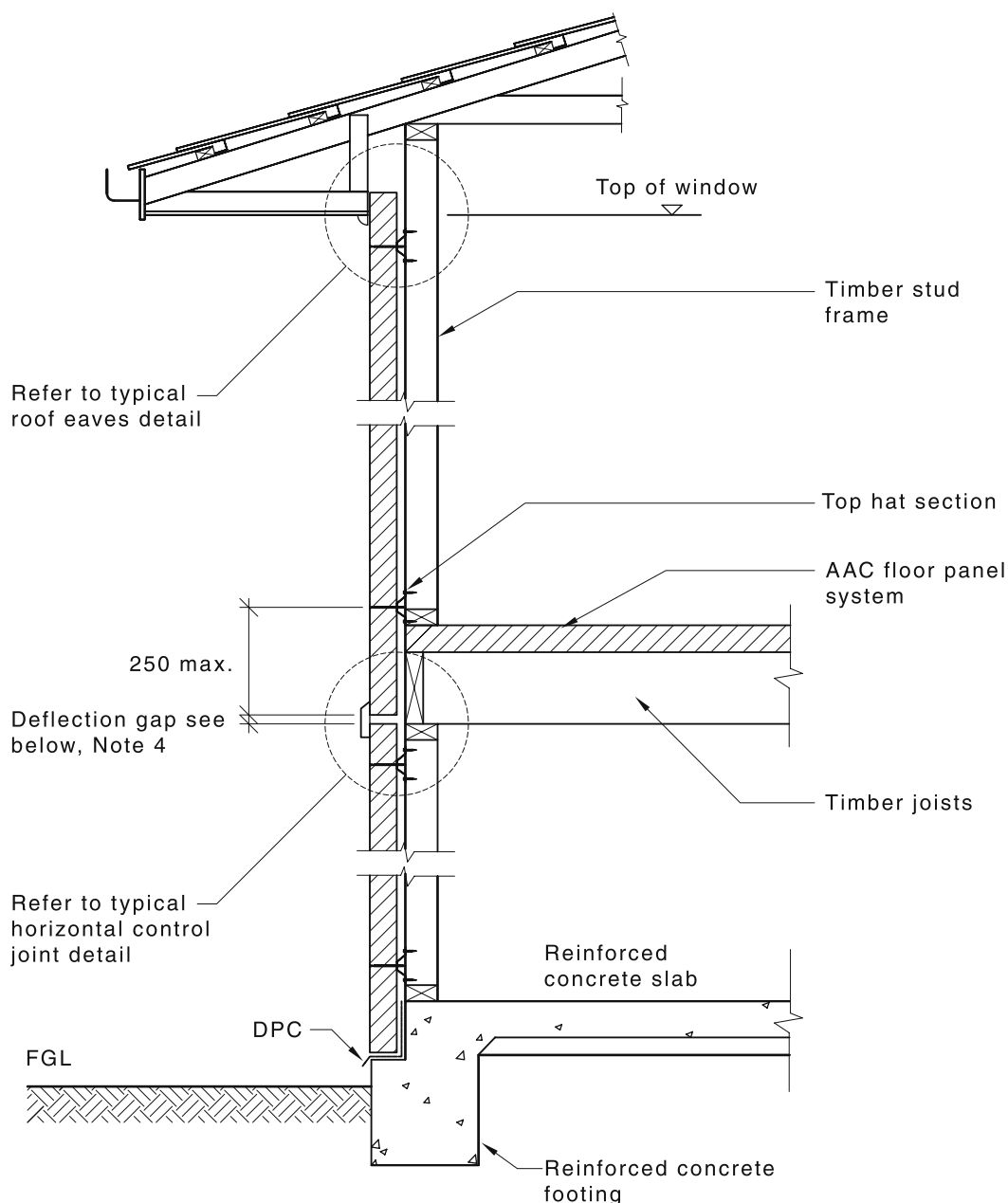
FIGURE 4.4.1(H) TWO STOREY CONSTRUCTION—VERTICALLY ALIGNED REINFORCED AAC PANELS—HIP ROOF ELEVATION



NOTES:

- 1 Details are applicable to 50 mm and 75 mm Reinforced AAC wall panels.
- 2 For number of top hats and screws, see Tables 3.3(A) to 3.3(F).
- 3 Additional top hats may be required. For suspended panels, see Tables 3.3(C) to 3.3(E).

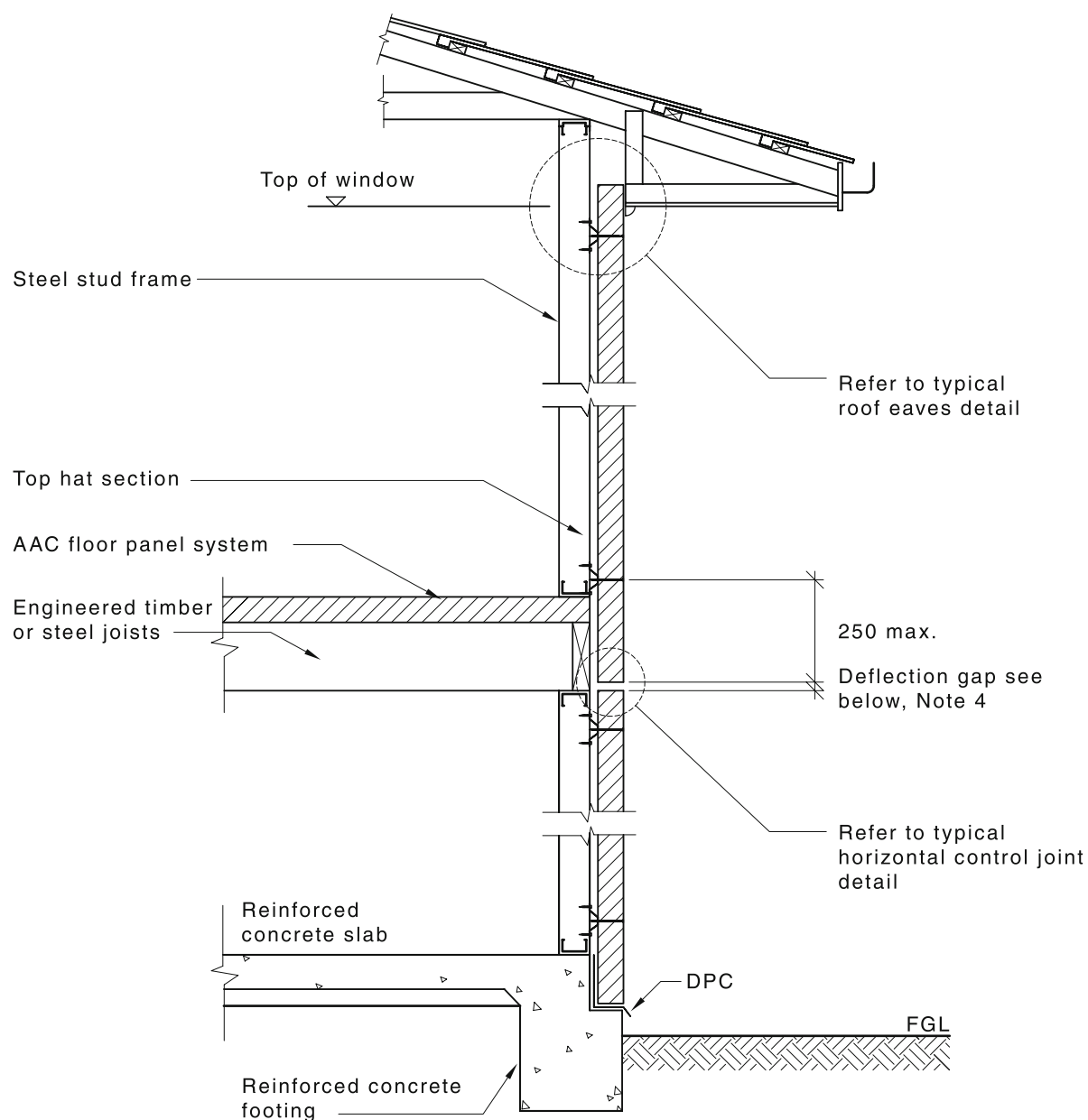
FIGURE 4.4.1(I) TWO STOREY CONSTRUCTION—VERTICALLY ALIGNED
REINFORCED AAC PANELS—GABLE ROOF ELEVATION



NOTES:

- 1 Details are applicable to 50 mm and 75 mm Reinforced AAC wall panels.
- 2 For number of top hats and screws, see Tables 3.3(A) to 3.3(F).
- 3 Additional top hats may be required. For suspended panels, see Tables 3.3(C) to 3.3(E).
- 4 The gap widths may be reduced for low-shrinkage floor systems. For guidance on acceptable gap width, see the manufacturer's specifications.
- 5 The maximum that the panel shall overhang the slab edge is 1/3 of the panel thickness.

FIGURE 4.4.1(J) TWO STOREY CONSTRUCTION—VERTICALLY ALIGNED REINFORCED AAC PANELS—TIMBER FRAME USING JOISTS WITH SHRINKAGE GREATER THAN 1%



NOTES:

- 1 Details are applicable to 50 mm and 75 mm Reinforced AAC wall panels.
- 2 For number of top hats and screws, see Tables 3.3(A) to 3.3(F).
- 3 Additional top hats may be required. For suspended panels, see Tables 3.3(C) to 3.3(E).
- 4 The gap widths may be reduced for low-shrinkage floor systems. For guidance on acceptable gap width, see the manufacturer's specifications.
- 5 The maximum that the panel shall overhang the slab edge is $\frac{1}{3}$ of the panel thickness.

FIGURE 4.4.1(K) SECTION THROUGH TWO STOREY CONSTRUCTION—VERTICALLY ALIGNED REINFORCED AAC PANELS—STEEL FRAME OR TIMBER FRAME USING JOISTS WITH SHRINKAGE NOT MORE THAN 1%