PRO PANEL
UNITED BUILDING SUPPLY PTY LTD.

# Houses and Low-Rise Multi-Residential External Wall System

## Vertical 50/75mm AAC

## Design & Installation Guide

CodeMark Australia
Certificate CM40384
CMI Certification

Version 1, July 2024

# CONTENTS

# CONTENTS

# 1 INTRODUCTION

## 1.1 PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System

PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System, by United Building Supply, provides an NCC 2022 compliant Autoclaved Aerated Concrete (AAC) panel Deemed-to-Satisfy Solution for external wall cladding in residential, commercial or light industrial applications not greater than 3 storeys in height.

This manual is provided for use by designers and builders. It describes the performance; installation; and typical detailing requirements for use of the PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System.

PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System delivers a high performance, high quality, solution to external walls requiring strength, weatherproofing, fire, acoustic, thermal & bushfire performance.

PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System has been tested, appraised and certified to the applicable DTS requirements of the NCC 2022, Volumes One, Two & Housing Provisions, Building Code of Australia, for Building Classes 1 & 10a (Housing):

**Structure:** B1D4(b)(ii) Determination of structural resistance of materials and forms of construction in accordance with AS 5146.1 and AS 5146.3; and H1D7(4)(a) when designed and constructed in accordance with AS 5146.1.

**Fire Safety:** C2D2(2) and 9.2.3(2)(a) for Fire Resistance Level tested and assessed to AS 1530.4 for FRL 120/120/120, (note AS 5146.3 Cl.2.6.2 provisions are for non-load bearing walls only).

**Non-Combustible:** C2D10(5)(e), Autoclaved aerated concrete, including mortar are non-combustible and may be used wherever a non-combustible material is required.

**Fire Hazard Properties:** C2D11(3) do not apply to Autoclaved aerated concrete.

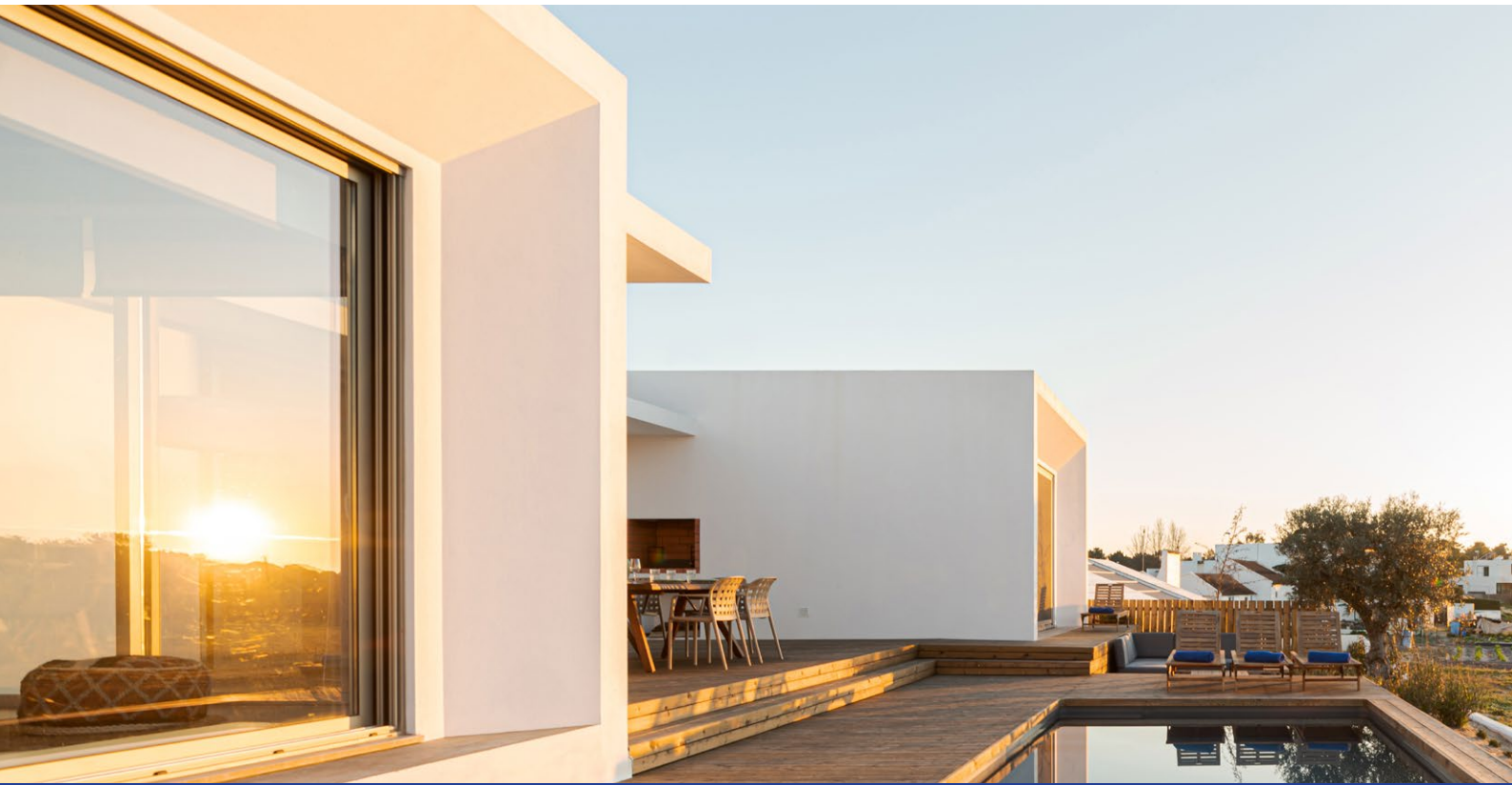
**Damp-proofing:** F1P4 and H2P3 in accordance with ground clearance detailing and damp-proof course material and installation requirements.

**Weatherproofing:** F3D5(1)(b) in accordance with AS 5146.3; and H2D6(4) in accordance with H1D7(4)(a) designed and constructed in accordance with AS 5146.1.

Condensation Management, Pliable Building Membrane: (F8D3(1)(a) and 10.8.1(1)(a), compliance with Australian Standards AS 4200.1 & AS 4200.2.

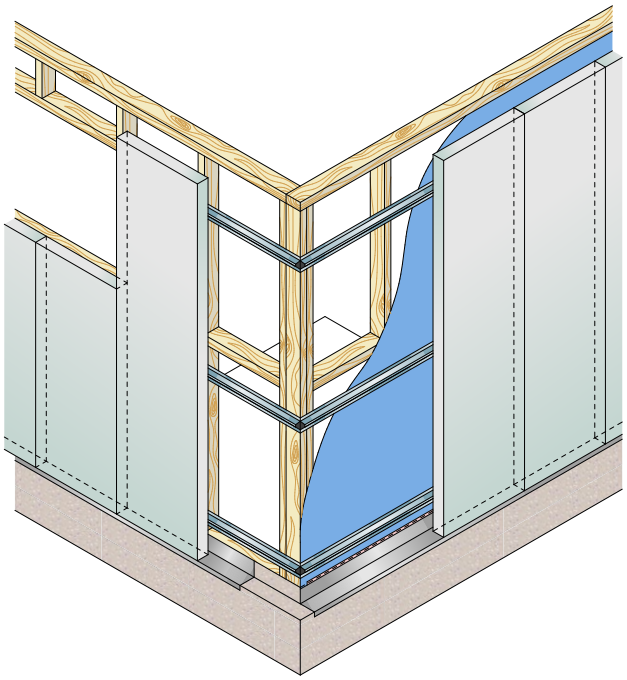
**Bushfire Attack Level:** G5D3 and H7D4(2)(a), (BAL FZ) in accordance with AS 3959, Clause 9.4.1(c) and AS 5146.3, Clause 2.7.2.

**Energy Efficiency:** J4D6, and H6D2(1), 13.2.5. PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System achieves high Total R-values which may be used to satisfy J4D6 and H6D2(1) external wall insulation requirements, or as input to house energy rating software to achieve an energy rating.

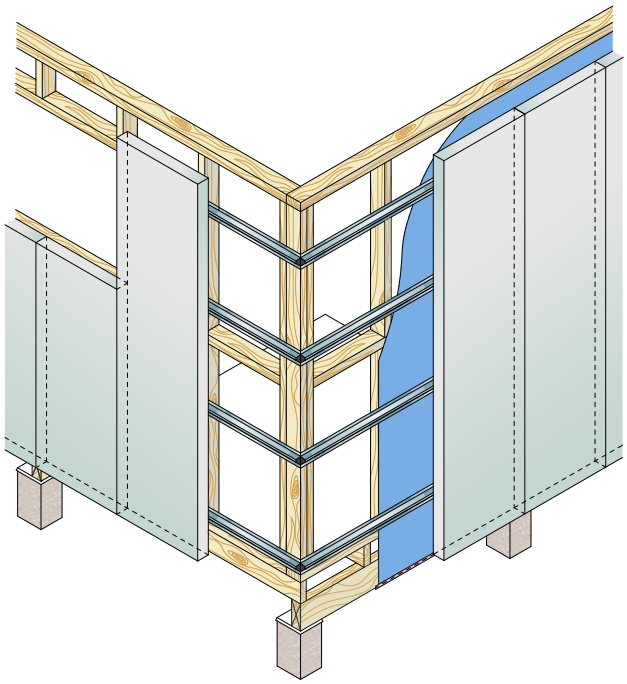


## 1.2 System Summary

PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System consists of 50mm or 75mm thick AAC panels screwed to either steel or timber wall framing through horizontal light-gauge steel top-hat battens & breathable wall wrap.



PANELS SUPPORTED AT BASE



PANELS SUSPENDED

It is finished on-site with layers of polymer-modified render, alkaline-resistant fiberglass mesh, texture and finish coatings.

The system is lightweight making it easy to install.

It provides an energy efficient barrier to the elements through its high thermal insulation properties.

It is versatile and designed to be able to be installed on all types of wall elements such as parapets and bulkheads to allow the architect to include multiple types of finishes on the same façade.

PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System provides the appearance of a rendered brick wall without the limitations of high mass construction.

PRO PANEL (VERTICAL) 50/75mm AAC other benefits include:

- High insulation performance for Energy Efficient construction,
- Adaptable to a wide-range of architectural designs,
- Lightweight for quick handling & construction,
- Durable to the elements & impact, and
- Detailed to proven Australian Standards for builders and renderers.

PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System is designed in Australia and is fully compliant to Australian requirements conditions. A proven successful high-performing construction system used successfully in Australia & Europe for many years. Lightweight and easy to install, adaptable to different designs, provides economy and confidence.

Product selection, and incorporation into the building design, must be made by a person who is conversant with the application and technical aspects of the product, and has ready access to the relevant technical information related to the product use.

Product installation must be carried out by a competent carpenter or other tradesman under the direction of a Builder, both of whom are conversant with the method of product installation and have access to all relevant technical information on product installation.

# 2 AAC MATERIAL PROPERTIES

Material Properties are determined in accordance with AS 5146 Parts 1 & 2 - Reinforced Autoclaved Aerated Concrete.

## 2.1 Physical Properties

Thicknesses: 50mm & 75mm

Width: 600mm

Lengths 50mm: 1800, 2200, 2400, 2550, 2700, 2850, 3000 mm

Lengths 75mm: 1800, 2400, 2550, 2700, 2850, 3000 mm

Edge Straightness Deviation (max.): +-1.5mm

Steel Reinforcement: Panel lengths 1800mm to 3000mm - Single layer of steel mesh 4 x Ø5mm longitudinal & 6-8 x Ø5mm transverse steel bars depending on panel length.

Declared Density Class (Dry): 500

Panel Density for transport/lifting (AS 5146.2, Cl.3.2.7): 740 kg/$m^3$

## 2.2 Strength Properties

Declared Compressive Strength Class: AAC 2.5

## 2.3 Thermal Properties

Declared AAC Thermal Resistance: 50mm = 0.38$m^2$K/W, 75mm = 0.57$m^2$K/W

## 2.4 Cutting

Panels typically should not be less than 270mm wide, and in all cases must achieve the specified minimum support and fixing requirements.

# 3 NATIONAL CONSTRUCTION CODE (NCC) 2022

The performance-based NCC consists of solutions that enable a building to be constructed to achieve minimum levels of compliance. This may be demonstrated through compliance with a Deemed-to-Satisfy Solution, or by a Performance Solution.

External Walls are required to comply with those performance requirements as applicable for; structure; fire; weatherproofing; dampness; bushfire; condensation and energy efficiency. Details of compliance are outlined below.

## 3.1 Structural Performance, B1D4(b)(ii) & H1D7(4)(a)

PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System has been tested in accordance with AS 5146.1 with design and construction in accordance with AS 5146.3.

As referenced in NCC 2022 Volume Two, H1D7(4)(a), performance requirement H1P1 is satisfied for autoclaved aerated concrete if it is designed and constructed in accordance with AS 5146.1.

As referenced in NCC 2022 Volume One, B1D4(b)(ii), structural resistance of materials and forms of construction for autoclaved aerated concrete must be determined in accordance with AS 5146.1 & AS 5146.3.

PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System is suitable for use in areas with AS/NZS 1170.2 design wind pressures up to -4.27kPa. This includes AS 4055 Wind Classifications N1w to N5w and C1w to C3w (excluding AS 4055 Wind Classifications N6w and C4w).

Design wind pressures for a building are site-specific, depending on many factors.

The Wind Classification of a building (AS 4055 or AS/NZS 1170.2) must be provided by the design professional responsible for the design.

PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System is not intended to act as wall bracing and racking loads must be designed independently.

PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System is non-load-bearing and control joints are required at regular intervals to allow for building movement.

In all cases, buildings designed in accordance with AS 4055 require;

- distance from ground level to the underside of eaves not to exceed 6.0m,
- distance from ground level to the highest point of the roof, not including chimneys, not to exceed 8.5m,
- width including roofed verandas, excluding eaves, not to exceed 16.0m, and the length not to exceed five times the width, and
- roof pitch to be not greater than 35 degrees.

## 3.2 Fire Safety Performance, C2D2(2) 9.2.3(2)(a)

The PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System with:

- PRO PANEL (VERTICAL) 50/75mm AAC, supported on steel top-hat battens at max. 500mm c/c, max. panel end overhang 400mm, fixed with 14g-10x100mm type 17 batten, bugle head coarse thread, internal hex drive; and
- Steel top-hat battens 24x0.42mm(BMT), G550 AAC Top-Hat Battens fixed with 12g-11 x 35mm type 17 hex head screws
- Sarking compliant with AS 4200.1 with Flammability Index not greater than 5.
- Wall framing either timber framing 70x45 mm MGP10, or light-gauge steel framing (min. 0.55mm BMT) compliant with the relevant framing code.
- R2.0, 70mm, 10.3kg/m3 Glasswool Batt Insulation
- Min. 10mm Standard Grade Plasterboard fixed with stud adhesive, paper tape 6gx25mm bugle head needle point screws

– A close control joint, min. 10mm panel separation, filled with backing rod to a depth of at least 15mm and covered with a fire grade external mastic.

– An expanded control joint is permitted to be provided up to 50mm in separation. The control joint is to be filled with mineral wool with a 10% compression to a depth of at least 50mm and density of at least 80kg/m3.

– Maximum wall height of 3.9m

Has been tested and assessed as having the capacity to maintain an FRL of 30/30/30, 60/60/60, 90/90/90 or 120/120/120 as applicable to the application.

As a non-combustible FRL-rated external wall system, PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System may be installed in:

- Type A construction applications in Class 2, 3 or 4 parts of buildings requiring 90/90/90 or -/90/90 as specified in S5C11(3); and
- Class 1 buildings less than 900mm from an allotment boundary that require an FRL of not less than 60/60/60 as specified in 9.2.3(2)(a).

## 3.3 Non Combustible, C2D10

Non-Combustible: C2D10(5)(e), Autoclaved aerated concrete, including mortar are non-combustible and may be used wherever a non-combustible material is required.

## 3.4 Fire Hazard Properties, C2D11

As a concrete product, C2D11(1) requirements for Group Number, $SMOGRA_{RC}$, ASEA, Spread-of-Flame and Smoke-Developed Indices, "…do not apply…" to PRO PANEL (per C2D11(3) ).

## 3.5 Damp-proofing F1P4, H2P3

The damp-proofing performance of the PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System to prevent unhealthy or dangerous conditions, or loss of amenity and undue dampness or deterioration of building elements is primarily achieved based on detailing where PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System clearance requirements shall be as per BCA requirements for 50mm to 150 mm clearance from finished ground level in accordance with Part 7.5.7 of the ABCB Housing Provisions. In addition, a damp proof course (not supplied by UBS) is detailed beneath the bottom plate, see Sections 4.4 & 6.5.1 as per BCA requirements in Part 5.7.4 of the ABCB Housing Provisions.

## 3.6 Weatherproofing Performance, F3D5(1)(b) and H2D6(4)

PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System has been tested in accordance with AS 5146.1 with design and construction in accordance with AS 5146.3.

As referenced in NCC 2022 Volume One, F3D5(1)(b), weatherproofing performance for autoclaved aerated concrete external wall cladding must comply with AS 5146.3.

As required in NCC 2022 Volume Two, H2D6(4), performance requirement H2P2 is satisfied for autoclaved aerated concrete if it is designed and constructed in accordance with AS 5146.1.

PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System provides weatherproofing performance for AS 4055 Wind Classifications N1w, N2w, N3w, N4w, N5w, C1w, C2w, C3w and for AS/NZS 1170.2 Serviceability Limit State (SLS) Design Wind pressures up to +1.19 & -1.79kPa.

## 3.7 Condensation Performance, F8D3(1)(a), 10.8.1(1)(a)

PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System incorporating; vapour permeable wall wrap beneath the battens, and thermal insulation within the framing cavity, satisfies NCC 2022 Volume One F8D3(1)(a) & Volume Two, 10.8.1(1)(a) requirements for condensation management in external wall construction.

Condensation is the result of complex interactions between the environment, building construction and occupant behaviour (Ref: Condensation in Buildings, Handbook, Australian Building Codes Board, 2023). Please consult your design professional for information specific to your project.

## 3.8 Bushfire Performance, G5D3, H7D4(2)(a)

PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System has been assessed by an accredited testing laboratory as achieving FRL's that exceed the AS 3959:2018 BAL-FZ Clause 9.4.1(c) requirement for 30/30/30 when tested from the outside, with particular reference to requirements for joint sealing and the detailing requirements of AS 3959:2018 Clause 3.6.1 for vents, weepholes, gaps and screening materials.

In accordance with AS 5146.3, Clause 2.7.1, PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System achieves bushfire resistance up to BAL FZ where:

(a) Support and fixing are in accordance with Section 6 of this manual.

(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.

(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. Noting that the PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System 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.

The determination of Bushfire Attack Level, and compliance of a Class 1, 2, 3 or 10 Building with AS 3959:2018 shall be undertaken by a suitably qualified building professional.

## 3.9 Thermal Performance, J4D6, H6D2(1) & 13.2.5

PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System incorporating 50mm or 75mm thickness panel, breathable non-reflective wall wrap, R2.0m²K/W, 70mm batts and 10mm plasterboard lining achieves the following Total R-values in accordance with AS/NZS 4859.1:2018 which may be used to satisfy the minimum Total R-value requirements of NCC 2022, Volume Two H6D2(1)(b)(i) & Housing Provisions 13.2.5 external wall insulation requirements, where these values are higher, or as input to house energy rating software to achieve an energy rating.

| **PRO PANEL (VERTICAL) 50/75mm AAC Exterior Wall Cladding System** (with R2.0, 70mm batts) | | **Total R-value (m².K/W)** | |
|---|---|---|---|
| | | **Winter** (Heat flow outwards) | **Summer** (Heat flow inwards) |
| **50 mm** | **Timber Frame** | 2.53 | 2.42 |
| | **Steel Frame** | 2.17 | 2.07 |
| **75 mm** | **Timber Frame** | 2.74 | 2.63 |
| | **Steel Frame** | 2.43 | 2.34 |

# 4 SYSTEM COMPONENTS

Components of the PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System are listed below. The use of other components is not authorised and will alter the performance of the system.

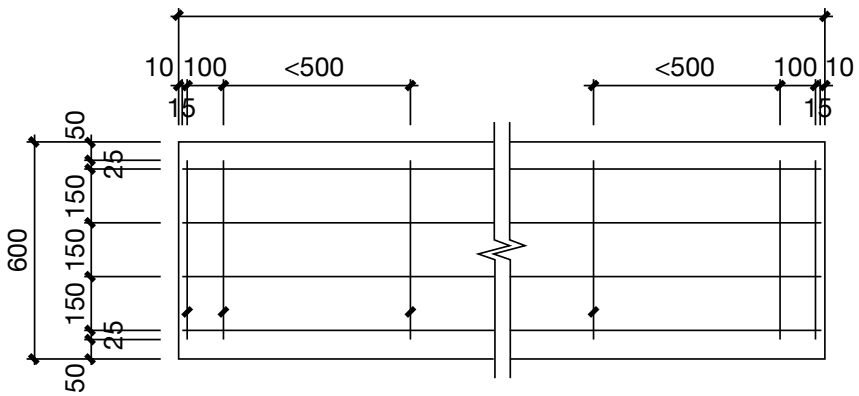
### 4.1.1 50mm AAC Panel

| | |
|---|---|
| **Product:** | Autoclaved aerated concrete panels |
| **Thickness:** | 50mm |
| **Width:** | 600mm |
| **Lengths:** | 1800, 2200, 2400, 2550, 2700, 2850, 3000mm |
| **Reinforcement:** | Single layer steel mesh, centrally located. |
| **Steel bars:** | 4 x Ø 5mm longitudinal bars and<br>6-8 x Ø 5mm transverse bars (@<550mm spacing) depending on panel length. |

### 4.1.2 75mm AAC Panel

| | |
|---|---|
| **Product:** | Autoclaved aerated concrete panels |
| **Thickness:** | 75mm |
| **Width:** | 600mm |
| **Lengths:** | 1800, 2400, 2550, 2700, 2850, 3000 mm |
| **Reinforcement:** | 1800 to 3000mm single layer steel mesh, centrally located. |
| **Steel bars** | 4 x Ø 5mm longitudinal bars and<br>6-8 x Ø 5mm transverse bars depending on panel length. |

Typical steel reinforcement layout:



## 4.2 Battens

For vertical panel orientation, battens shall be light gauge steel sections not less than 24 mm deep x 30 mm wide x 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.

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.

## 4.3 Wall Wrap (Breathable)

Breathable Wall Wrap must:

- achieve a minimum Light Wall Duty Classification, and
- Water Barrier Classification in accordance with AS 4200.1, and
- be a Class 3 or 4 vapour control membrane in Climate Zones 4 or 5; or a Class 4 vapour control membrane in Climate Zones 6, 7 or 8.
- have a “Low” Flammability Index (FI) in accordance with AS 1530.2, and
- be installed in accordance with AS 4200.2

## 4.4 Damp Proof Course

Damp proof course (DPC) must 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.

## 4.5 48mm Wall Wrap Tape

Minimum 48mm wide, wrap-compatible pressure sensitive tape must be installed in accordance with the PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System Typical Construction Details including sealing the wall wrap around its perimeter, at joins, and at openings.

## 4.6 Flashings

Flashings are required 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).

Flashings shall conform with AS/NZS 2904 and the following:

a) 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/m$^2$, 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/m$^2$ 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.

b) 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/m$^2$ 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/m$^2$ 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.

## 4.7 Panel Screws

To fix PRO PANEL 50mm or 75mm AAC panel to light gauge steel batten from outside the building, 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 PRO PANEL 75mm AAC panel to light gauge steel top hat batten from inside the building, 14–10 Hex Head Type 17 screw (Class 3 or 4). Screw length shall be 10 mm shorter than the panel thickness.

Screws shall be:

a) at least Class 3 for moderate and mild exposure environments;

b) at least Class 4 for severe marine further than 100 m from breaking surf, marine and industrial exposure environments; and

c) Class 4 stainless steel for severe marine exposure environments within 100 m of breaking surf.

## 4.8 Batten Screws

Timber Frame: 12–11 x 35 mm Hex Head Type 17 screw (Class 3 or 4), 2 per stud.

Steel Frame: 10–16 x 16 mm Hex Head Self-drilling screw (Class 3 or 4), 2 per stud.

Screws shall be:

a) at least Class 3 for moderate and mild exposure environments;

b) at least Class 4 for severe marine further than 100 m from breaking surf, marine and industrial exposure environments; and

c) Class 4 stainless steel for severe marine exposure environments within 100 m of breaking surf.

## 4.9 Thin Bed Adhesive

The thin-bed adhesive shall have a characteristic tensile strength equal to or greater than the characteristic tensile strength of the AAC, and be C1E classification in accordance with AS ISO 13007.1.

## 4.10 Backing Rod

The 'backing rod' shall be a minimum of 10 mm wide and shall consist of an expanded polystyrene tube or bead.

## 4.11 External Coatings & Membranes

External coating systems used to provide weatherproofing in accordance with the NCC requirements or durability in accordance with AS 5146.3 Table 2.5, shall be water-resistant; be vapour-permeable; be capable of bridging up to a 1 mm crack in the substrate; consist of a base levelling coat, and texture and finish coats.

Note that AS 5146.3 requires an embedded fibreglass mesh reinforcing coat with a maximum aperture of 10 mm by 10 mm and a minimum weight of 145 g/m$^2$ when the panel thickness is less than 75 mm.

When used to provide weatherproofing in accordance with the NCC requirements, external membrane systems shall be water-proof, and be capable of bridging up to a 1 mm crack in the substrate, and consist of a base levelling coat and membrane.

# 5 SPECIFICATIONS

The following are outside the scope of this manual, 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 supporting framing and the like).

Wall framing supporting AAC wall panels shall be in accordance with 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. Reinforced concrete slab-on-ground or reinforced concrete footings shall confirm to AS 2870 or AS 3600 requirements. 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 the PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System.

The placement and correct installation of control joints and articulation joints is the responsibility of the Building Designer.

The design, supply and correct installation of penetrations, e.g. windows, doors etc., are outside the scope of the PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System.

The designer and builder must ensure that the building including all drainage holes and integral flashings in all penetrations will prevent the ingress of rain water behind the PRO PANEL 50/75mm AAC Panel and will drain to the outside of the building.

All exterior windows, doors and joinery must be fixed in position before the installation of the PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System.

## 5.1 Storage and Handling

Physical damage - During construction, PRO PANEL 50/75mm AAC panel shall be protected to avoid damage and surface contamination.

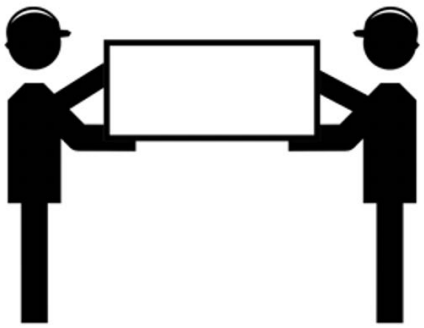
Weather protection - During construction, the top surface of PRO PANEL 50/75mm AAC panel shall be covered to prevent the entry of rainwater.

Packs of panels must only be stacked one pack high and must be properly supported on a level surface. Always verify the structural adequacy before placing packs on any structure.

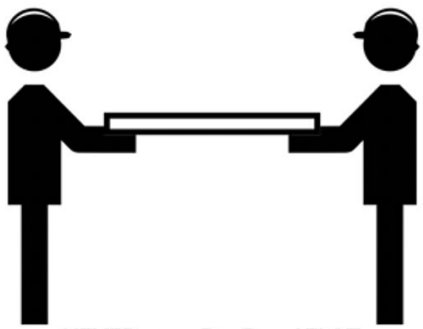
Manual handling of PRO PANEL 50/75mm AAC panel should be kept to a minimum. Ensure the panel is turned onto its long edge.

Cutting of cement based products may cause dust, which contains respirable crystalline silica. When cutting AAC products, wear a P1 or P2 respirator and eye & ear protection, and use dust extraction equipment that complies with AS/NZS 60335.2.69 class M or H requirements. Wet cutting may be mandatory in certain States and/or Territories, confirm with local work safe authority on cutting requirement for AAC products. Always refer to the appropriate Safety Data Sheet for further information.

Steel panel reinforcement exposed during cutting must be re-coated with anti-corrosion protection paint.



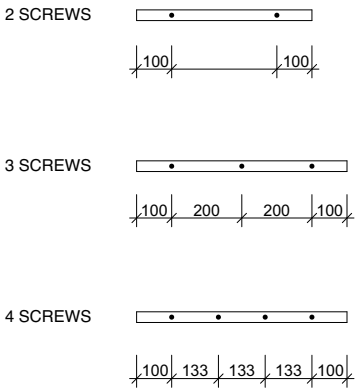
ALWAYS carry Pro Panel ON EDGE



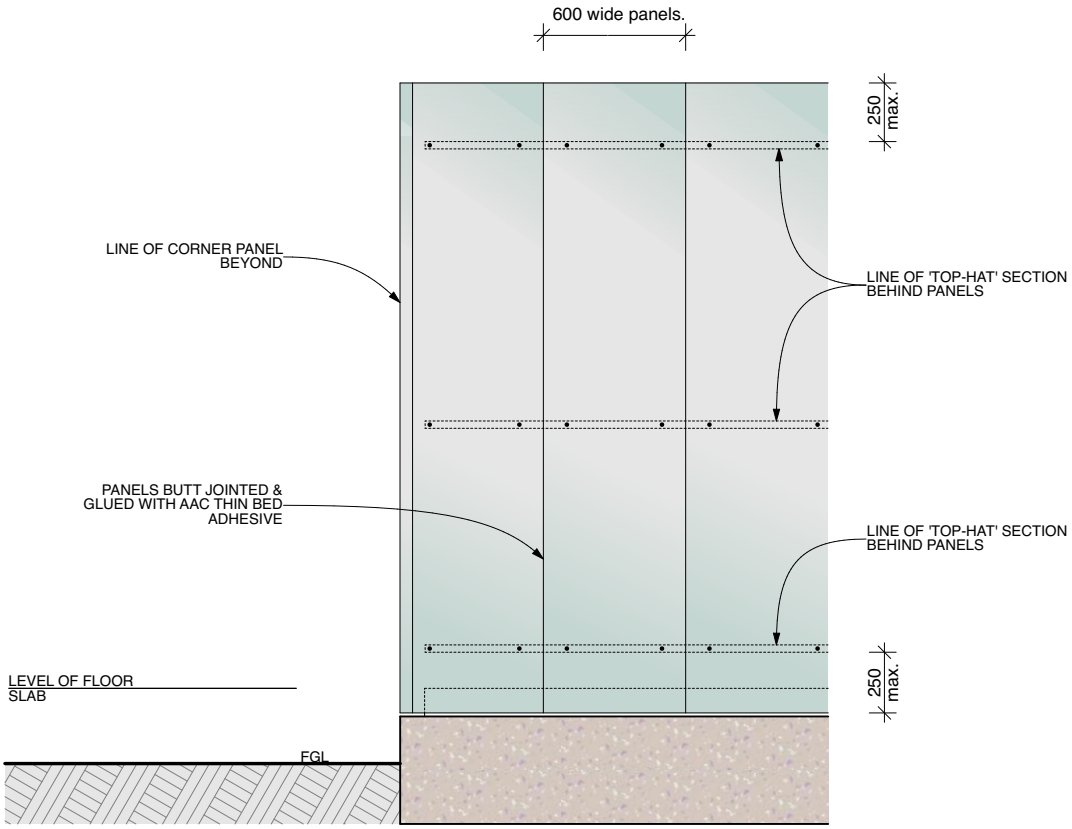
NEVER carry Pro Panel FLAT

# 6 INSTALLATION

PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System must be installed only by qualified and experienced carpenters or other tradesmen, who are conversant with the installation techniques set out in the PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System Manual, AS 5146.3 and the NCC 2022.




FIXING SCREW LAYOUT




NOTES:
For number of top hats and screws, see fixing tables.

Additional top hats may be required. For suspended panels, see fixing tables.

PANEL AND FIXING SET-OUT ELEVATION

## 6.1 50mm Panels

### 6.1.1 Panels - Supported at Base

The following tables are applicable when panels are supported at their base such as a slab edge or shelf angle.

**TABLE 1: 50mm Panel Spans - when Supported at Base**
(e.g. slab edge or shelf angle)

| AS 4055 Wind Category | Maximum ultimate wind pressure / suction (kPa) | | Maximum Stud Spacing (mm) | Maximum Panel Span (mm) | | | |
|---|---|---|---|---|---|---|---|
| | | | | Panel Location | | | |
| | | | | Typical | | Corner | |
| | Over 1200mm from corners | Within 1200mm of corners | | Span | Cant. | Span | Cant. |
| **N1, N2** | +0.67, -0.62 | -1.25 | 600 | 1200 | 250 | 1200 | 250 |
| **N3** | +1.05, -0.98 | -1.95 | 600 | 1200 | 250 | 1000 | 250 |
| **N3, C1** | +1.05, -0.98 | -1.95 | 450 | 1200 | 250 | 1000 | 250 |
| **N4, C2** | +1.56, -1.45 | -2.90 | 450 | 1050 | 250 | 750 | 150 |
| **N5, C3** | +2.30, -2.14 | -4.27 | 450 | 850 | 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 2: Number of Screws per 50mm Panel at Each Batten Location - when Supported at Base**
(e.g. slab edge or shelf angle)

| AS 4055 Wind Category | Maximum ultimate wind pressure / suction (kPa) | | Maximum Stud Spacing (mm) | Number of screws per panel per batten fixed from outside the building | |
|---|---|---|---|---|---|
| | Over 1200mm from corners | Within 1200mm of corners | | Panel Location | |
| | | | | Typical | Corner |
| **N1, N2** | +0.67, -0.62 | -1.25 | 600 | 2 | 2 |
| **N3** | +1.05, -0.98 | -1.95 | 600 | 3 | 3 |
| **N3, C1** | +1.05, -0.98 | -1.95 | 450 | 3 | 3 |
| **N4, C2** | +1.56, -1.45 | -2.90 | 450 | 3 | 4 |
| **N5, C3** | +2.30, -2.14 | -4.27 | 450 | 3 | 4 |

| AS 4055 Wind Category | Maximum ultimate wind pressure / suction (kPa) | | Maximum Stud Spacing (mm) | Number of screws per panel per batten fixed from outside the building | |
|---|---|---|---|---|---|
| | Over 1200mm from corners | Within 1200mm of corners | | Panel Location | |
| | | | | Typical | Corner |
| **N1, N2** | +0.67, -0.62 | -1.25 | 600 | 3 | 6 |
| **N3** | +1.05, -0.98 | -1.95 | 600 | 5 | 7 |
| **N3, C1** | +1.05, -0.98 | -1.95 | 450 | 5 | 7 |
| **N4, C2** | +1.56, -1.45 | -2.90 | 450 | Not suitable | Not suitable |
| **N5, C3** | +2.30, -2.14 | -4.27 | 450 | Not suitable | Not suitable |

**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 (10mm shorter than panel thickness), or 14-10 MP Bugle Head Batten screw, fixed from outside the building (15mm longer than panel thickness).
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.

### 6.1.2 Panels – Suspended at Gable Ends

The following tables are applicable when panels are suspended such as a gable end.

**Table 3: 50mm Panel Spans - when Suspended at Gable Ends**

| AS 4055 Wind Category | Maximum ultimate wind pressure / suction (kPa) | | Maximum Stud Spacing (mm) | Maximum Panel Span (mm) | | | |
|---|---|---|---|---|---|---|---|
| | | | | Panel Location | | | |
| | | | | Typical | | Corner | |
| | Over 1200mm from corners | Within 1200mm of corners | | Span | Cant. | Span | Cant. |
| **N1, N2** | +0.67, -0.62 | -1.25 | 600 | 800 | 150 | 750 | 150 |
| **N3** | +1.05, -0.98 | -1.95 | 600 | 800 | 150 | 600 | 150 |
| **N3, C1** | +1.05, -0.98 | -1.95 | 450 | 800 | 150 | 650 | 150 |
| **N4, C2** | +1.56, -1.45 | -2.90 | 450 | 800 | 150 | 450 | 100 |
| **N5, C3** | +2.30, -2.14 | -4.27 | 450 | 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 4: Number of Screws per 50mm Panel at Each Batten Location - when Suspended at Gable Ends | | | | | |
|---|---|---|---|---|---|
| AS 4055 Wind Category | Maximum ultimate wind pressure / suction (kPa) | | Maximum Stud Spacing (mm) | Number of screws per panel per batten fixed from outside the building | |
| | Over 1200mm from corners | Within 1200mm of corners | | Batten Location | |
| | | | | Typical | Corner |
| N1, N2 | +0.67, -0.62 | -1.25 | 600 | 2 | 3 |
| N3 | +1.05, -0.98 | -1.95 | 600 | 3 | 4 |
| N3, C1 | +1.05, -0.98 | -1.95 | 450 | 3 | 4 |
| N4, C2 | +1.56, -1.45 | -2.90 | 450 | 4 | 4 |
| N5, C3 | +2.30, -2.14 | -4.27 | 450 | 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 (15mm longer than panel thickness).
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.

### 6.1.3 Panels – Suspended from Framing (2nd & 3rd storey construction)

The following tables are applicable when panels are suspended such as second and third storey constructions.

**Table 5: 50mm Panel Spans - when Suspended from Framing**
(e.g. 2nd & 3rd Storey Construction)

| AS 4055 Wind Category | Maximum ultimate wind pressure / suction (kPa) | | Maximum Stud Spacing (mm) | Maximum Panel Span (mm) | | | |
|---|---|---|---|---|---|---|---|
| | | | | Panel Location | | | |
| | | | | Typical | | Corner | |
| | Over 1200mm from corners | Within 1200mm of corners | | Span | Cant. | Span | Cant. |
| **N1, N2** | +0.67, -0.62 | -1.25 | 600 | 1000 | 250 | 1000 | 250 |
| **N3** | +1.05, -0.98 | -1.95 | 600 | 1000 | 250 | 950 | 150 |
| **N3, C1** | +1.05, -0.98 | -1.95 | 450 | 1000 | 250 | 950 | 150 |
| **N4, C2** | +1.56, -1.45 | -2.90 | 450 | 1000 | 250 | 750 | 150 |
| **N5, C3** | +2.30, -2.14 | -4.27 | 450 | 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 6: Number of Screws per 50mm Panel at Each Batten Location - when Suspended from Framing**
(e.g. 2nd and 3rd storey construction)

| AS 4055 Wind Category | Maximum ultimate wind pressure / suction (kPa) | | Maximum Stud Spacing (mm) | Number of screws per panel per batten fixed from outside the building | |
|---|---|---|---|---|---|
| | Over 1200mm from corners | Within 1200mm of corners | | Batten Location | |
| | | | | Typical | Corner |
| **N1, N2** | +0.67, -0.62 | -1.25 | 600 | 2 | 3 |
| **N3** | +1.05, -0.98 | -1.95 | 600 | 3 | 4 |
| **N3, C1** | +1.05, -0.98 | -1.95 | 450 | 3 | 4 |
| **N4, C2** | +1.56, -1.45 | -2.90 | 450 | 4 | 4 |
| **N5, C3** | +2.30, -2.14 | -4.27 | 450 | 4 | 4 |

| AS 4055 Wind Category | Maximum ultimate wind pressure / suction (kPa) | | Maximum Stud Spacing (mm) | Number of screws per panel per batten fixed from inside the building | |
|---|---|---|---|---|---|
| | Over 1200mm from corners | Within 1200mm of corners | | Batten Location | |
| | | | | Typical | Corner |
| **N1, N2** | +0.67, -0.62 | -1.25 | 600 | Not suitable | Not suitable |
| **N3** | +1.05, -0.98 | -1.95 | 600 | Not suitable | Not suitable |
| **N3, C1** | +1.05, -0.98 | -1.95 | 450 | Not suitable | Not suitable |
| **N4, C2** | +1.56, -1.45 | -2.90 | 450 | Not suitable | Not suitable |
| **N5, C3** | +2.30, -2.14 | -4.27 | 450 | Not suitable | Not suitable |

**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 (10mm shorter than panel thickness), or 14-10 MP Bugle Head Batten screw, fixed from outside the building (15mm longer than panel thickness).
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.

## 6.2 75mm Panels

### 6.2.1 Panels - Supported at Base

The following tables are applicable when panels are supported at their base such as a slab edge or shelf angle.

**TABLE 7: 75mm Panel Spans - when Supported at Base**
(e.g. slab edge or shelf angle)

| AS 4055 Wind Category | Maximum ultimate wind pressure / suction (kPa) | | Maximum Stud Spacing (mm) | Maximum Panel Span (mm) | | | |
|---|---|---|---|---|---|---|---|
| | | | | Panel Location | | | |
| | | | | Typical | | Corner | |
| | Over 1200mm from corners | Within 1200mm of corners | | Span | Cant. | Span | Cant. |
| **N1, N2** | +0.67, -0.62 | -1.25 | 600 | 1200 | 250 | 1200 | 250 |
| **N3** | +1.05, -0.98 | -1.95 | 600 | 1200 | 250 | 1000 | 250 |
| **N3, C1** | +1.05, -0.98 | -1.95 | 450 | 1200 | 250 | 1000 | 250 |
| **N4, C2** | +1.56, -1.45 | -2.90 | 450 | 1200 | 250 | 900 | 150 |
| **N5, C3** | +2.30, -2.14 | -4.27 | 450 | 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 8: Number of Screws per 75mm Panel at Each Batten Location - when Supported at Base**
(e.g. slab edge or shelf angle)

| AS 4055 Wind Category | Maximum ultimate wind pressure / suction (kPa) | | Maximum Stud Spacing (mm) | Number of screws per panel per batten fixed from outside the building | |
|---|---|---|---|---|---|
| | Over 1200mm from corners | Within 1200mm of corners | | Batten Location | |
| | | | | Typical | Corner |
| **N1, N2** | +0.67, -0.62 | -1.25 | 600 | 2 | 2 |
| **N3** | +1.05, -0.98 | -1.95 | 600 | 3 | 3 |
| **N3, C1** | +1.05, -0.98 | -1.95 | 450 | 3 | 3 |
| **N4, C2** | +1.56, -1.45 | -2.90 | 450 | 3 | 4 |
| **N5, C3** | +2.30, -2.14 | -4.27 | 450 | 3 | 4 |

| AS 4055 Wind Category | Maximum ultimate wind pressure / suction (kPa) | | Maximum Stud Spacing (mm) | Number of screws per panel per batten fixed from inside the building | |
|---|---|---|---|---|---|
| | Over 1200mm from corners | Within 1200mm of corners | | Batten Location | |
| | | | | Typical | Corner |
| **N1, N2** | +0.67, -0.62 | -1.25 | 600 | 2 | 2 |
| **N3** | +1.05, -0.98 | -1.95 | 600 | 3 | 3 |
| **N3, C1** | +1.05, -0.98 | -1.95 | 450 | 3 | 3 |
| **N4, C2** | +1.56, -1.45 | -2.90 | 450 | 3 | 4 |
| **N5, C3** | +2.30, -2.14 | -4.27 | 450 | 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 (10mm shorter than panel thickness), or 14-10 MP Bugle Head Batten screw, fixed from outside the building (15mm longer than panel thickness).
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.

### 6.2.2 Panels – Suspended at Gable Ends

The following tables are applicable when panels are suspended such as a gable end.

**Table 9: 75mm Panel Spans - when Suspended at Gable Ends**

| AS 4055 Wind Category | Maximum ultimate wind pressure / suction (kPa) | | Maximum Stud Spacing (mm) | Maximum Panel Span (mm) | | | |
|---|---|---|---|---|---|---|---|
| | | | | Panel Location | | | |
| | | | | Typical | | Corner | |
| | Over 1200mm from corners | Within 1200mm of corners | | Span | Cant. | Span | Cant. |
| **N1, N2** | +0.67, -0.62 | -1.25 | 600 | 800 | 150 | 750 | 150 |
| **N3** | +1.05, -0.98 | -1.95 | 600 | 800 | 150 | 600 | 150 |
| **N3, C1** | +1.05, -0.98 | -1.95 | 450 | 800 | 150 | 650 | 150 |
| **N4, C2** | +1.56, -1.45 | -2.90 | 450 | 800 | 150 | 450 | 100 |
| **N5, C3** | +2.30, -2.14 | -4.27 | 450 | 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 10: Number of Screws per 75mm Panel at Each Batten Location - when Suspended at Gable Ends | | | | | |
|---|---|---|---|---|---|
| AS 4055 Wind Category | Maximum ultimate wind pressure / suction (kPa) | | Maximum Stud Spacing (mm) | Number of screws per panel per batten fixed from outside the building | |
| | Over 1200mm from corners | Within 1200mm of corners | | Batten Location | |
| | | | | Typical | Corner |
| **N1, N2** | +0.67, -0.62 | -1.25 | 600 | 2 | 3 |
| **N3** | +1.05, -0.98 | -1.95 | 600 | 3 | 4 |
| **N3, C1** | +1.05, -0.98 | -1.95 | 450 | 3 | 4 |
| **N4, C2** | +1.56, -1.45 | -2.90 | 450 | 4 | 4 |
| **N5, C3** | +2.30, -2.14 | -4.27 | 450 | 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 15mm longer than panel thickness.
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.

### 6.2.3 Panels – Suspended from Framing (2nd & 3rd storey construction)

The following tables are applicable when panels are suspended such as second and third storey constructions.

**Table 11: 75mm Panel Spans - when Suspended from Framing**
(e.g. 2nd & 3rd Storey Construction)

| AS 4055 Wind Category | Maximum ultimate wind pressure / suction (kPa) | | Maximum Stud Spacing (mm) | Maximum Panel Span (mm) | | | |
|---|---|---|---|---|---|---|---|
| | | | | Panel Location | | | |
| | | | | Typical | | Corner | |
| | Over 1200mm from corners | Within 1200mm of corners | | Span | Cant. | Span | Cant. |
| **N1, N2** | +0.67, -0.62 | -1.25 | 600 | 1000 | 250 | 1000 | 250 |
| **N3** | +1.05, -0.98 | -1.95 | 600 | 1000 | 250 | 1000 | 250 |
| **N3, C1** | +1.05, -0.98 | -1.95 | 450 | 1000 | 250 | 1000 | 250 |
| **N4, C2** | +1.56, -1.45 | -2.90 | 450 | 1000 | 250 | 750 | 150 |
| **N5, C3** | +2.30, -2.14 | -4.27 | 450 | 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 12: Number of Screws per 75mm Panel at Each Batten Location - when Suspended from Framing**
(e.g. 2nd and 3rd storey construction)

| AS 4055 Wind Category | Maximum ultimate wind pressure / suction (kPa) | | Maximum Stud Spacing (mm) | Number of screws per panel per batten fixed from outside the building | |
|---|---|---|---|---|---|
| | Over 1200mm from corners | Within 1200mm of corners | | Batten Location | |
| | | | | Typical | Corner |
| **N1, N2** | +0.67, -0.62 | -1.25 | 600 | 2 | 3 |
| **N3** | +1.05, -0.98 | -1.95 | 600 | 3 | 4 |
| **N3, C1** | +1.05, -0.98 | -1.95 | 450 | 3 | 4 |
| **N4, C2** | +1.56, -1.45 | -2.90 | 450 | 4 | 4 |
| **N5, C3** | +2.30, -2.14 | -4.27 | 450 | 4 | 4 |

| AS 4055 Wind Category | Maximum ultimate wind pressure / suction (kPa) | | Maximum Stud Spacing (mm) | Number of screws per panel per batten fixed from inside the building | |
|---|---|---|---|---|---|
| | Over 1200mm from corners | Within 1200mm of corners | | Batten Location | |
| | | | | Typical | Corner |
| **N1, N2** | +0.67, -0.62 | -1.25 | 600 | 2 | 3 |
| **N3** | +1.05, -0.98 | -1.95 | 600 | 3 | 4 |
| **N3, C1** | +1.05, -0.98 | -1.95 | 450 | 3 | 4 |
| **N4, C2** | +1.56, -1.45 | -2.90 | 450 | 4 | 4 |
| **N5, C3** | +2.30, -2.14 | -4.27 | 450 | Not suitable | Not suitable |

**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 (10mm shorter than panel thickness), or 14-10 MP Bugle Head Batten screw, fixed from outside the building (15mm longer than panel thickness).
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.

## 6.3 Control Joints and Articulation Joints

Specific requirements for Control joints and articulation joints will vary from building to building. It is the responsibility of the designer to ensure the PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System is suitable for any application. General guidance for control joints and articulation joints is provided in AS 5146.3 and as follows.

At minimum, 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 AS 5146.3 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:

   a. At the corner of itself.

   b. At a maximum of 1.2 m one side of a corner, or

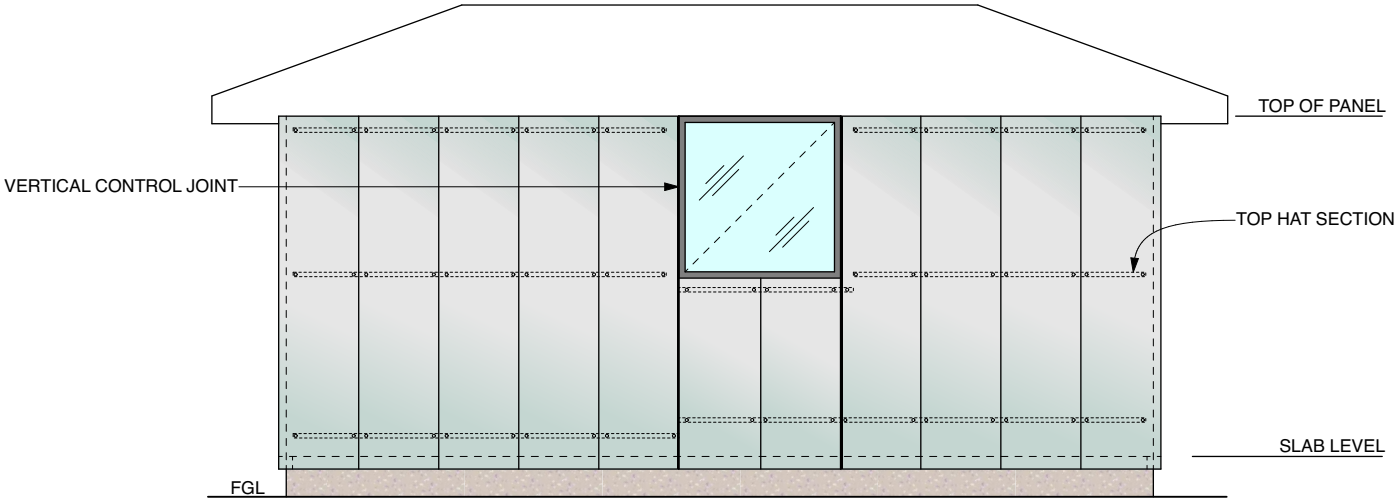
   c. At a maximum of 2.4 m on each side of a corner.

At minimum, 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.

b) At the position where the ends of two or more adjacent panels are aligned.

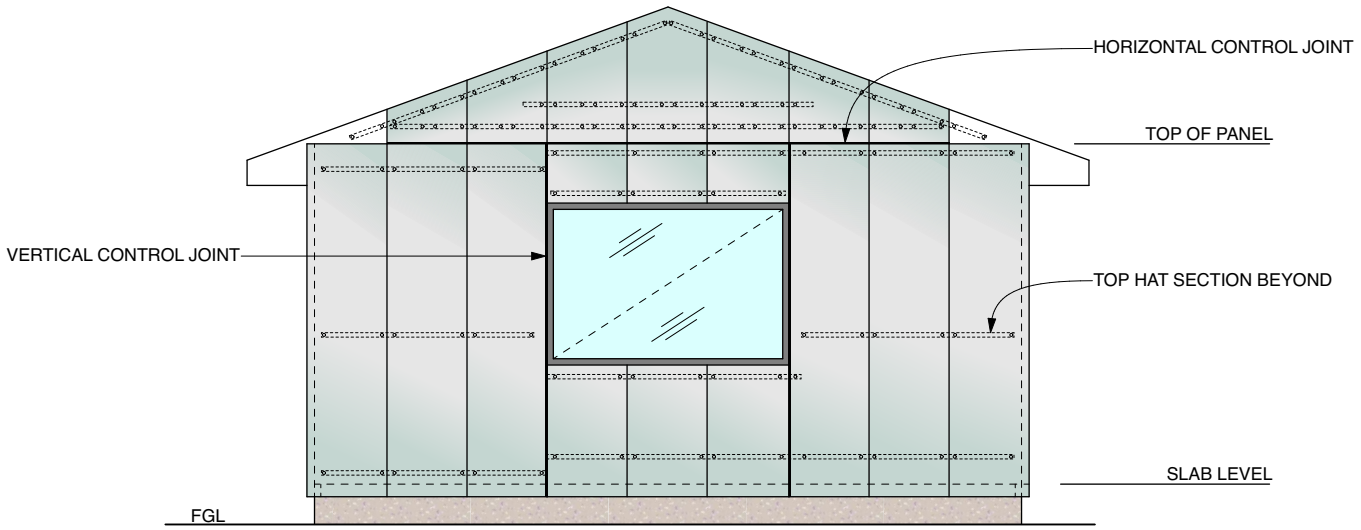
## 6.4 Typical Panel Layout for Max. 600mm Stud Wall Detail




NOTES:
For number of top hats and screws, see fixing tables.

These details have not shown the set-out of the top hats to accomodate control joint locations.

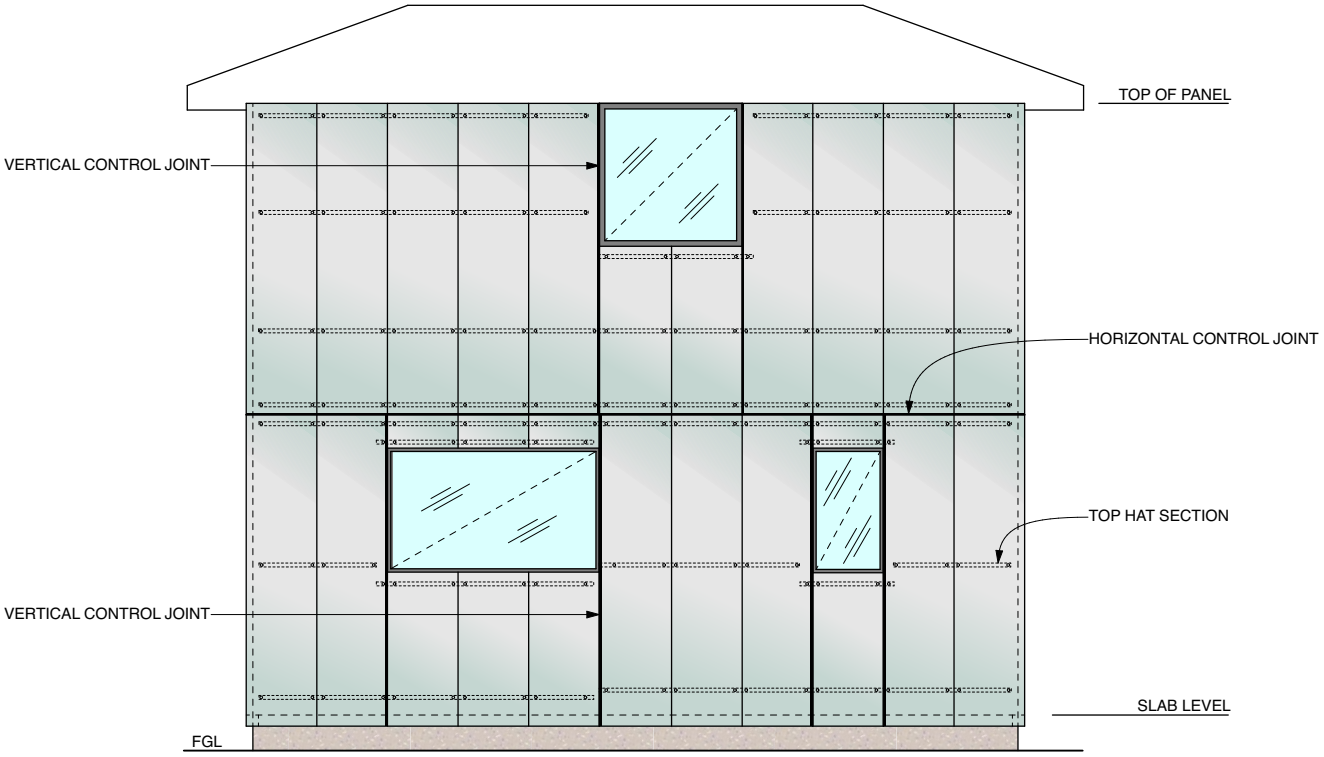
SINGLE STOREY CONSTRUCTION - HIP ROOF ELEVATION




NOTES:
For number of top hats and screws, see fixing tables.

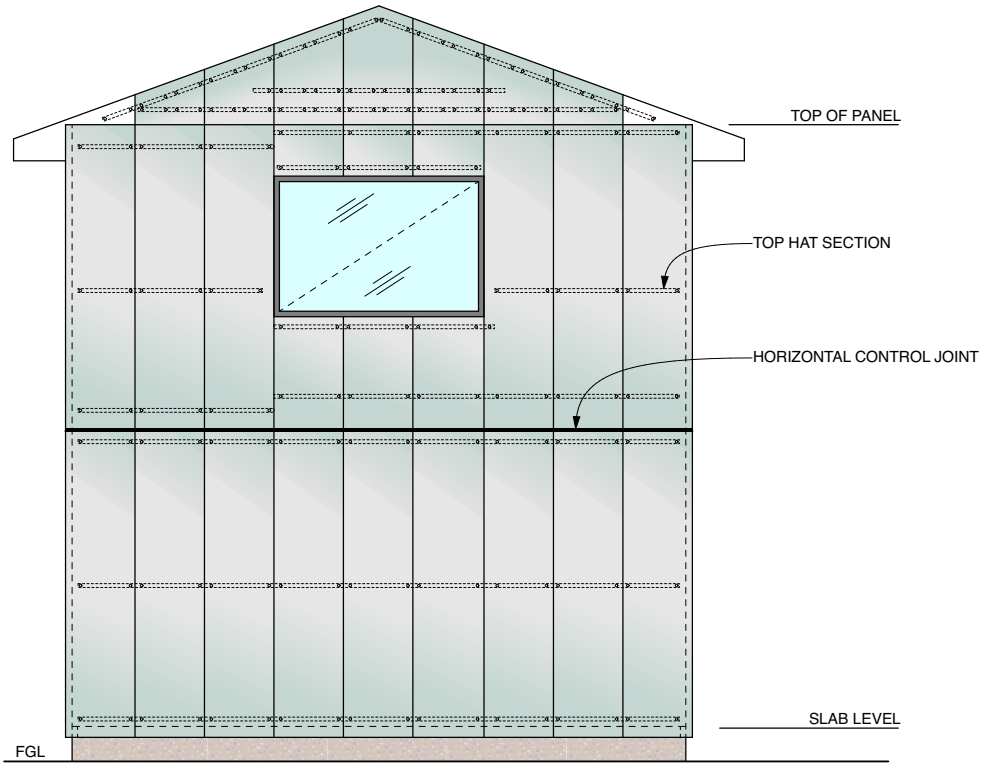
These details have not shown the set-out of the top hats to accomodate control joint locations.

SINGLE STOREY CONSTRUCTION - GABLE ROOF ELEVATION




NOTES:
For number of top hats and screws, see fixing tables.

## TWO STOREY CONSTRUCTION - HIP ROOF ELEVATION




NOTES:
For number of top hats and screws, see fixing tables.

## TWO STOREY CONSTRUCTION - GABLE ROOF ELEVATION

## 6.5 Installation Steps

### 6.5.1 Accessories Installation:

1. Damp-proof Course and Flashings – shall be installed in accordance with the PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System Typical Construction Details, NCC requirements (e.g. NCC 2022 Volume Two, 5.7.4), and as follows.

   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. Breathable Wall Wrap - Fix over the studs, and cut around penetrations and openings (e.g. doors, windows) in accordance with AS 4200.2:2017.

3. Install Flashing Tape to seal the breathable wall wrap at all joins, openings and around the perimeter of the wall frame. Flashing Tape must always be applied in accordance with the manufacturers' instructions including:

   - surfaces are clean and dry

   - pressure is applied to the tape so the adhesive is firm contact with the substrate.

   Flashing Tape is not a mechanical joining device, ensure that the materials being are joined mechanically secured. Flapping of wrap joined by flashing tape is likely to cause tape failure.

4. Battens must be fixed on every stud, with maximum spacings as described in the Sections 6.1, 6.2 or 6.3 as applicable.

### 6.5.2 Panel Installation:

1. Holes and chases shall not be made in Reinforced AAC, except at positions specified in the design documents.
2. Reinforced AAC members shall not be cut during construction, except at positions specified in the design documents.
3. Allow gaps between PRO PANEL 50/75mm AAC panel and any openings for beading and sealing. Guidance on gap sizes is provided in AS 5146.3, Table 2.10.7.
4. 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.
5. The Backing Rod is a closed-cell polyethylene foam. This used as back-blocking for sealant placed in joints.
6. Horizontal Control Joints - Provide horizontal control joints at all locations as noted for the specific project. Horizontal control joints consist of a 10 mm gap with backing rod for the sealant to be placed in the joint. Note that as a minimum, horizontal control joints must be made at vertical spacing not greater than 3.0 m, typically corresponding to a storey height. In all cases horizontal control joints must be made at all construction joints and at the junctions of dissimilar substrates where the potential for differential movement exists.
7. Vertical Control Joints – Provide vertical control joints, at all locations as noted for the specific project. Vertical control joints consist of a 10 mm gap with backing rod for the sealant to be placed in the joint. Note that as a minimum, vertical control joints must be made at horizontal spacing not greater than 9m, and should typically coincide with penetrations such as doors, windows etc. In all cases vertical control joints must be made at all construction joints and at the junctions of dissimilar substrates where the potential for differential movement exists.

### 6.5.3 External Coating or Membrane Installation

**External Coating System:**

The following external coating system conforms with the durability requirements of AS 5146.3 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 that AS 5146.3 Clause 2.8.4 deems the inaccessible surfaces of separating walls (party walls), which are enclosed, are considered to be 'internal' walls and thus do not require coating.

**External Membrane System:**

The following external membrane system conforms with the durability requirements of AS 5146.3 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.

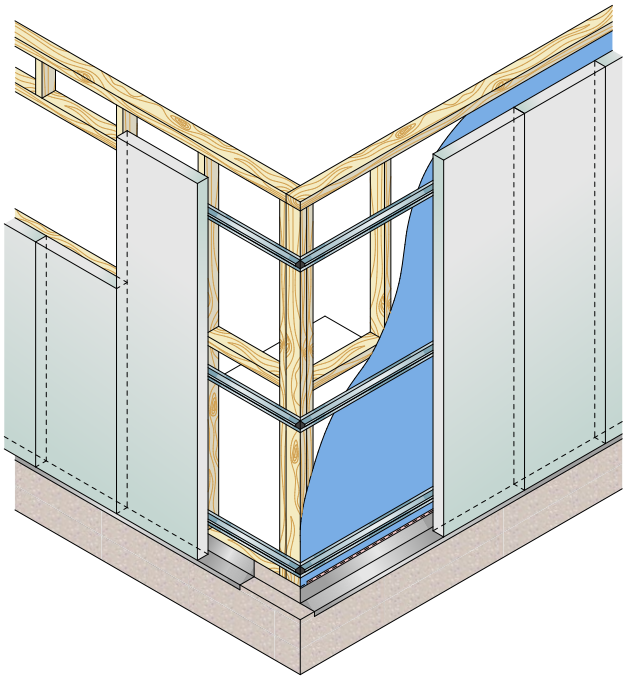
# 7 CONSTRUCTION DETAILS

## 7.1 Typical Details

PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System must be installed in strict accordance with this Technical and Installation Manual and comply with all relevant building codes and local government regulations.

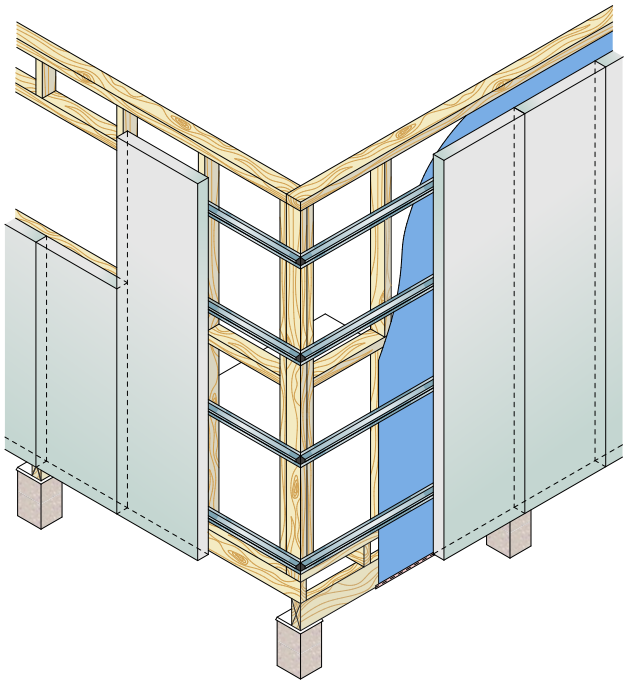
These typical construction details are provided as a guide for construction industry professionals. These typical construction details do not constitute a project specific specification and should only be used within the context of project specifications.

Modifications to these drawings shall not be made without the approval of United Building Supply.



NOTES:
For number of top hats and screws, see fixing tables.

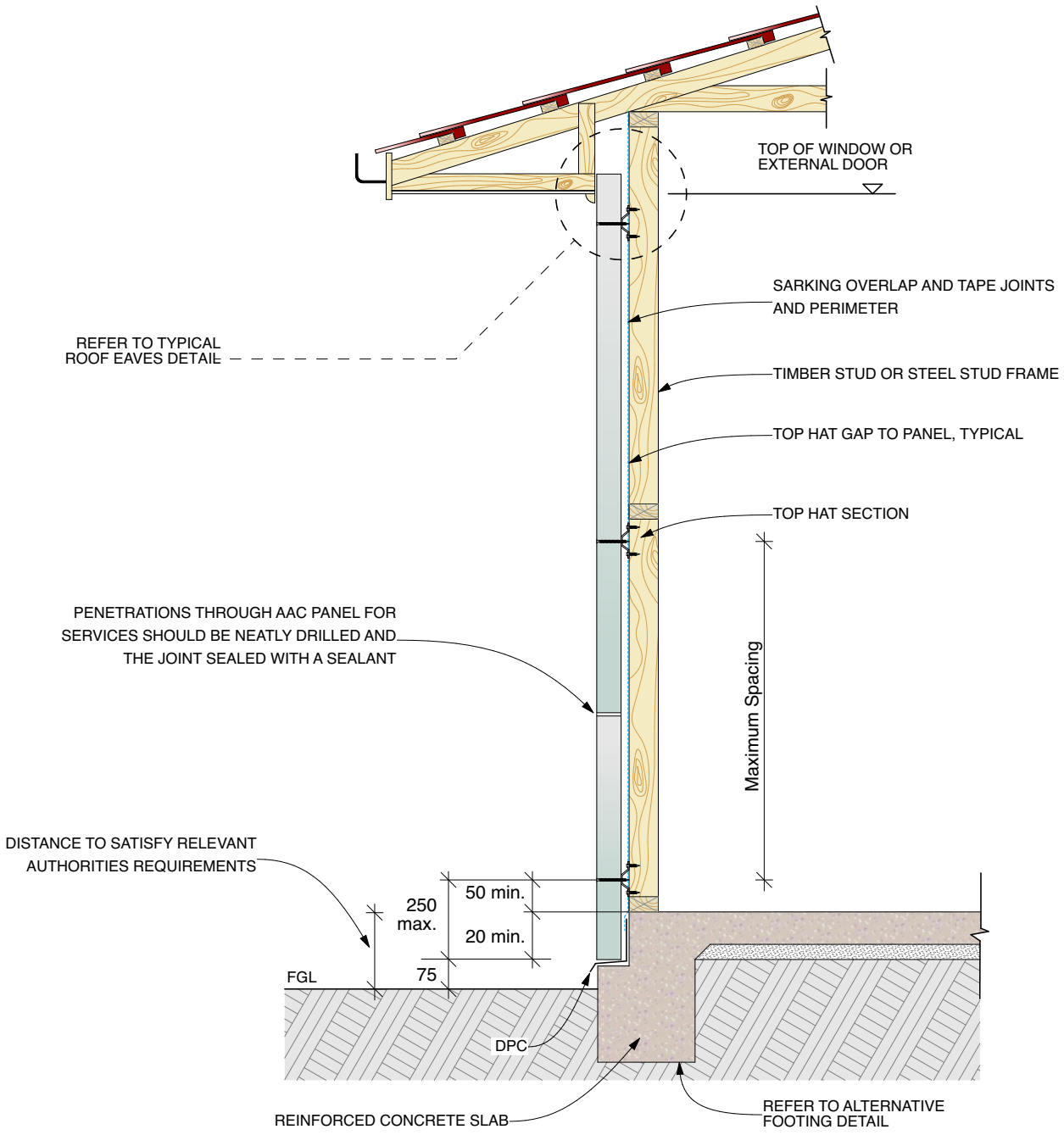
PANELS SUPPORTED AT BASE



NOTES:
For number of top hats and screws, see fixing tables.

PANELS SUSPENDED

## 7.1.1 SECTION THROUGH SINGLE STOREY CONSTRUCTION

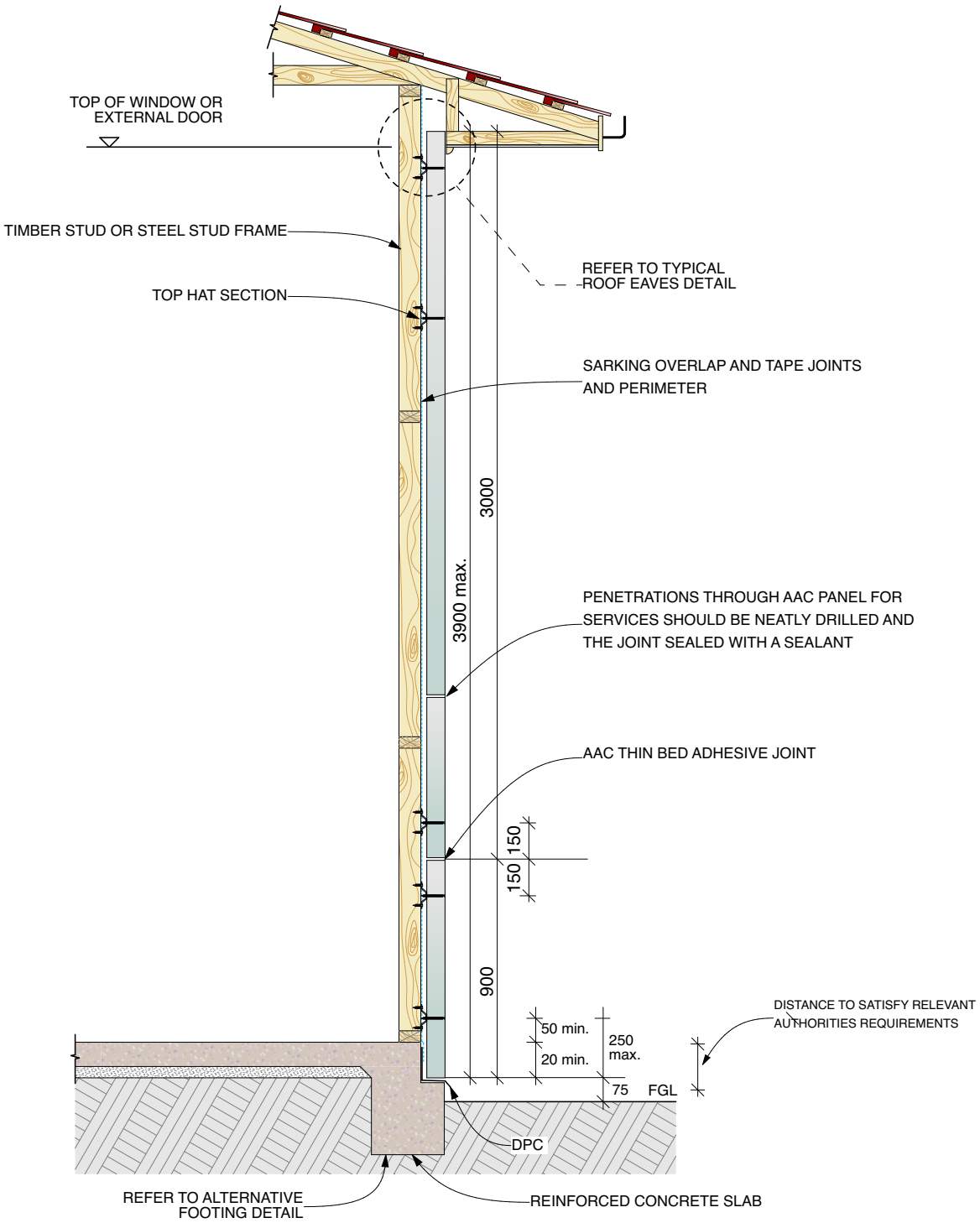



NOTES:

For number of top hats and screws, see fixing tables.

The maximum that the panel shall overhang the slab edge is ⅓ of the panel thickness.

## 7.1.2 SECTION THROUGH SINGLE STOREY CONSTRUCTION - WALL UP TO 3900mm HIGH

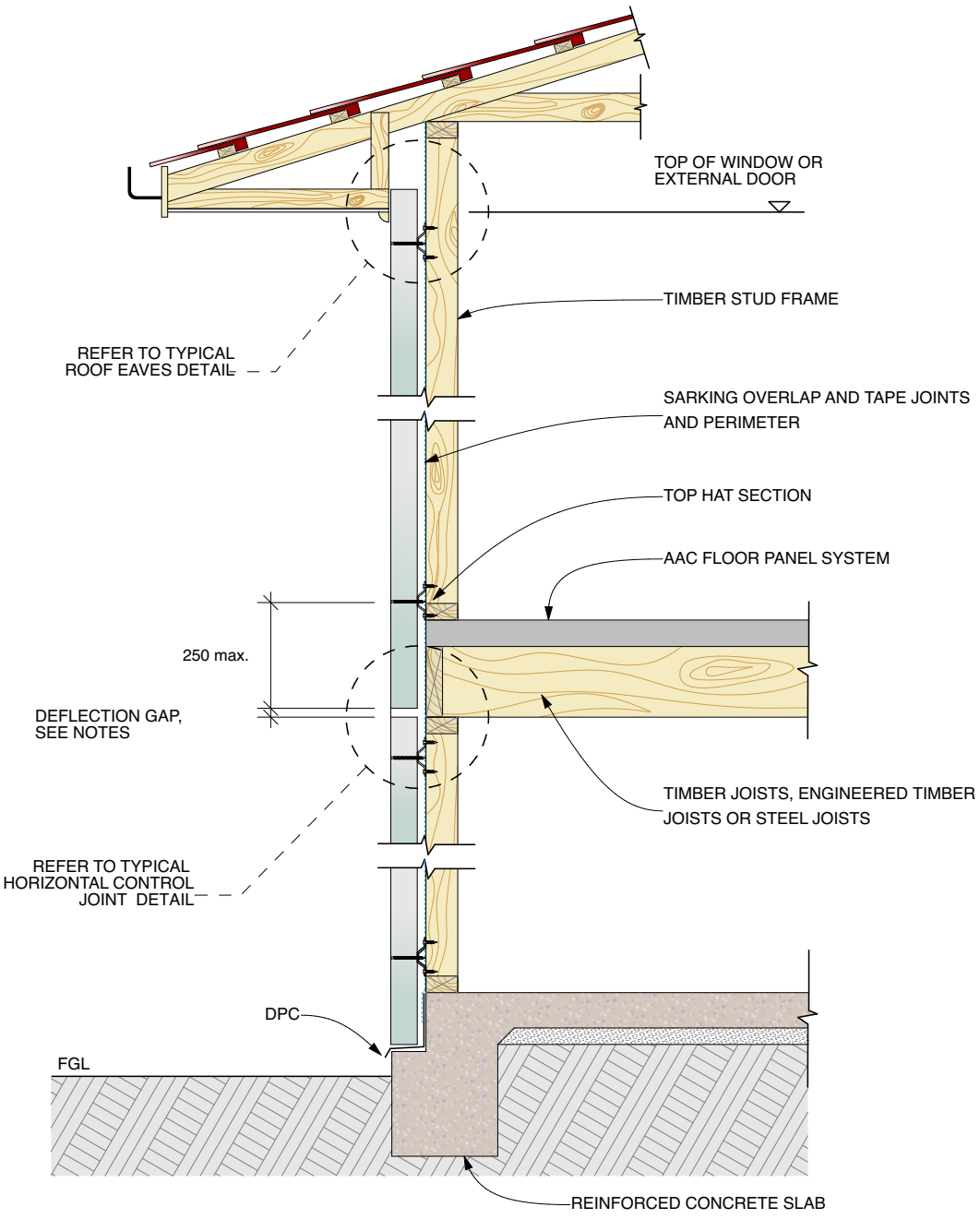



NOTES:

For number of top hats and screws, see fixing tables.

The maximum that the panel shall overhang the slab edge is ⅓ of the panel thickness.

## 7.1.3 TWO STOREY CONSTRUCTION - HORIZONTAL CONTROL JOINT



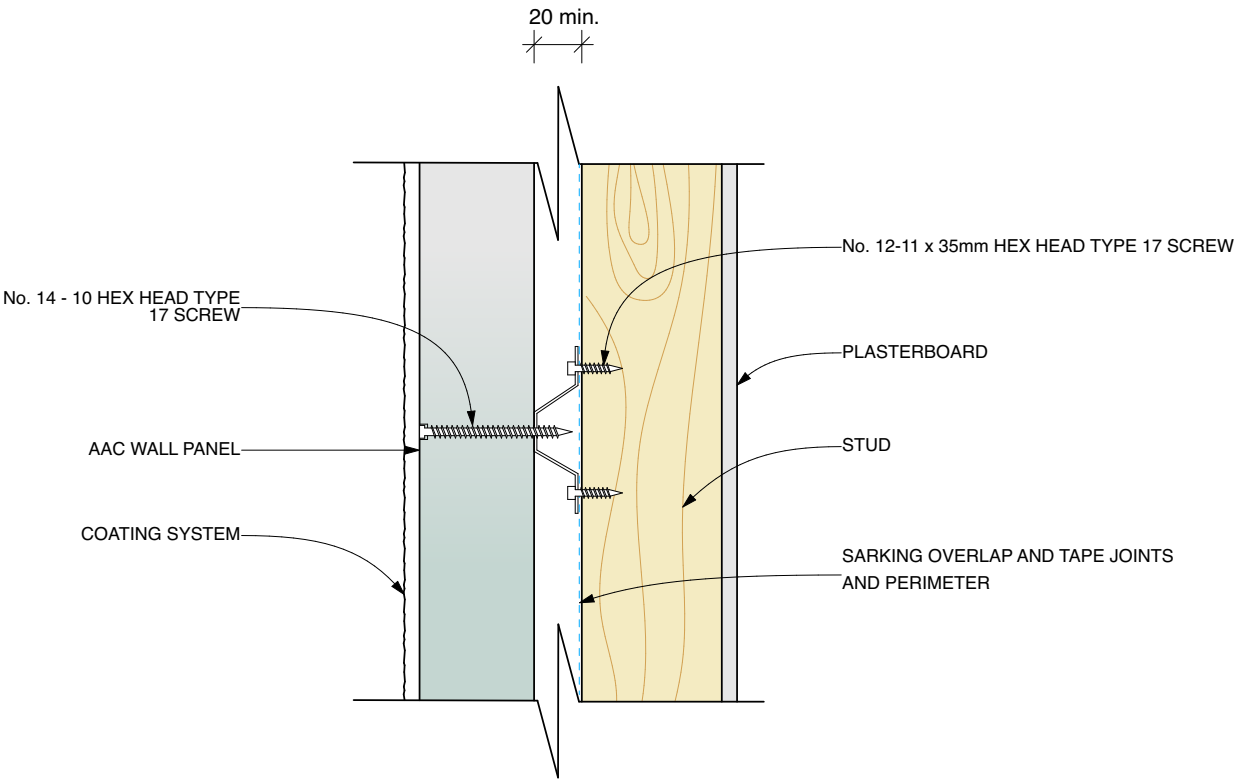

NOTES:

The gap widths may be reduced for low-shrinkage fl oo r systems.

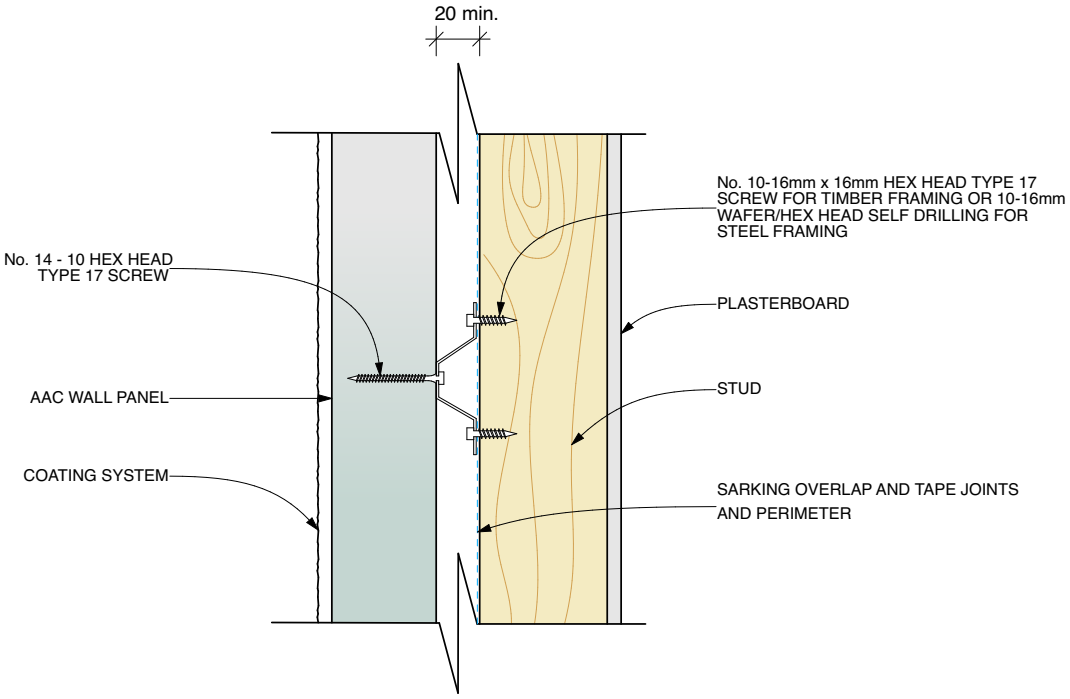
Maximum acceptable gap width for FRL applications is 10mm.

The maximum that the panel shall overhang the slab edge is ⅓ of the panel thickness.

### 7.1.4 EXTERNAL FIXING DETAIL



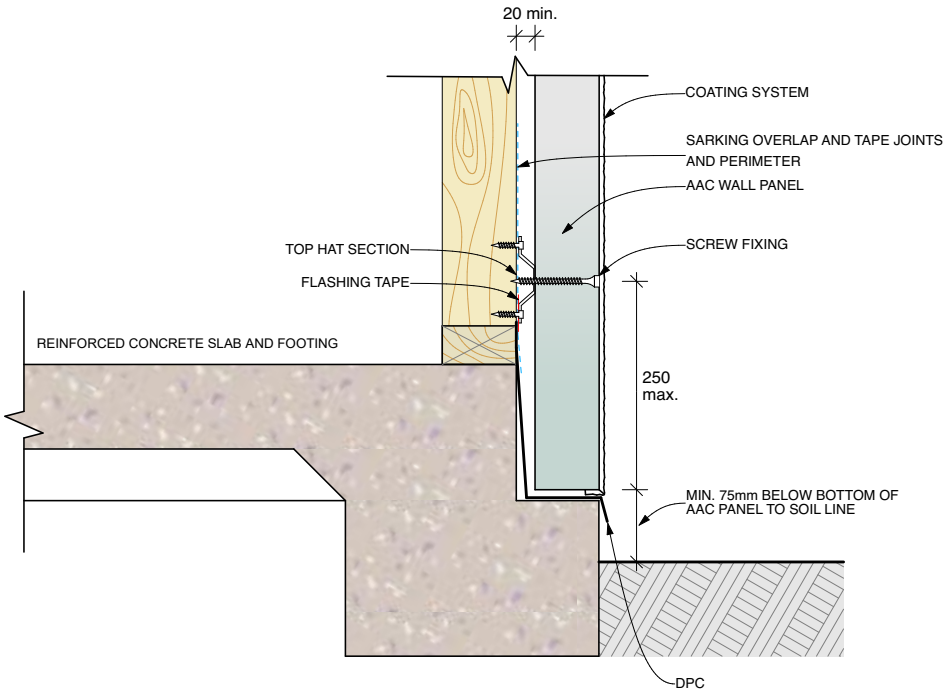
## 7.1.5 INTERNAL FIXING DETAIL FOR BOUNDARY WALLS




NOTES:

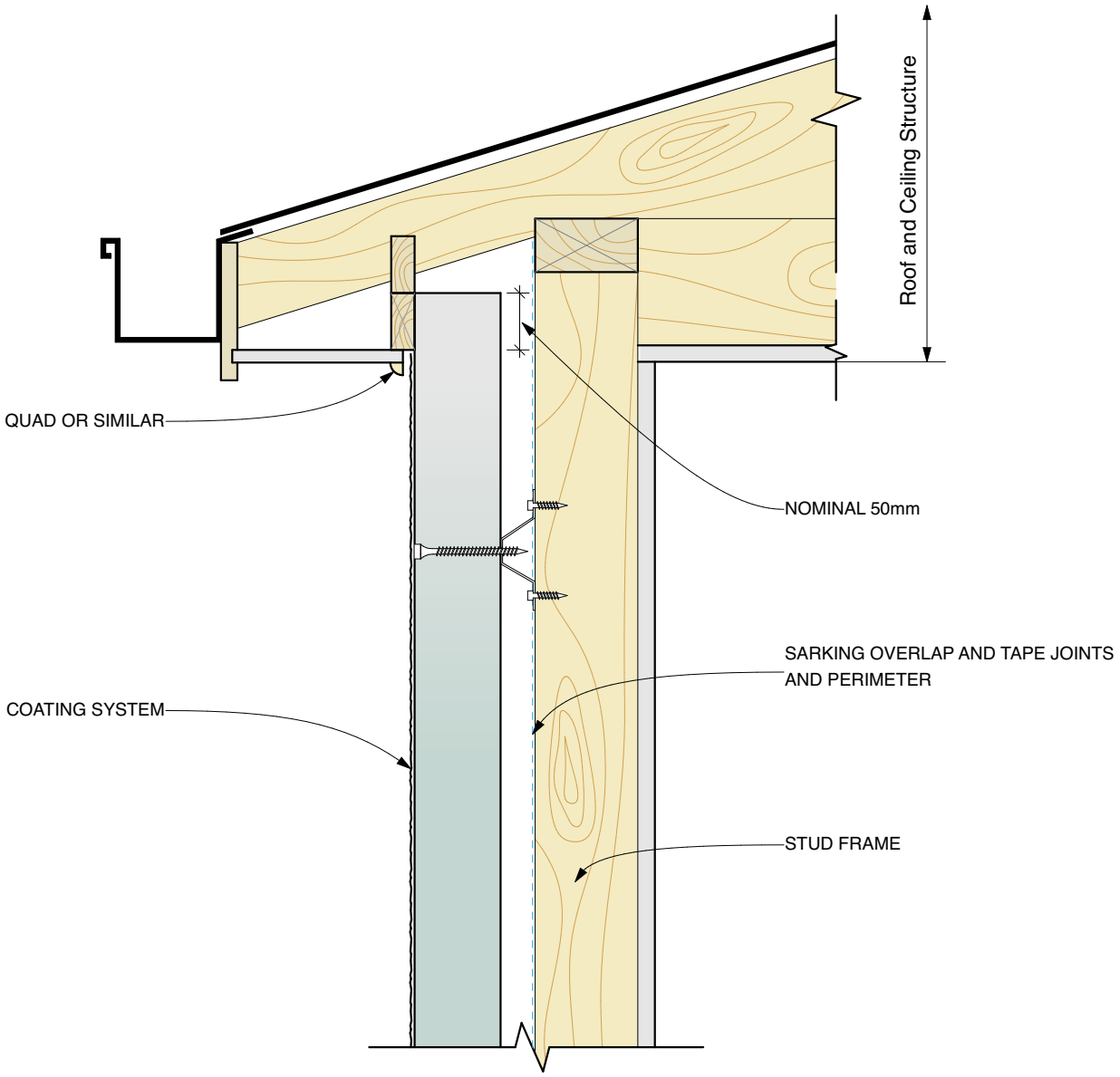
When limited access dictates that the panels shall be fixed from the inside of the building, an additional 14-10 Hex Head Type 17 screw per panel per top-hat batten shall be installed.
When the sarking is penetrated by screw fixing, tape to seal wall wrap.

## 7.1.6 TYPICAL BOTTOM EDGE DETAIL

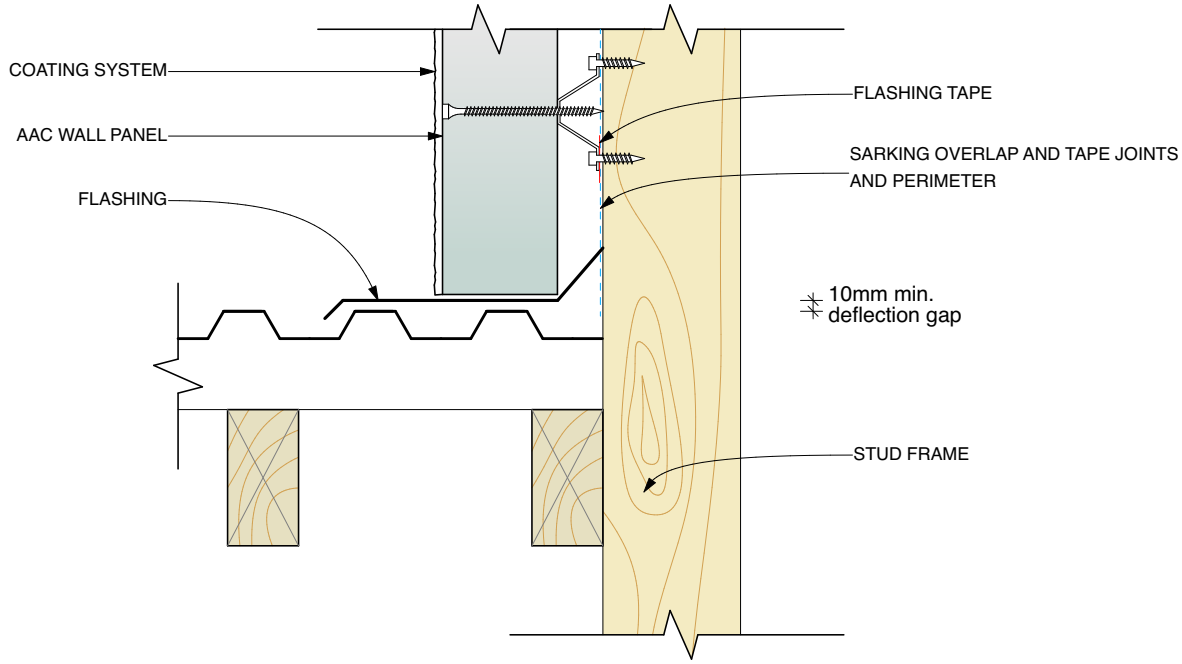



NOTES:
The maximum that the panel shall overhang the slab edge is ⅓ of the panel thickness.

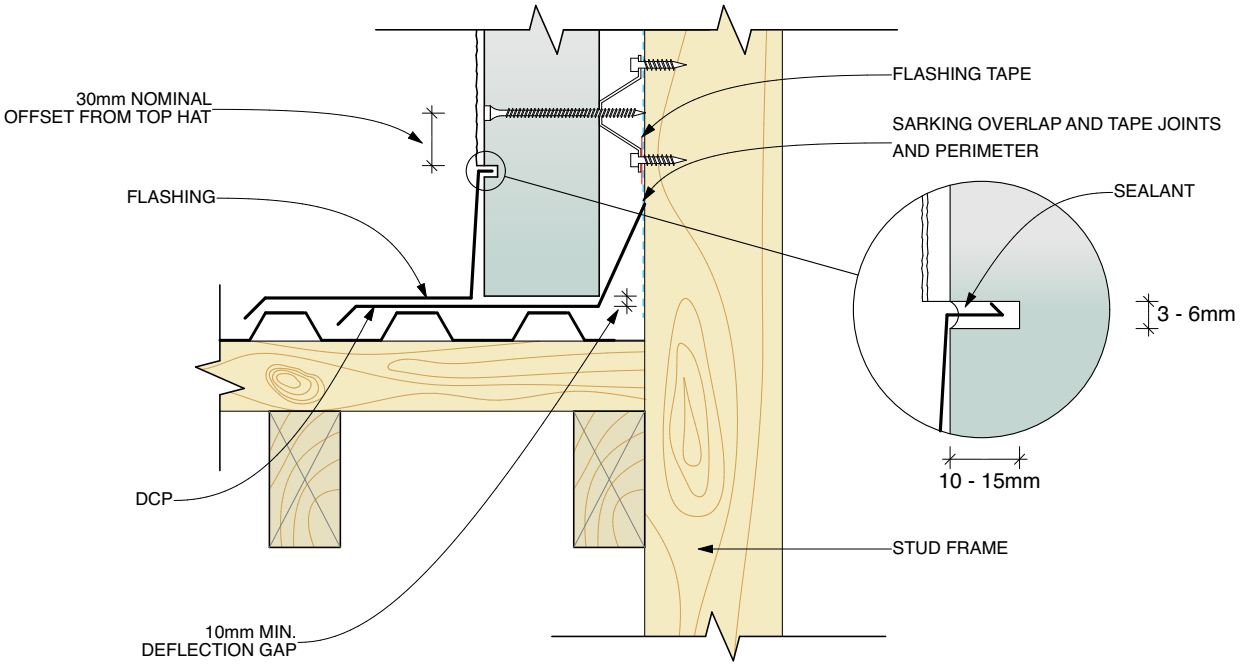
## 7.1.7 TYPICAL EAVES DETAIL WITH AAC PANEL FINISHING ABOVE SOFFIT



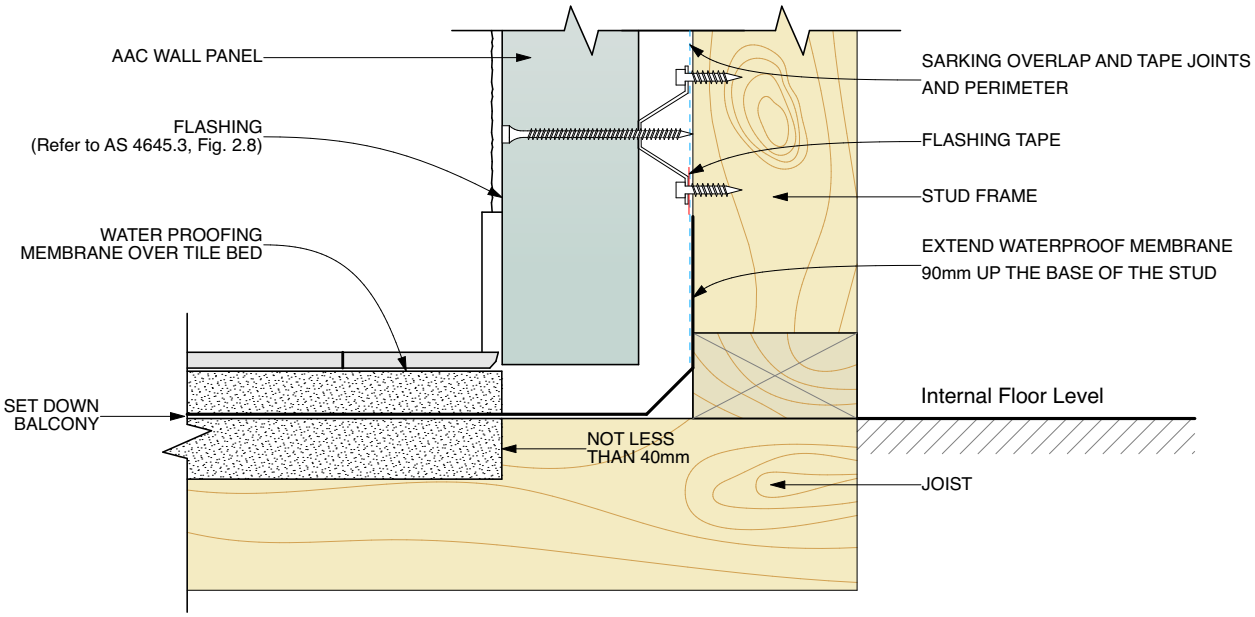
### 7.1.8 ROOF DETAIL WITH FLASHING UNDER PANEL



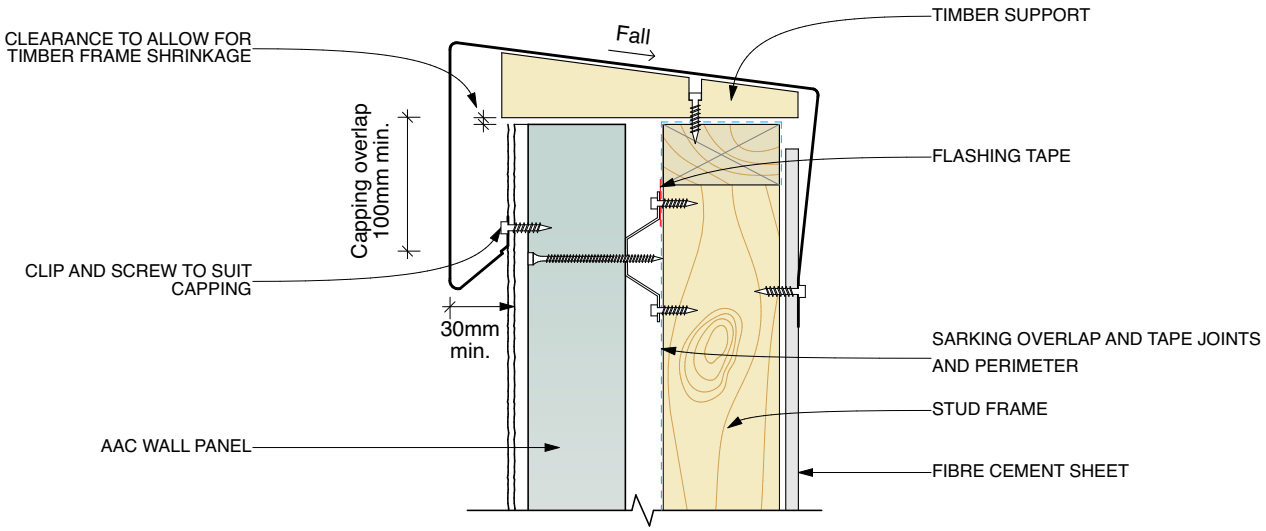
## 7.1.9 ROOF DETAIL WITH FLASHING SET INTO AAC PANEL



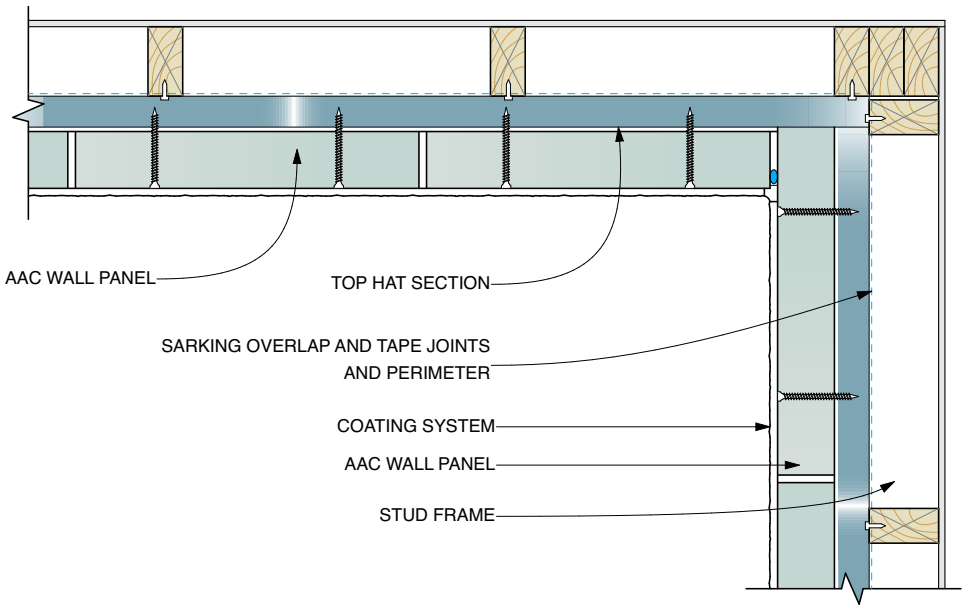
## 7.1.10 TYPICAL BALCONY DETAIL



## 7.1.11 TYPICAL PARAPET CAPPING

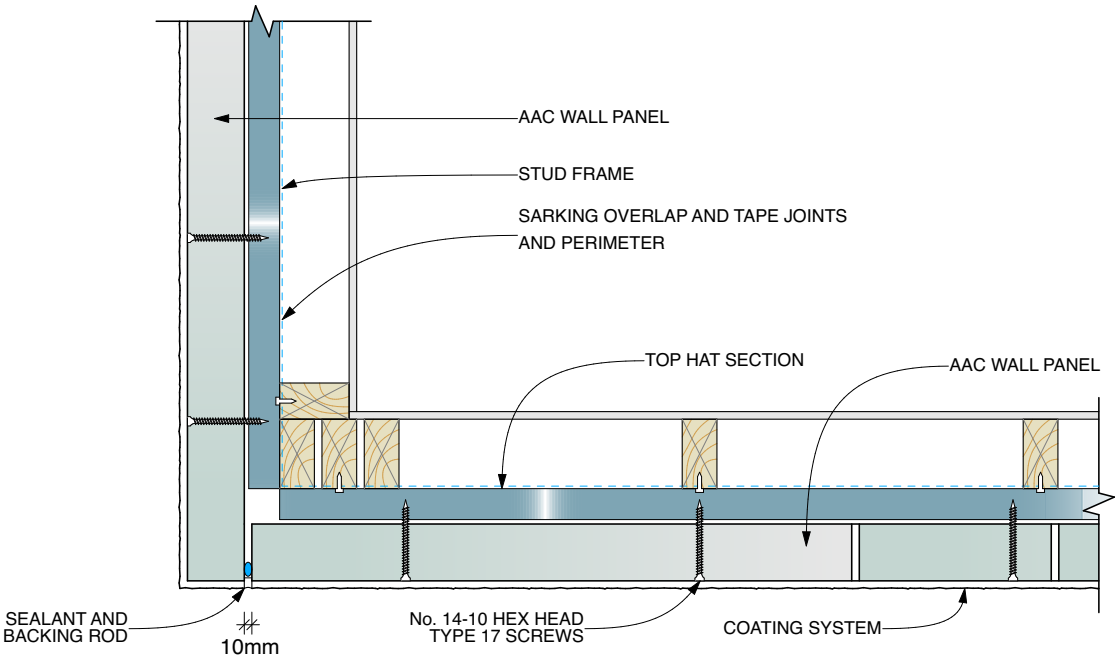


### 7.1.12 VERTICAL CONTROL JOINT AT INTERNAL CORNER




NOTES:
For number of top hats and screws, see fixing tables.

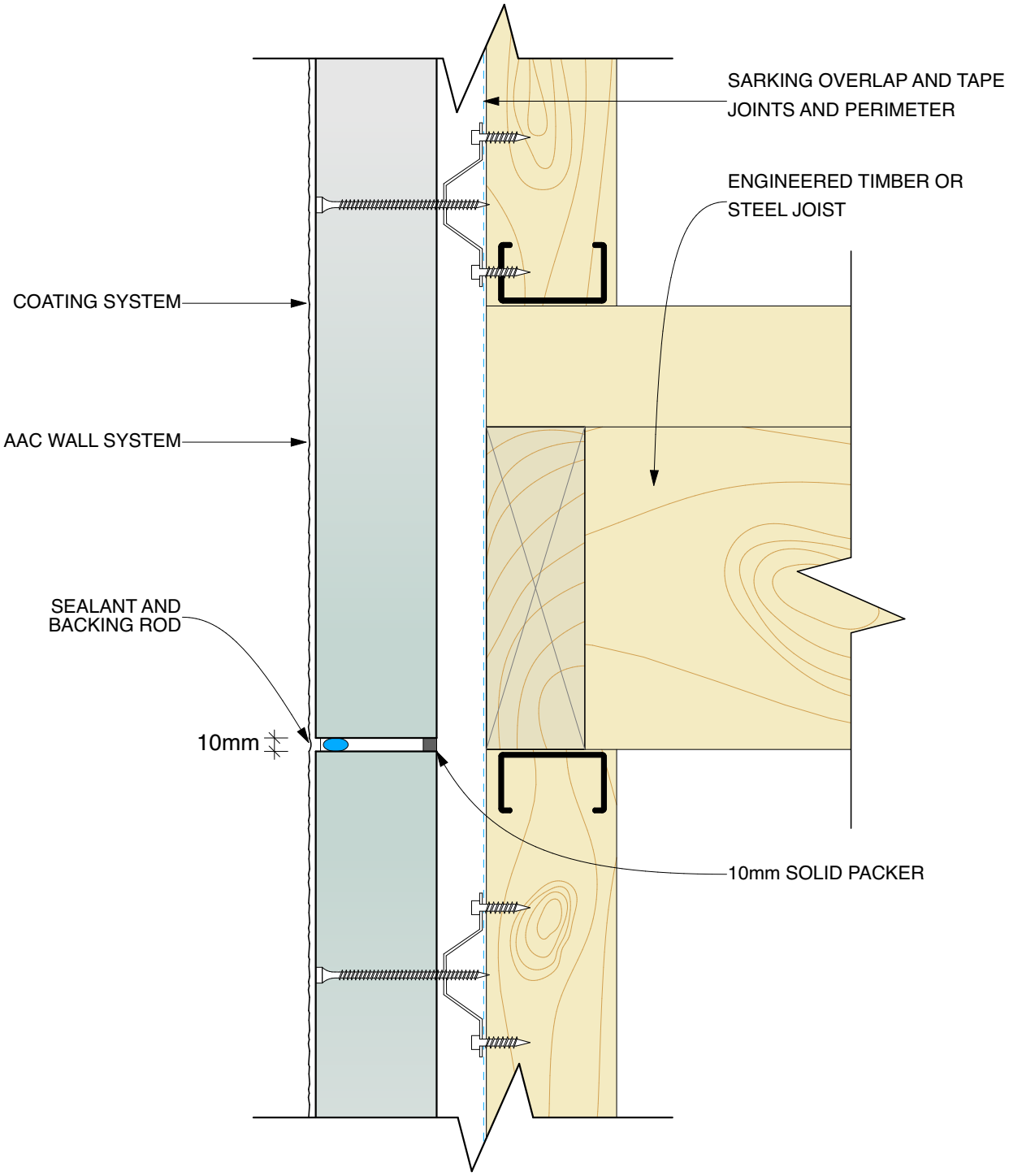
## 7.1.13 VERTICAL CONTROL JOINT AT EXTERNAL CORNER



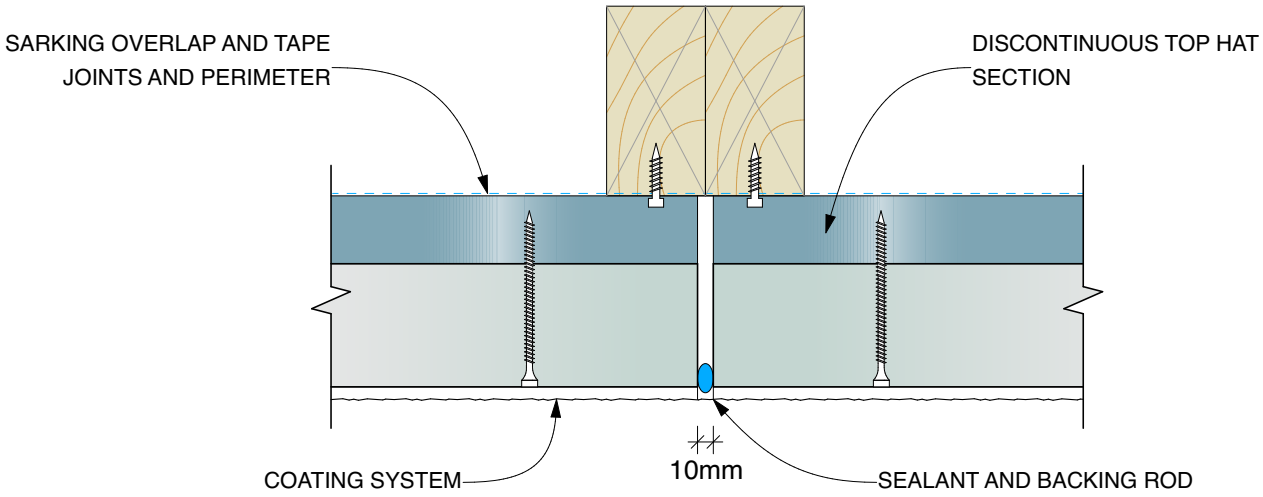

NOTES:

For number of top hats and screws, see fixing tables.

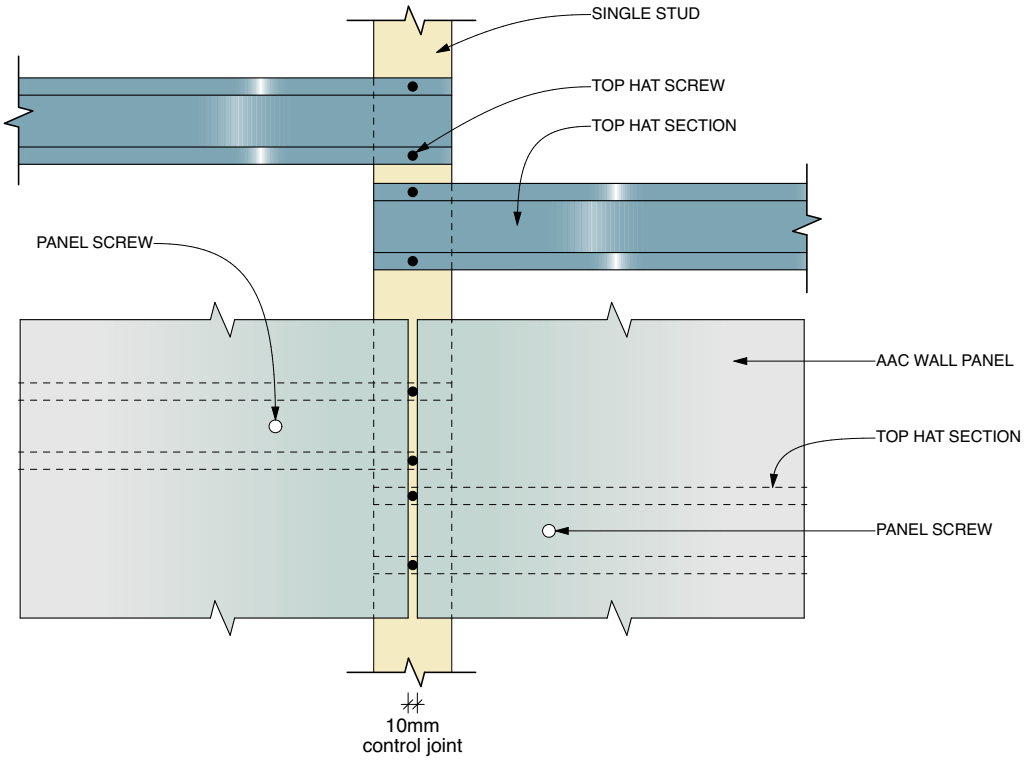
### 7.1.14 TYPICAL HORIZONTAL CONTROL JOINT



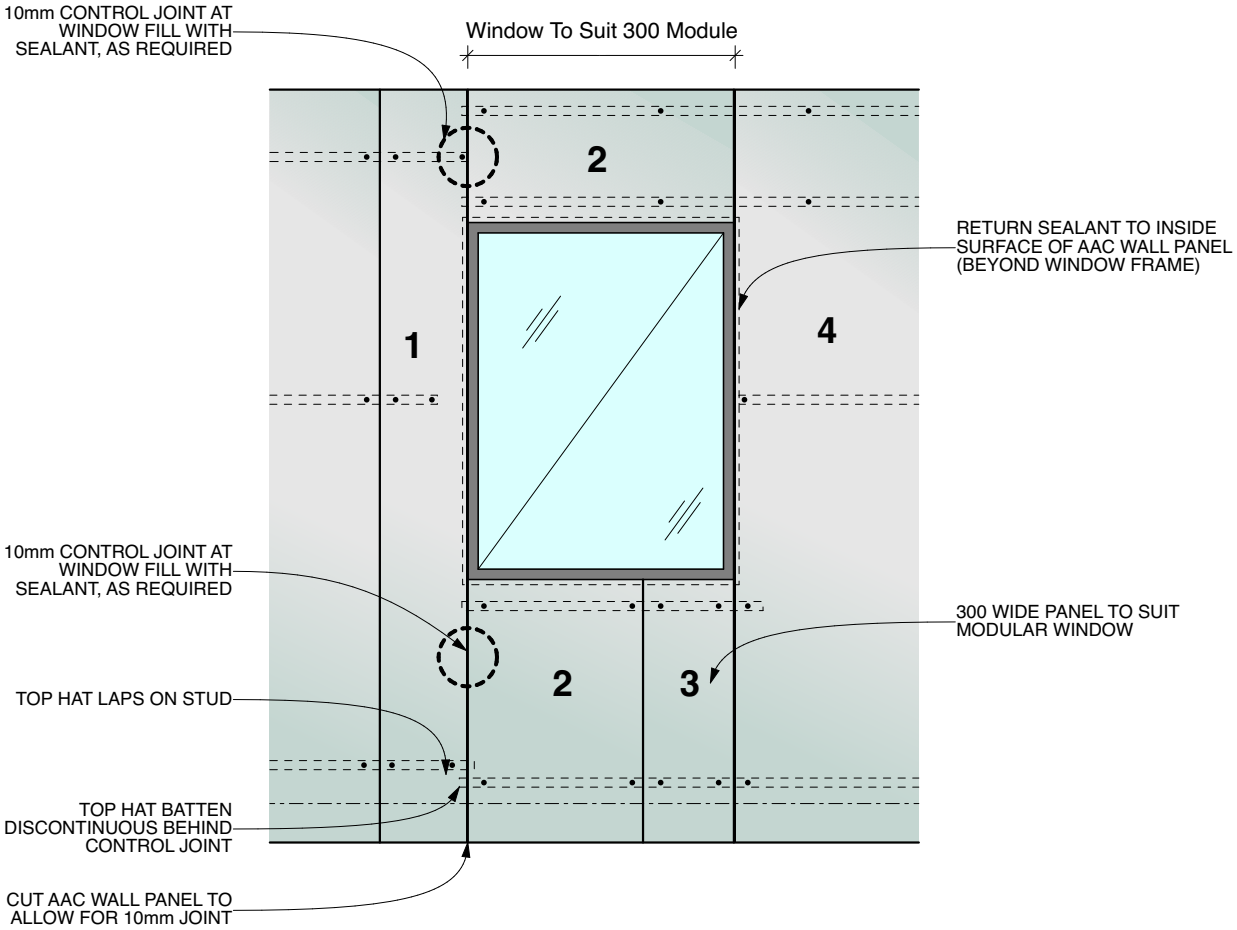
### 7.1.15 TYPICAL VERTICAL CONTROL JOINT WITH DOUBLE STUDS



### 7.1.16 VERTICAL CONTROL JOINT WITH SINGLE STUDS



## 7.1.17 VERTICAL WINDOW CONTROL JOINT WITH LINTEL OVER



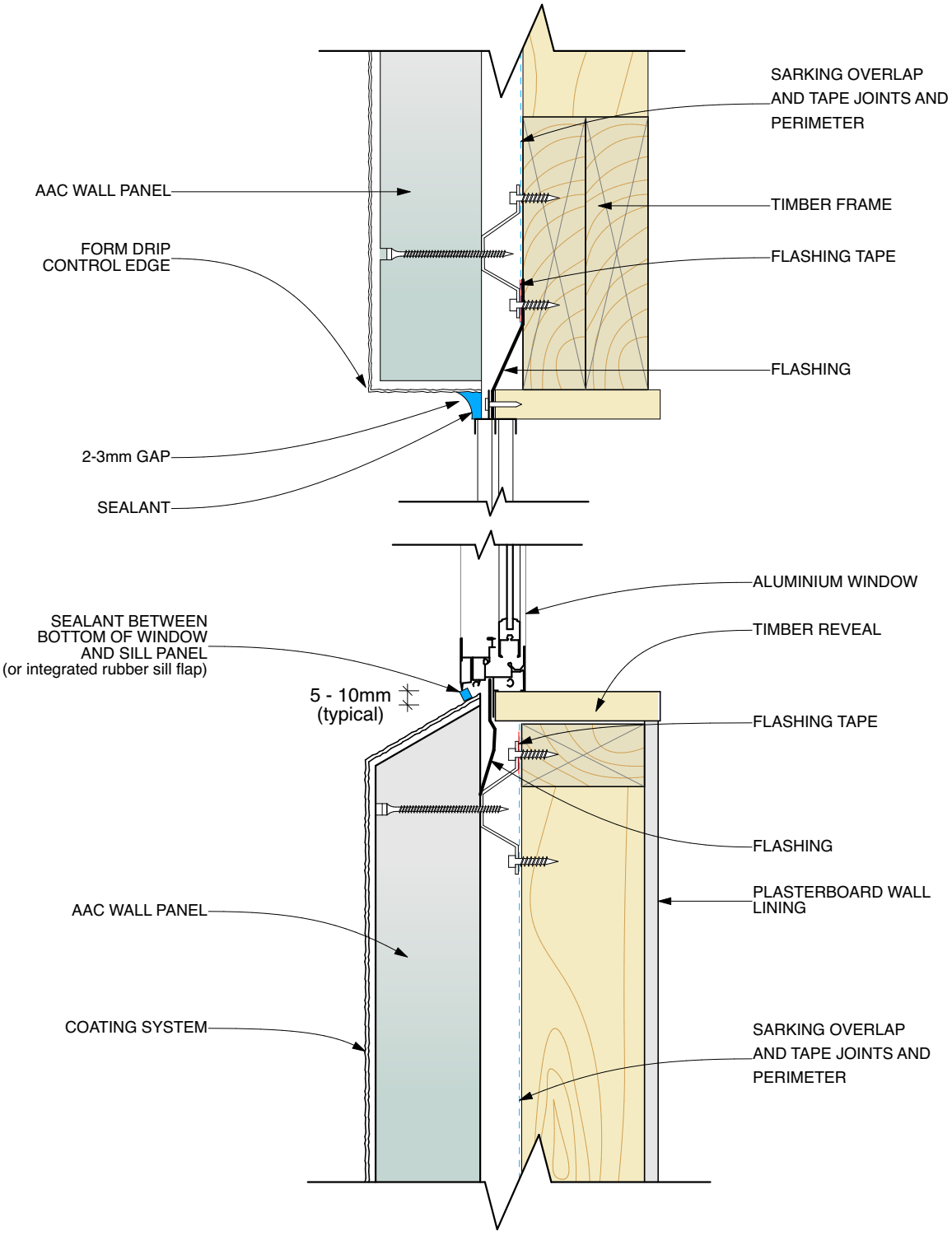

NOTES:

For number of top hats and screws, see fixing tables.

Additional top hats may be required. For suspended panels, see fixing tables.

The installation sequence of the AAC panels around the openings should be followed as numbered if there is no control joint at the opening, to maintain glue thickness on the edge of the panel.

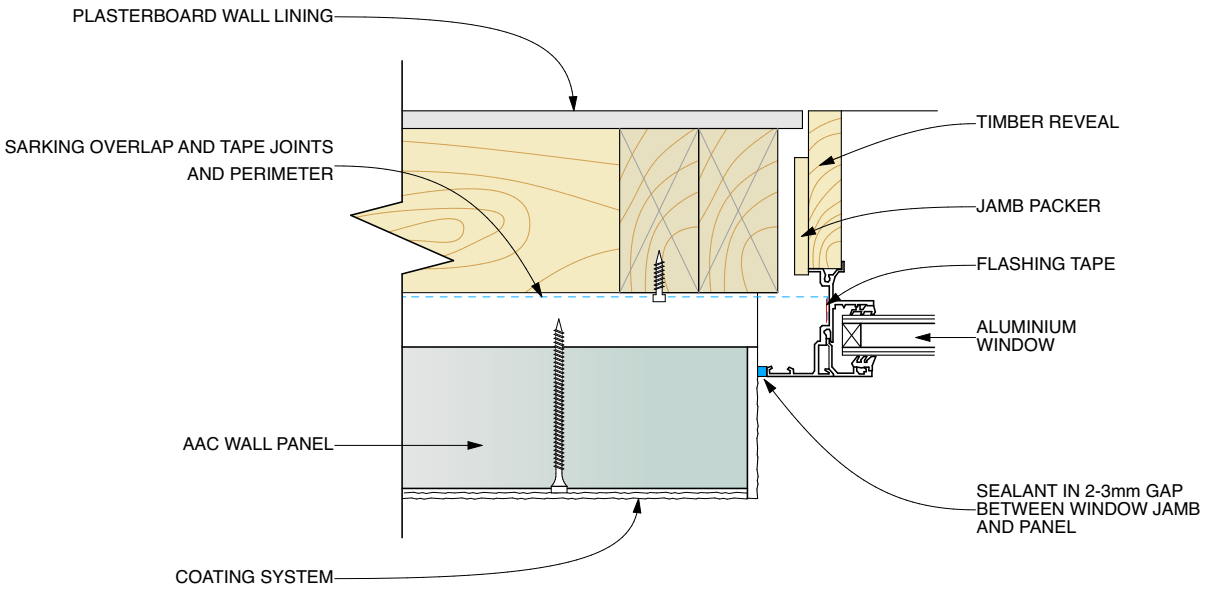
## 7.1.18 HEAD AND SILL DETAIL FOR SLIDING ALUMINIUM WINDOWS



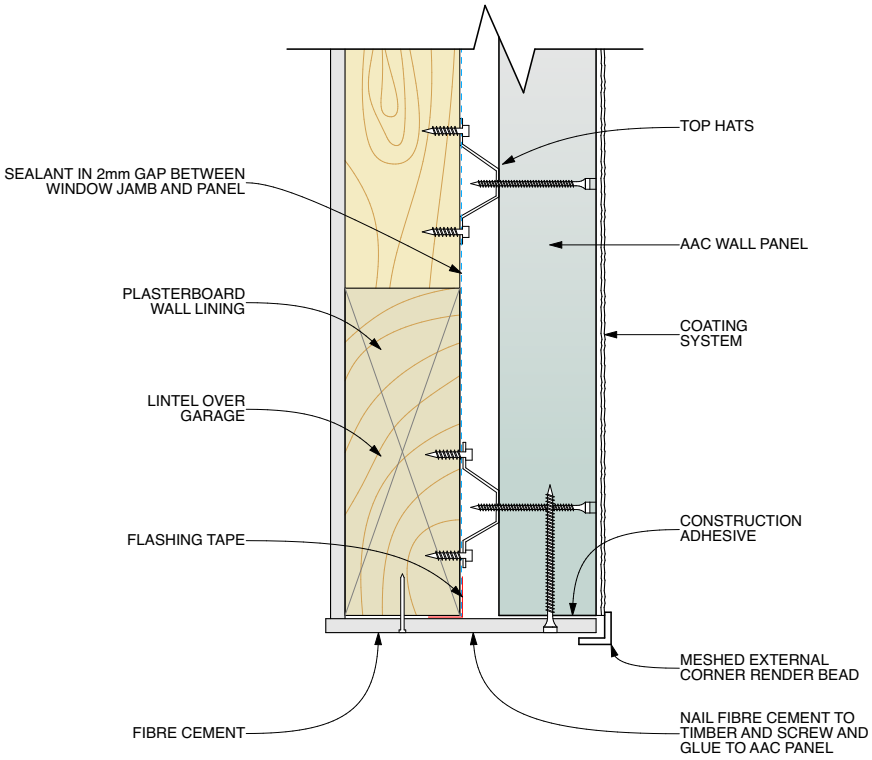

NOTES:

The drainage of windows and doors, with either aluminium or timber frames, shall be directed to the outside of the building on the top of the sill.

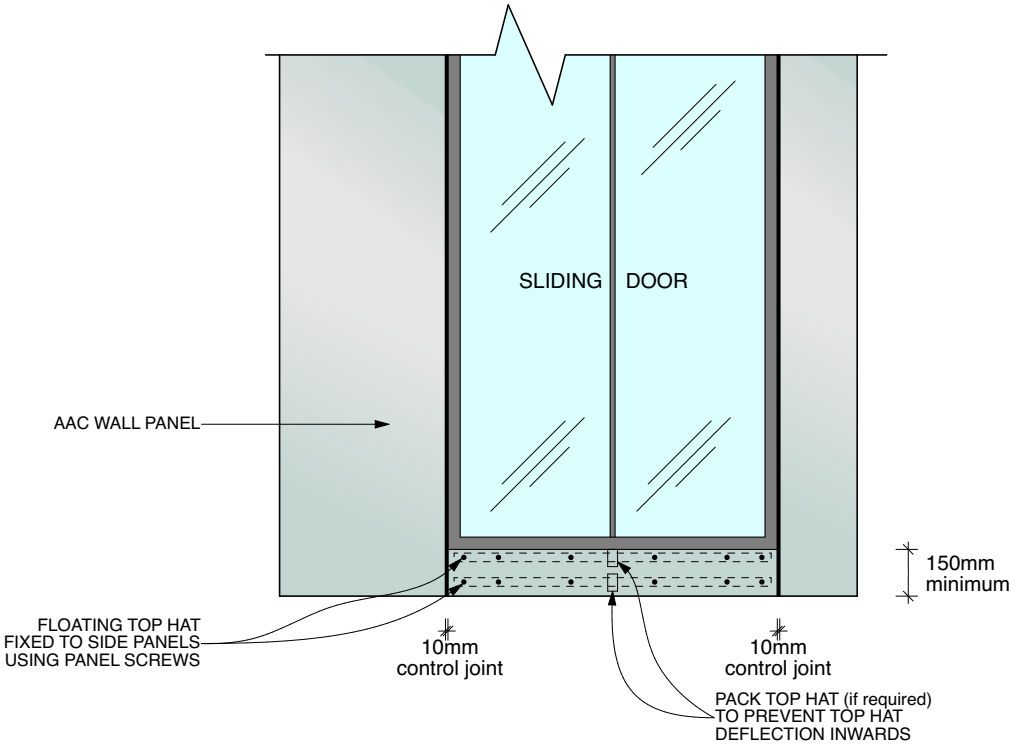
## 7.1.19 JAMB DETAIL FOR SLIDING ALUMINIUM WINDOWS



## 7.1.20 GARAGE DOOR HEAD DETAIL



### 7.1.21 SLIDING DOOR SILL 150mm TO 270mm



# 8 WARRANTY

UBS Products warrants to the purchaser of the Product and the last purchaser prior to the installation of the Product for a period of 10 years from the date of purchase that PRO PANEL 50/75mm AAC panels (the "Product") will be free from defects due to defective factory workmanship or materials and, subject to compliance with the conditions below, will be resistant to cracking, rotting and damage from termite attack.

Nothing in this document shall exclude or modify any legal rights a customer may have under the Trade Practices Act or otherwise which cannot be excluded or modified at law.

### Conditions of warranty

The warranty is strictly subject to the following conditions:

(a) The customer shall provide any reasonable documents reasonably requested by UBS Pro Panel in support of the claim, including but not limited to proof of purchase, and ensure that the Pro Panel products have been paid for in full.

(b) UBS Pro Panel must be notified within 12 weeks after the alleged defect is discovered, or after it ought to have been discovered, and in no circumstances after the expiry of the relevant Pro Panel warranty.

(c) UBS Pro Panel shall be provided with a reasonable opportunity to inspect the alleged defective Pro Panel products in situ prior to their removal, repair, or replacement. The claimant is responsible for any testing and investigation directed by UBS in order to ascertain the underlying cause of the problems encountered. UBS will refund such costs reasonably incurred if it subsequently determines that the underlying cause is covered by this warranty.

(d) The Pro Panel products must have been handled, installed, and maintained in accordance with UBS Pro Panel's current literature at the time of purchase.

(e) All components used as part of a system, as outlined in the literature ("Pro Panel System"), in which the Pro Panel products are installed, must be as specified and sold by UBS Pro Panel.

(f) The relevant Pro Panel System must have been constructed in compliance with UBS Pro Panel's current literature at the time of purchase, and in accordance with the National Construction Code of Australia, all relevant Australian Standards at the time of installation, and any other applicable laws, regulations, and industry codes.

### Exclusions:

(a) Damage to or deterioration of Pro Panel products resulting from external causes beyond UBS's control, such as building structure movement, welding, pollution, exposure to conditions detrimental to conventional concrete products (e.g., acidic environments), mechanical damage, hydrostatic pressure, electrical or electrolytic damage, incorrect cleaning, neglect, fire, explosion, radiation, collision, acts of nature, wars, riots, civil commotion, vandalism, malicious damage, industrial action, adverse weather conditions (e.g., hail storms, sand storms), and similar events.

(b) Damage to or deterioration of Pro Panel products caused by work performed on the Pro Panel products and/or Pro Panel System or any other part of the structure before, during, or after installation.

(c) Damage to or deterioration of Pro Panel products caused by mishandling (including failure to adhere to any "Panel Handling" instructions in the literature) of the Pro Panel products and/or Pro Panel System before, during, or after installation.

(d) Any faults to the extent that they are caused or contributed to by third-party design or engineering of the building or structure to which the Pro Panel products and/or relevant Pro Panel System are attached, including but not limited to the design of the frame or foundations to which the Pro Panel products and/or relevant Pro Panel System are incorporated or affixed.

(e) Any faults to the extent they are caused or contributed to by materials or accessories supplied by third parties.

(f) Cracking in any coatings (or sealants) applied over any Pro Panel products (including any damage to the relevant Pro Panel System caused by such cracking). Note: Prior to selecting a coating (or sealant system), it is the purchaser's responsibility to communicate with the manufacturer of those systems to ensure suitability to the Pro Panel products substrate and to provide the minimum elasticity and water ingress protection in accordance with UBS Pro Panel literature current at the time of purchase.

Except as explicitly stated in this Pro Panel Warranty, and the warranties that cannot be excluded under the Australian Consumer Law (Schedule 2 of the Competition and Consumer Act 2010 (Cth)) and any other applicable law, UBS excludes all other warranties and guarantees concerning Pro Panel products, including all implied warranties and guarantees.

To the extent permitted, UBS excludes all liability for loss and damage (including consequential loss) where the relevant Pro Panel product is a good other than of a kind ordinarily acquired for personal, domestic, or household use

### Disclaimer

The mere provision of this Pro Panel Warranty to a specific individual, organization, or for a particular building does not imply that UBS has verified compliance with any of the conditions of this warranty, including (but not limited to) the exclusive use of Pro Panel products in its construction. Furthermore, UBS is not responsible for ensuring the suitability of Pro Panel products for their intended application. It is the responsibility of the warranty beneficiary to verify both aspects. Any site visits conducted by UBS do not constitute inspections, nor do they serve as a guarantee or warranty regarding third-party installation.

The **PRO PANEL** External Wall System delivers a high performance, high quality, solution to external walls requiring strength, weatherproofing, fire, acoustic, thermal & bushfire performance.

PRO PANEL
UNITED BUILDING SUPPLY PTY LTD.

Information on PRO PANEL (VERTICAL) 50/75mm AAC Low-Rise External Wall System can be found at:

**www.ubs-aac.com.au**

United Building Supply Pty Ltd
36 Randor Drive Deer Park VIC 3023