CodeMark Australia | CMI Certification Certificate CM40381 | EASTLAND

Eastland AAC External Wall Cladding

Technical Manual

Rev 1.1 – June 2025

CONTENTS

Caption -
Eastland reinforced AAC
Panels

1. INTRODUCTION

This Technical Manual for Eastland AAC panels is intended to provide design and installation guidance to building professionals including designers, engineers and installers. All building professionals referencing this Technical Manual shall assess the information contained herein and ensure that such information is relevant and suitable for the project.

1.1 Autoclaved Aerated Concrete

Manufacturing of Autoclaved Aerated Concrete (AAC) involves mixing cement, sand, lime and water, with an aluminium paste expanding agent. The mixture is poured into large moulds, filling to about two-thirds of the mould height. Upon contact, the expanding agent reacts with the other ingredients through a chemical reaction that creates small, finely-dispersed air bubbles. The resultant expansion causes the mix to rise within the mould to the full height.

The moulds are then pre-cured in a heated environment for 18-24 hours. The resulting semi-solid material, still in a green state, is then transported to a cutting machine where it is sliced into panels of desired sizes using steel wires. Subsequently, the sliced panels or blocks undergo steam pressure curing in autoclaves for up to 12 hours where the final hydration of the cementitious mix occurs.

Panels are reinforced with steel reinforcing bars, placed into the mould prior to the liquid mixture being poured. Eastland AAC Panels are manufactured in 50mm or 75mm thickness with a standard width of 600mm and various length options.

The combination of the expanding chemical reaction and the autoclave process confers upon AAC its distinctive lightweight properties. AAC exhibits exceptional thermal insulation and acoustic absorption capabilities, along with superior fire resistance and termite resistance. It conforms to relevant building codes and offers ease and efficiency in handling. AAC stands out as a versatile and cost-effective building material, meeting diverse demands better than alternatives due to its physical and mechanical properties.

1.2 Eastland AAC

Eastland AAC panels present acoustic and fire rated wall solutions across a wide range of applications, including external wall cladding, internal partition walls, service riser shafts and intertenancy walls.

Benefits of using Eastland AAC panels in your next project include:

- Solid & durable masonry finish
- Thermally efficient
- Fire resistant & non-combustible
- Excellent Acoustics
- Aesthetic appeal
- Fast construction
- Efficient & low cost construction systems

1.3 System Description

The Eastland AAC external wall cladding system is a non-loadbearing wall cladding system for use in external and internal wall applications and presents options for a ventilated rainscreen facade or face sealed external wall system for multi residential apartments, commercial buildings and residential homes.

The Eastland AAC Cladding system components includes 50mm and 75mm reinforced AAC panels. The installer is required to supply battens / top hats, site mixed adhesive and appropriately rated fasteners for the vertical and/or horizontal support structure.

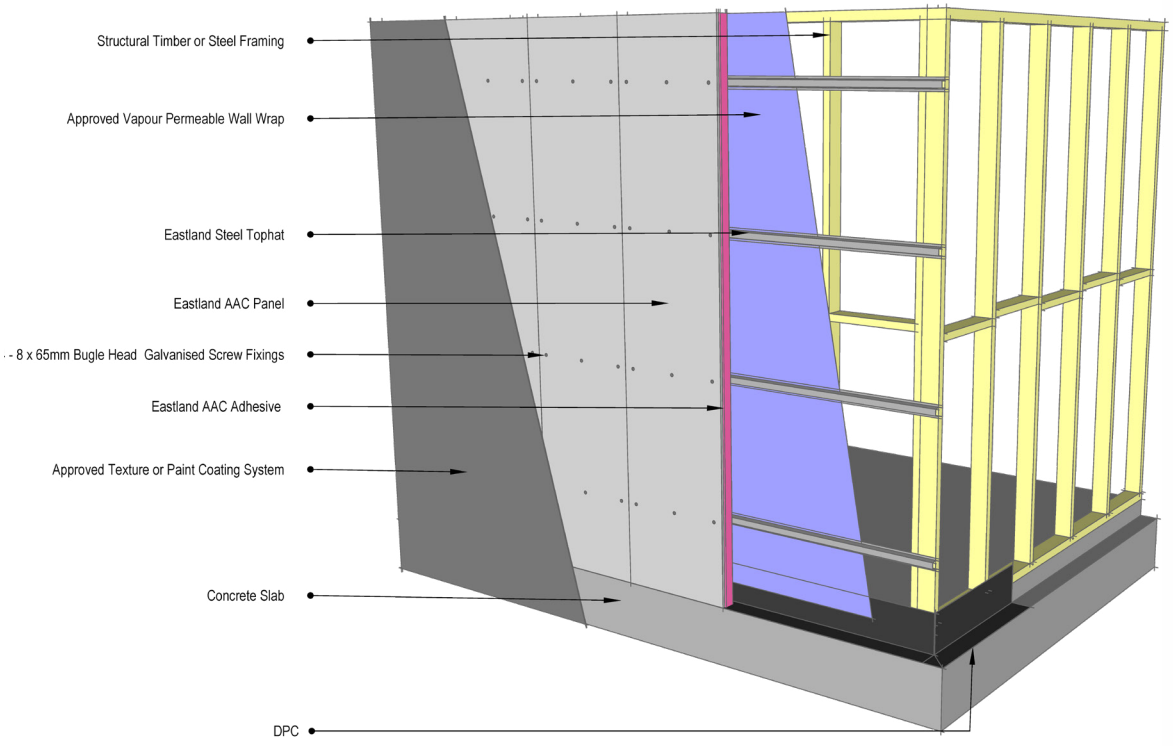
The Eastland AAC cladding panels are fixed into the building structure via Top Hat battens, which are in turn fixed to the stud frame members or at similar frequency for concrete and masonry structures. For external wall systems Top Hat battens shall provide a minimum cavity of 25mm width (subject to wind pressure loading), external to the weatherisation layer.

The base wall system structure behind the Eastland AAC Cladding System shall be designed to withstand project specific loads including wind loads and any other loading relevant to the application.

The external face of the base wall system structure / building frame shall be made weather tight using pliable membranes or rigid weather barriers to the manufacturer's detail. Pliable membranes shall comply with AS4200.1 and be installed in accordance with AS4200.2. All weatherisation layers shall be suitable for project wind loads and must be airtight, watertight and flashed to ensure the wall system remains weatherproof.

Top Hat and Fastener selection including frequency / spacing to secure the Eastland AAC Panels to the base wall system shall be conducted in accordance with the System Performance section of this manual.

Wall Panels & Components



1.4 Rainscreen Facade

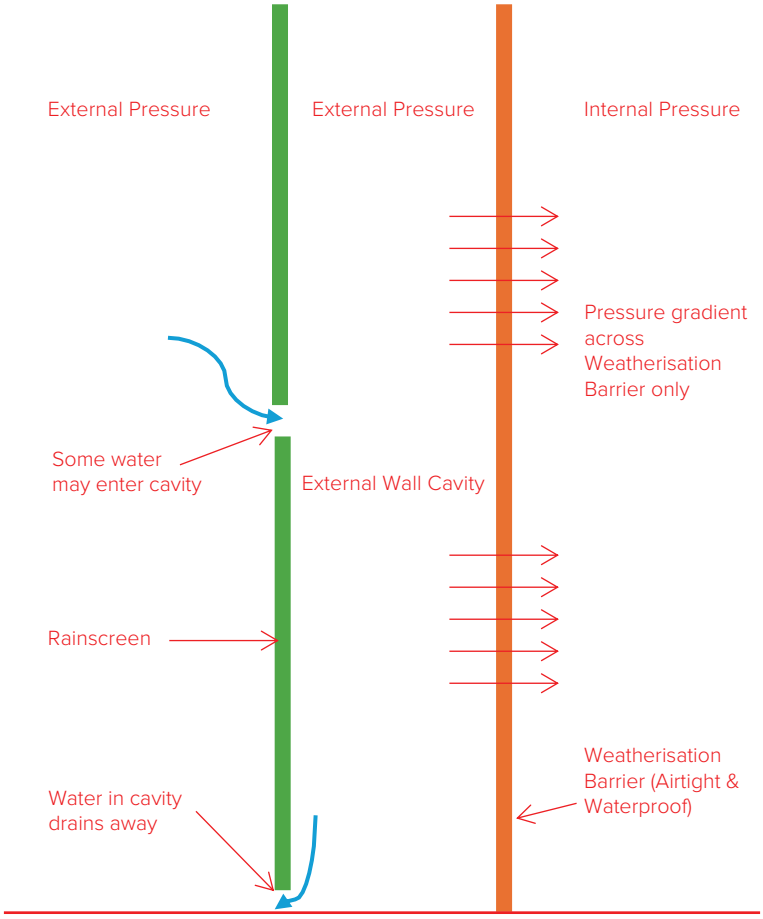
When built with a drained and ventilated external wall cavity, the Eastland AAC Cladding system presents a ventilated rainscreen facade system for commercial and multi residential buildings.

A rainscreen is an external wall or facade system where the external wall cladding is separated from the weatherisation barrier applied to the external side of the structure, this creates an external ventilated cavity allowing drainage and evaporation.

Rainscreen cladding systems permit wind pressure to be equalised across the external cladding, creating a ventilated cavity. The air barrier bears the wind pressure and due to it being separated from external surface water, rainscreen facades present enhanced long term weather proofing of external walls.

A Rainscreen wall has the following three key components:

- An outer rainscreen (shown as Green below), designed to divert most of the water from the outside face
- A ventilated and drained, externally pressure-equalised cavity, allowing air to flow in/out of the external wall cavity
- An internal airtight and waterproof barrier (shown as Orange below), capable of withstanding external wind pressures and maintaining weatherproof construction, known as the weatherisation barrier and installed directly to the outside of the base wall system structure



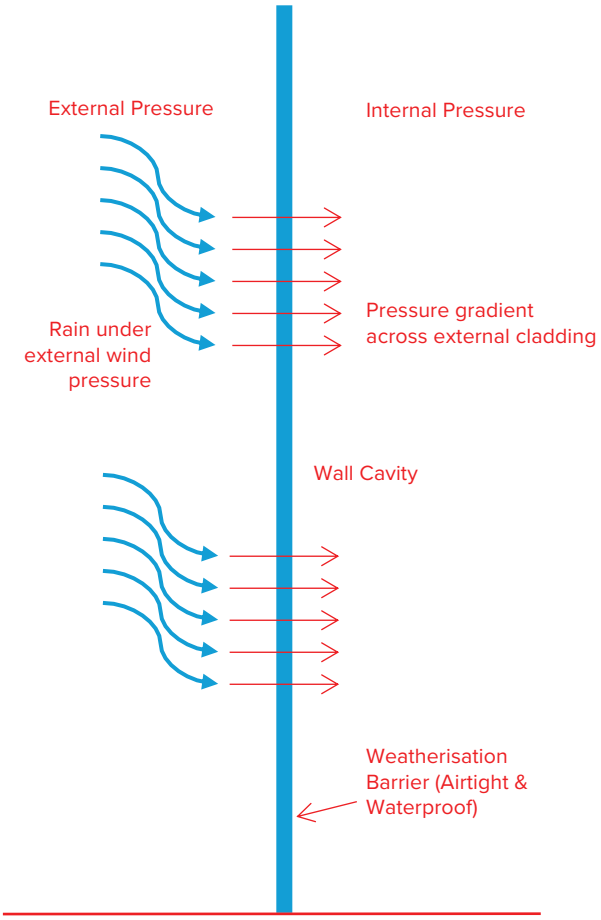
1.5 Face Sealed External Walls

Face sealed external walls are generally more suited to low rise residential homes with lower external wind pressures compared to high rise apartments and commercial buildings.

The Eastland AAC Cladding system may be constructed with a face sealed facade where the external cladding presents the primary weatherisation barrier. The external cavity behind the cladding is constructed in a similar manner to the rainscreen system with Top Hat battens and wall wrap / sarking as a secondary defence system in the event of a leak developing in the cladding or an interface between the cladding and another element such as a window.

The external walls are still required to be flashed at penetrations and other interfaces to direct any moisture (from leaks or otherwise) away from the internal surfaces and materials of the building.

When constructed as a face sealed external wall system, the Eastland AAC cladding will bear the wind pressure and protect the building from rain penetration. Detailing of sealants, interfaces, junctions and penetrations is critical in ensuring the face sealed external wall system remains weatherproof.



2. SYSTEM COMPONENTS

2.1 Eastland AAC Panel Properties

The key components of the Eastland AAC Cladding system are the 50mm & 75mm thick reinforced AAC panels, compliant with AS 5146.1 & AS 5146.2.

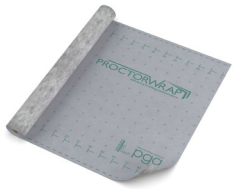
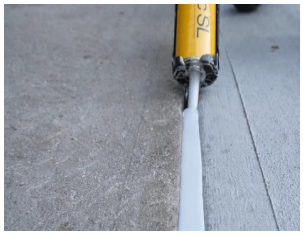
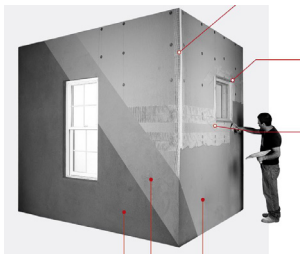
Eastland Reinforced AAC Panels			
Properties	Panel Thickness (mm)		Reference
	50	75	
Width (mm)	600	600	AS 5146.2 Appendices A & K
Lengths (mm)	2,200 2,400 2,700 2,850 3,000	2,200 2,400 2,700 2,850 3,000 3,300	
Mass of Panel (kg/m^2)	30	38	AS 5146.2 Appendix C
Dry Density (kg/m^3)	515	445	
Working Density (kg/m^3)	592	512	AS 5146.2
Characteristic Compressive Strength f_{ck} (MPa)	≥2.5	≥2.0	AS 5146.2 Appendix D
Characteristic Flexural Strength (MOR) f_{ut} (MPa)	0.32	0.39	AS 5146.2 Appendix E
Characteristic ULS Bending Moment Capacity (kN.m/m)	0.306	0.547	AS 5146.2 Appendix P
Characteristic Shear Capacity (kN/m)	4.98	6.68	AS 5146.2 Section 4.3
Characteristic Punching Shear Capacity (kN)	0.96	1.78	AS 5146.2 Section 4.4
Characteristic Axial Load Capacity (kN)	15.66	20.16	AS 5146.2 Section 4.8
Elastic Modulus – Mean value (MPa)	1,825	1,475	AS 5146.2 Section 3.5
Thermal Conductivity *k* W/(m.K)	0.125	0.107	AS 5146.2 Section 7 or AS/NZS 4859.1
Thermal Resistance R (m^2.K)/W	R 0.40	R 0.701	
Coefficient of Thermal Expansion (mm/mm/^{0}C)	8 x 10^{-6}	8 x 10^{-6}	AS 5146.2 Section 3

Eastland Reinforced AAC Panels			
Properties	Panel Thickness (mm)		Reference
	50	75	
Steel Reinforcing:			
Yield Strength f_{yk} (MPa)	>500	>500	AS/NZS 4671
Tensile Strength f_{st} (MPa)	>600	>600	
Longitudinal Bars			
Diameter	5mm	5mm	
Number per Panel	4 to 5	4 to 5	
Transverse Bars			
Diameter	4mm	4mm	
Max spacing	600mm	600mm	
Combustibility	Non-combustible	Non-combustible	NCC 2022 Defined

1.1 System Accessories

The following accessories are approved for use in installing the Eastland AAC Cladding System.

Application	Accessory Details	
Eastland AAC reinforced panels	50mm & 75mm AAC panels, refer section 2.1 above.	
Eastland Adhesive	Eastland AAC Adhesive (supplied in 20 kg bags), used for gluing the AAC panels together at the panel edges.	
Fix Eastland AAC panels to Top Hats	50mm Panels – 14-10x65mm Type 17 Hex head screws 75mm Panels – 14-10x90mm Type 17 Hex head screws	
Fix Top Hats to timber framing	12-11x35mm Type 17 Hex head screws	
Fix Top Hats to light gauge steel framing	10-16x16mm Self–drilling Hex head Tek screws	
Fix Top Hats to masonry or concrete	Hilti X-U MX 16mm or 19mm pins, using DX351 MX Powder actuated tool, or Ramset P8HC617 Premium drive 17mm pins, using Trakfast 800 tool or similar	

Application	Accessory Details	
Eastland Top Hat Profiles	24mm/35mm/45mm Steel Top Hat profiles (0.5 – 1.2 mm BMT), select top hat profile and spacing to suit project wind pressures. Pack to suit alignment of substrate. Consult with top hat supplier to ensure suitable fixing of top hat to substrate.	
Weather Resistant Barrier Pliable Building Membrane (≤ 2.5 kPa ULS wind pressure)	Flexible wall wrap / sarking building membranes: • Manufactured in accordance with AS 4200.1 • Installed in accordance with AS 4200.2 Airtight & Waterproof barrier, Vapour permeability (Barrier or Permeable) according to the application and Climate Zone. Note: Perforated (breather) membranes shall NOT be used.	
Weather Resistant Barrier Rigid Air Barrier (applications > 2.5 kPa ULS wind pressure)	James Hardie RAB or Promat Siniat Weather Defence boards or equivalent. Airtight & Waterproof barrier, Vapour permeability (Barrier or Permeable) according to the application and Climate Zone. Check for Fire Resistance (if required).	
Sealants	Acrylic and/or PU based sealants approved for use in external applications, (fire and acoustic rated, where required) may be used. Silicone based sealants are NOT recommended.	
Flashings	Flashings shall be selected and installed in accordance with AS/NZS 2904 and suitable for the site's exposure classification.	
Render System	Acrylic Render, corner bead accessories, Texture Coat and Finishing (Paint)	

3. CLADDING SYSTEM COMPLIANCE

3.1 Building Code of Australia

The Building Code of Australia (BCA) is part of the National Construction Code which defines the minimum standards by which buildings are to be designed and constructed. The BCA comprises two volumes:

- Volume One – Establishes the requirements for multi-residential, commercial and public buildings, defined as Class 2 to 9 buildings.
- Volume Two (including the Housing Provisions) – Establishes the standards for domestic residential construction, defined as Class 1 and 10 buildings.

Within the context of internal and external wall systems, the BCA is structured to provide minimum requirements for Structure, Fire Safety & Resistance, Damp & Weatherproofing, Acoustic attenuation, Condensation Management and Thermal Performance.

Eastland AAC Cladding system may be used for internal and external cladding and is compliant (or contributes to compliance) with the following sections of the BCA:

BCA 2022	Volume One	Volume Two & Housing Provisions	Applications
Structure	B1D4 Determination of structural resistance of materials and forms of construction	H1D7 Roof and wall cladding	External and some Internal walls
Fire	C2D2 Fire resistance and stability C2D10 Non-combustible external walls G5D3 Bushfire Construction G5D4 Bushfire Construction (Class 9)	H3D3 Fire separation of external walls H7D4 Bushfire Construction	External and Internal occupancy separation walls
Weatherproofing	F3D5 Wall cladding	H2D6 Roof and wall cladding	External walls
Acoustics	F7D6 Sound insulation rating of walls For separating walls	H4D8 Sound insulation Housing Provisions Part 10.7 For separating walls	Internal occupancy separation walls
Condensation Management	F8D3 Condensation	H4D9 Condensation and water vapour management Housing Provisions Part 10.8	External walls
	Pliable building membranes must comply with AS4200.1 and be installed in accordance with AS4200.2. A weather resistant barrier shall be selected to withstand project Wind pressures, Rigid Air Barriers may be required for high wind load zones.		
Thermal Performance	J3D8, J3D9 & J4D6 Building Fabric Thermal Energy Efficiency	H6D2 Energy Efficiency Housing Provisions Part 13.2 Building Fabric Thermal Energy Efficiency	External walls
	Total building envelope / wall system R values, according to Climate Zone		

Section 4 of this manual provides specific details relating to the performance of the Eastland AAC Cladding system. While this technical manual may provide guidance on some select BCA requirements, it is the responsibility of relevant project professionals to ensure the construction systems specified and installed meet all relevant BCA requirements.

Refer to CodeMark Certificate of compliance CM 40381 and external expert compliance reports (extracts available on request) for details of compliance with the relevant parts of the BCA Volumes 1 & 2.

3.2 AS 5146 – Reinforced Autoclaved Aerated Concrete

The structural properties of Eastland AAC panels in 50mm and 75mm thickness (detailed in section 2.1 of this manual) have been determined by testing and calculation in accordance with AS 5146.2:2018.

The Eastland reinforced AAC panel products are considered compliant with AS 5146 "Reinforced Autoclaved Aerated Concrete", which comprises 3 parts:

- AS 5146.1:2015 "Reinforced Autoclaved Aerated Concrete Part 1 – Structures"
- AS 5146.2:2018 "Reinforced Autoclaved Aerated Concrete Part 2 – Design"
- AS 5146.3:2018 "Reinforced Autoclaved Aerated Concrete Part 3 – Construction"

The above Standards are referenced in the BCA meaning AS 5146 compliant AAC products are Deemed-to-Satisfy (DTS) for Structural and Weatherproofing requirements of the BCA. Both 50mm and 75mm thick AAC panels installed Horizontally and Vertically are included in the construction requirements of AS 5146.3.

3.3 Standards Compliance

In addition to the AS 5146 series, all design and construction works are required to be carried out in accordance with the BCA (as discussed in 3.1 above) and the relevant standards, which may include (but are not limited to):

- AS/NZS 1170.0 Structural design actions – General principles
- AS/NZS 1170.1 Structural design actions – Permanent, imposed and other actions
- AS/NZS 1170.2 Structural design actions – Wind actions
- AS 4055 Wind loads for housing
- AS 1720 Timber structures
- AS 1684 Residential timber framing construction
- NASH Standard – Residential and Low-Rise Steel Framing
- AS 3623 Domestic metal framing
- AS/NZS 4100 Steel structures
- AS/NZS 4600 Cold formed steel structures
- AS 2904 Damp proof courses and flashings
- AS 3660 Termite management
- AS 2870 Residential slabs and footings
- AS 3600 Concrete Structures
- AS 3959 Construction of buildings in bushfire-prone areas

4. SYSTEM PERFORMANCE

4.1 Designing with Eastland AAC

The following design process is used to ensure your Eastland AAC wall system is suitable for the intended purposes:

1 For External wall applications, consult the project engineer to determine the relevant Wind Region, site wind speed and multiplying factors to determine the site Wind Pressures and Loads on the external walls. For Internal wall applications, use a nominal internal wind pressure (refer AS/NZS 1170.2) or consult the project engineer.
2 Refer to the wind loading span tables (for general wall areas and corner zones) to determine Stud frame type and spacing, Top Hat type and spacing, Panel screw fastener spacing.
Refer to Project Engineer or Stud Frame supplier / installer for design specifications for base structure wall system design.
3 Determine any additional design criteria, as required by the relevant provisions of the BCA:
    a Fire resistance
    b Weatherproofing
    c Condensation management
    d Sound transmission and insulation
    e Bushfire construction
    f Energy efficiency – building fabric
4 Select wall wrap / sarking and insulation according to Climate Zone requirements for External wall applications, or Acoustic insulation requirements for Internal wall applications.
5 Check suitability of construction details with reference to Fire Resistance Levels and Weatherproofing.
6 Check the Site exposure classification and suitable durability of wall system components selected and upgrade specifications as required.
7 Plan control joint layout / locations according to building geometry.

Eastland AAC wall cladding systems may be installed over a variety of substrates, including:

- Timber framing in accordance with AS 1684 and/or AS 1720
- Lightweight steel framing in accordance with AS 4600 and/or NASH standard
- Concrete structures (including permanent formwork) in accordance with AS 3600
- Masonry structures in accordance with AS 3700 and/or AS 4773
- Structural Steel in accordance with AS 4100

4.2 Structural Span Tables – Vertically Oriented Panels

The specification of the cladding system must be carried out in accordance with AS 1170.2 or AS 4055, the wind pressure limits, maximum span & fixings for vertically oriented Eastland AAC panels with horizontal top hats are shown below (referencing AS 4055 wind categories). For hi-rise residential and commercial buildings, use wind pressures in the following tables as a guide.

Structural Span Table – **Base Supported** Eastland AAC Panels

AS 4055 Wind Category	Max ULS Wind pressure (kPa)		Stud Spacing (mm)	Max Span of Panel / Top Hat spacing (mm)			
				Panel Thickness (mm)			
	≥ 1,200 mm from Corners	< 1,200 mm from Corners		50		75	
				Panel Location		Panel Location	
				Typical	Corner	Typical	Corner
N1	+0.62 -0.53	-0.94	600	1,200	1,200	1,200	1,200
N2	+0.86 -0.74	-1.30	600	1,200	1,200	1,200	1,200
N3	+1.35 -1.16	-2.03	450	1,200	950	1,200	1,000
N4	+2.01 -1.72	-3.01	450	1,050	750	1,200	900
N5	+2.96 -2.53	-4.44	450	850	600	1,200	600
N6	+3.99 -3.42	-5.99	400	600	500	750	550

Notes:

1. The above table is suitable for Vertically oriented reinforced AAC panels supported at the Base of the panel (eg. by slab edge, shelf angle or similar).
2. Battens to be equally spaced with maximum end cantilever of 250mm in N1, N2 & N3 regions and maximum cantilever of 150mm in N4, N5 & N6 regions.
3. Additional top hats to be installed to support panels or sill blocks above or below window openings.
4. Local suction factors within 1,200mm of building corners may require additional top hats.
5. The wind resistance of an external wall requires internal linings capable of resisting wind pressures exerted from inside the building.
6. Stud frame wall design with all relevant load factors applied shall be conducted by qualified project engineers.

The Eastland AAC systems may be installed in non-cyclonic wind regions up to and including N6 for all wall areas including corner zones. Installation in cyclonic wind regions require site specific engineering design and is outside the scope of this Technical Manual.

Project specific stud spacing and top hat spacing shall not exceed the nominated limits detailed above, weather resistant barriers shall be selected to withstand project specific wind pressures. Typically, flexible membranes may be installed in applications up to 2.5 kPa ULS wind pressure and Rigid Air Barriers for higher wind pressures, check manufacturer's details.

Screw Fixing Table – **Base Supported** Eastland AAC Panels (Fixing of Screws from Outside panel)

AS 4055 Wind Category	Max ULS Wind pressure (kPa)		Stud Spacing (mm)	Number of Screws Per Panel, Per Top Hat (Outside fixing)			
				Panel Thickness (mm)			
	≥ 1,200 mm from Corners	< 1,200 mm from Corners		50		75	
				Panel Location		Panel Location	
				Typical	Corner	Typical	Corner
N1	+0.62 -0.53	-0.94	600	2	2	2	2
N2	+0.86 -0.74	-1.30	600	2	2	2	2
N3	+1.35 -1.16	-2.03	450	3	3	3	3
N4	+2.01 -1.72	-3.01	450	3	4	3	4
N5	+2.96 -2.53	-4.44	450	3	4	3	4
N6	+3.99 -3.42	-5.99	400	4	4	4	4

Notes:

1. The above table is suitable for Vertically oriented reinforced AAC panels supported at the Base of the panel (eg. by slab edge, shelf angle or similar).
2. The above table is to be used for fixing of panels using screws from the outside of the building.
3. For Fire rated construction, a minimum of 3 screws per top hat is required.
4. Outside fixing of screws based upon 14-10 MP Bugle Head Batten screw, screw length as per section 2.2.

Screw Fixing Table – **Base Supported** Eastland AAC Panels (Fixing of Screws from Inside panel)

AS 4055 Wind Category	Max ULS Wind pressure (kPa)		Stud Spacing (mm)	Number of Screws Per Panel, Per Top Hat (Inside fixing)			
				Panel Thickness (mm)			
	≥ 1,200 mm from Corners	< 1,200 mm from Corners		50		75	
				Panel Location		Panel Location	
				Typical	Corner	Typical	Corner
N1	+0.62 -0.53	-0.94	600	3	5	2	2
N2	+0.86 -0.74	-1.30	600	3	6	2	3
N3	+1.35 -1.16	-2.03	450	5	7	3	3
N4	+2.01 -1.72	-3.01	450	Unsuitable	Unsuitable	3	4
N5	+2.96 -2.53	-4.44	450	Unsuitable	Unsuitable	4	5
N6	+3.99 -3.42	-5.99	400	Unsuitable	Unsuitable	Unsuitable	Unsuitable

Notes:

1. The above table is suitable for Vertically oriented reinforced AAC panels supported at the Base of the panel (eg. by slab edge, shelf angle or similar).
2. The above table is to be used for fixing of panels using screws from the inside of the building.
3. Inside fixing shall only apply to Base Supported panels (NOT suitable for suspended panels).
4. For Fire rated construction, a minimum of 3 screws per top hat is required.
5. Inside fixing of screws based upon 14-10 Hex Head Type 17 screw, screw length as per section 2.2.
6. For inside fixing of screws, care must be taken to avoid over-torque and stripping of screw thread in the AAC material, screws must be made snug into the AAC.

Structural Span Table – **Gable End Suspended** Eastland AAC Panels

AS 4055 Wind Category	Max ULS Wind pressure (kPa)		Stud Spacing (mm)	Max Span of Panel / Top Hat spacing (mm)			
				Panel Thickness (mm)			
	≥ 1,200 mm from Corners	< 1,200 mm from Corners		50		75	
				Panel Location		Panel Location	
				Typical	Corner	Typical	Corner
N1	+0.62 -0.53	-0.94	600	800	750	800	750
N2	+0.86 -0.74	-1.30	600	800	750	800	750
N3	+1.35 -1.16	-2.03	450	800	650	800	650
N4	+2.01 -1.72	-3.01	450	800	450	800	450
N5	+2.96 -2.53	-4.44	450	600	350	600	350
N6	+3.99 -3.42	-5.99	400	500	300	500	300

Notes:

1. The above table is suitable for Vertically oriented reinforced AAC panels, suspended at the gable ends of a building.
2. Battens to be equally spaced with maximum end cantilever of 150mm in N1, N2 & N3 regions and maximum cantilever of 100mm in N4, N5 & N6 regions.
3. Additional top hats to be installed to support panels or sill blocks above or below window openings.
4. Local suction factors within 1,200mm of building corners may require additional top hats.
5. The wind resistance of an external wall requires internal linings capable of resisting wind pressures exerted from inside the building.
1. Stud frame wall design with all relevant load factors applied shall be conducted by qualified project engineers.

Screw Fixing Table – **Gable End Suspended** Eastland AAC Panels (Fixing of Screws from Outside panel)

AS 4055 Wind Category	Max ULS Wind pressure (kPa)		Stud Spacing (mm)	Number of Screws Per Panel, Per Top Hat (Outside fixing)			
				Panel Thickness (mm)			
	≥ 1,200 mm from Corners	< 1,200 mm from Corners		50		75	
				Panel Location		Panel Location	
				Typical	Corner	Typical	Corner
N1	+0.62 -0.53	-0.94	600	2	3	2	3
N2	+0.86 -0.74	-1.30	600	2	3	2	3
N3	+1.35 -1.16	-2.03	450	3	4	3	4
N4	+2.01 -1.72	-3.01	450	4	4	4	4
N5	+2.96 -2.53	-4.44	450	4	4	4	4
N6	+3.99 -3.42	-5.99	400	4	4	4	4

Notes:

1. The above table is suitable for Vertically oriented reinforced AAC panels, suspended at the gable ends of a building.
2. The above table is to be used for fixing of panels using screws from the outside of the building.
3. Inside fixing is NOT suitable for suspended panels.
4. For Fire rated construction, a minimum of 3 screws per top hat is required.
5. Outside fixing of screws based upon 14-10 MP Bugle Head Batten screw, screw length as per section 2.2.

Structural Span Table – **Framing Suspended** Eastland AAC Panels (2nd or 3rd storey)

AS 4055 Wind Category	Max ULS Wind pressure (kPa)		Stud Spacing (mm)	Max Span of Panel / Top Hat spacing (mm)			
				Panel Thickness (mm)			
	≥ 1,200 mm from Corners	< 1,200 mm from Corners		50		75	
				Panel Location		Panel Location	
				Typical	Corner	Typical	Corner
N1	+0.62 -0.53	-0.94	600	1,000	1,000	1,000	1,000
N2	+0.86 -0.74	-1.30	600	1,000	1,000	1,000	1,000
N3	+1.35 -1.16	-2.03	450	1,000	950	1,000	950
N4	+2.01 -1.72	-3.01	450	1,000	750	1,000	750
N5	+2.96 -2.53	-4.44	450	750	600	750	600
N6	+3.99 -3.42	-5.99	400	600	450	600	450

Notes:

1. The above table is suitable for Vertically oriented reinforced AAC panels, suspended from framing for a 2nd or 3rd storey.
2. Battens to be equally spaced with maximum end cantilever of 250mm in N1, N2 & N3 regions and maximum cantilever of 150mm in N4, N5 & N6 regions.
3. Additional top hats to be installed to support panels or sill blocks above or below window openings.
4. Local suction factors within 1,200mm of building corners may require additional top hats.
5. The wind resistance of an external wall requires internal linings capable of resisting wind pressures exerted from inside the building.
6. Stud frame wall design with all relevant load factors applied shall be conducted by qualified project engineers.

Screw Fixing Table – **Framing Suspended** Eastland AAC Panels (Fixing of Screws from Outside panel)

AS 4055 Wind Category	Max ULS Wind pressure (kPa)		Stud Spacing (mm)	Number of Screws Per Panel, Per Top Hat (Outside fixing)			
				Panel Thickness (mm)			
	≥ 1,200 mm from Corners	< 1,200 mm from Corners		50		75	
				Panel Location		Panel Location	
				Typical	Corner	Typical	Corner
N1	+0.62 -0.53	-0.94	600	2	3	2	3
N2	+0.86 -0.74	-1.30	600	2	3	2	3
N3	+1.35 -1.16	-2.03	450	3	4	3	4
N4	+2.01 -1.72	-3.01	450	4	4	4	4
N5	+2.96 -2.53	-4.44	450	4	4	4	4
N6	+3.99 -3.42	-5.99	400	4	4	4	4

Notes:

1. The above table is suitable for Vertically oriented reinforced AAC panels, suspended from framing for a 2nd or 3rd storey.
2. The above table is to be used for fixing of panels using screws from the outside of the building.
3. Inside fixing is NOT suitable for suspended panels.
4. For Fire rated construction, a minimum of 3 screws per top hat is required.
5. Outside fixing of screws based upon 14-10 MP Bugle Head Batten screw, screw length as per section 2.2.

4.3 Structural Span Tables – Horizontally Oriented Panels

The specification of the cladding system must be carried out in accordance with AS 1170.2 or AS 4055, the wind pressure limits, maximum span & fixings for horizontally oriented Eastland AAC panels with vertical top hats are shown below, note the Top Hat spacing to be equal to the Stud spacing.

For hi-rise residential and commercial buildings, use wind pressures in the following tables as a guide.

Structural Span Table – **Base Supported** Eastland AAC Panels

AS 4055 Wind Category	Max ULS Wind pressure (kPa)		Stud Spacing (mm)	Number of Screws Per Panel, Per Top Hat (Outside fixing)			
				Panel Thickness (mm)			
	≥ 1,200 mm from Corners	< 1,200 mm from Corners		50		75	
				Panel Location		Panel Location	
				Typical	Corner	Typical	Corner
N1	+0.62 -0.53	-0.94	600	2	2	2	3
N2	+0.86 -0.74	-1.30	600	2	2	2	2
N3	+1.35 -1.16	-2.03	600	2	2	2	2
N4	+2.01 -1.72	-3.01	600	2	3	2	2
N5	+2.96 -2.53	-4.44	600	Unsuitable	Unsuitable	2	3
N6	+3.99 -3.42	-5.99	600	Unsuitable	Unsuitable	3	4
N1	+0.62 -0.53	-0.94	450	2	2	2	2
N2	+0.86 -0.74	-1.30	450	2	2	2	2
N3	+1.35 -1.16	-2.03	450	2	2	2	2
N4	+2.01 -1.72	-3.01	450	2	2	2	2
N5	+2.96 -2.53	-4.44	450	2	3	2	2
N6	+3.99 -3.42	-5.99	450	2	3	2	3

Notes:

1. The above table is suitable for Horizontally oriented reinforced AAC panels supported at the Base of the panel (eg. by slab edge, shelf angle or similar).
2. Battens to be installed vertically onto studs with panels spanning horizontally.
3. Panels to be staggered in a stretcher bond pattern.
4. The above table is to be used for fixing of panels using screws from the outside of the building.
5. Inside fixing is NOT suitable for Horizontally oriented panels.
6. Outside fixing of screws based upon 14-10 MP Bugle Head Batten screw, screw length as per section 2.2.
7. Local suction factors within 1,200mm of building corners may require additional top hats.
8. The wind resistance of an external wall requires internal linings capable of resisting wind pressures exerted from inside the building.
9. Stud frame wall design with all relevant load factors applied shall be conducted by qualified project engineers.

The Eastland AAC systems may be installed in non-cyclonic wind regions up to and including N6 for all wall areas including corner zones. Installation in cyclonic wind regions require site specific engineering design and is outside the scope of this Technical Manual.

Project specific stud spacing and top hat spacing shall not exceed the nominated limits detailed above, weather resistant barriers shall be selected to withstand project specific wind pressures. Typically, flexible membranes may be installed in applications up to 2.5 kPa ULS wind pressure and Rigid Air Barriers for higher wind pressures, check manufacturer's details.

Structural Span Table – **Framing and Gable End Supported** Eastland AAC Panels

AS 4055 Wind Category	Max ULS Wind pressure (kPa)		Stud Spacing (mm)	Number of Screws Per Panel, Per Top Hat (Outside fixing)			
				Panel Thickness (mm)			
	≥ 1,200 mm from Corners	< 1,200 mm from Corners		50		75	
				Panel Location		Panel Location	
				Typical	Corner	Typical	Corner
N1	+0.62 -0.53	-0.94	600	3	3	3	3
N2	+0.86 -0.74	-1.30	600	3	3	3	3
N3	+1.35 -1.16	-2.03	600	3	3	3	3
N4	+2.01 -1.72	-3.01	600	3	3	3	3
N5	+2.96 -2.53	-4.44	600	Unsuitable	Unsuitable	3	3
N6	+3.99 -3.42	-5.99	600	Unsuitable	Unsuitable	3	4
N1	+0.62 -0.53	-0.94	450	3	3	3	3
N2	+0.86 -0.74	-1.30	450	3	3	3	3
N3	+1.35 -1.16	-2.03	450	3	3	3	3
N4	+2.01 -1.72	-3.01	450	3	3	3	3
N5	+2.96 -2.53	-4.44	450	3	3	3	3
N6	+3.99 -3.42	-5.99	450	3	3	3	3

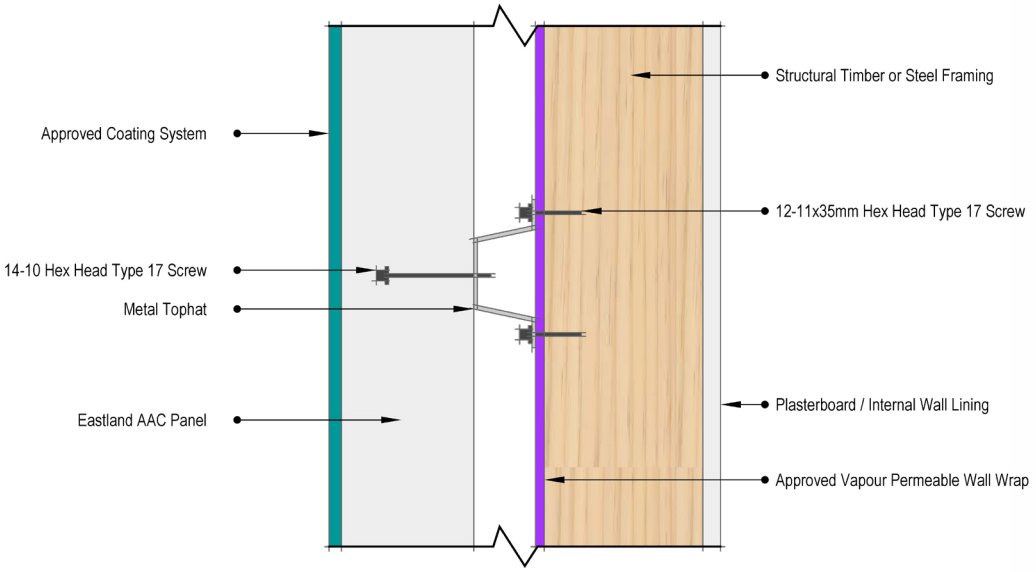
Notes:

1. The above table is suitable for Horizontally oriented reinforced AAC panels suspended from framing for 2nd & 3rd storey construction and at the gable ends of a building.
2. Battens to be installed vertically onto studs with panels spanning horizontally.
3. Panels to be staggered in a stretcher bond pattern.
4. The above table is to be used for fixing of panels using screws from the outside of the building.
5. Inside fixing is NOT suitable for Horizontally oriented panels.
6. Outside fixing of screws based upon 14-10 MP Bugle Head Batten screw, screw length as per section 2.2.
7. Local suction factors within 1,200mm of building corners may require additional top hats.
8. The wind resistance of an external wall requires internal linings capable of resisting wind pressures exerted from inside the building.
9. Stud frame wall design with all relevant load factors applied shall be conducted by qualified project engineers.

4.4 Fixing of AAC Panels to Top Hats

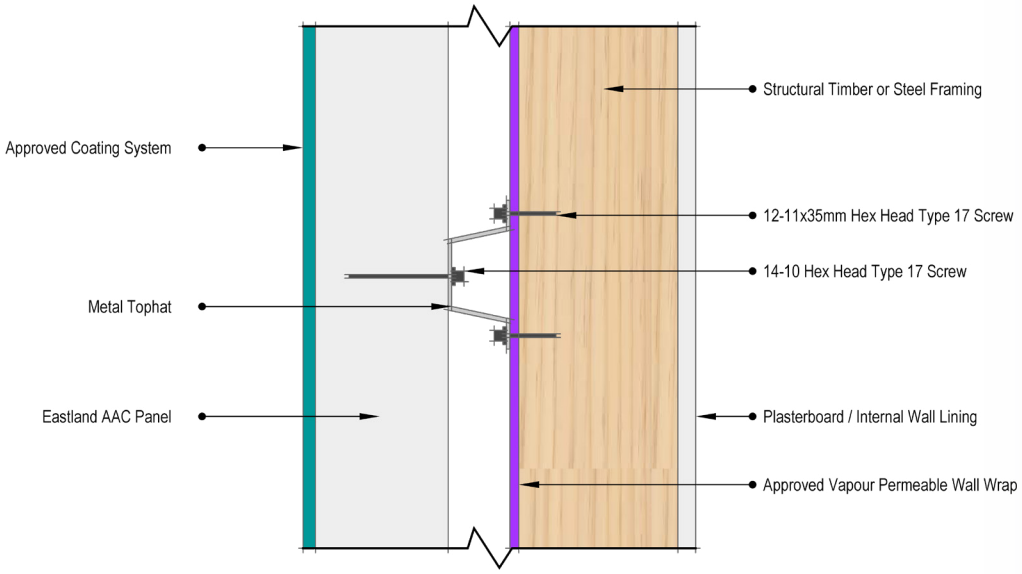
External Fixing Detail

In general, the most common method of fixing AAC panels to Top Hats should be from the external side of the panel, as per the detail below. Using this fixing detail engages the Top Hat with the screw thread and the panel with the screw head, providing a stronger connection.



Internal Fixing Detail – Restricted Access & Vertical Panels Only

When access to the external face of the AAC panel is impossible, fixing of the AAC panels to the Top Hats may be conducted from inside the building, as per the detail below. Using this method the screw head is engaged with the inside face of the Top Hat and the screw thread engages the AAC material.



Care must be taken to avoid over-torque of the screw which can strip the AAC material, rendering the connection ineffective.

4.5 Resistance to Fire & Bushfire

Non-combustible

Eastland AAC materials are deemed non-combustible according to BCA 2022 Volume One C2D10 (4). All elements of the Eastland AAC Cladding System are manufactured from non-combustible materials and are deemed non-combustible in accordance with the general concessions provided in BCA 2022 Volume 1 C2D10.

External Cladding

When Eastland AAC cladding panels are used on external walls that are required to have non-combustible elements, all other components used within the construction of the wall must be compliant with BCA 2022 Volume 1 C2D10.

Fire Rating

Should an Eastland AAC Cladding system be installed in an external wall application where Resistance to Fire is required, the wall system shall be specified and constructed to provide the required Fire Resistance Level (FRL). FRLs for external wall construction using Eastland AAC panels, supported by structural framing including top hat battens, may be determined in accordance with AS 5146.3:2018 Part 2.6 (Table 2.6.2(A) below).

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

Note: The above FRL's are provided from the panel side of construction.

External framed walls constructed using the Eastland 50mm AAC panel and supported by battens at spacings no greater than those listed in Section 3.3 of AS 5146.3:2018, the external wall achieves a maximum FRL of 120/120/120, from an external fire source.

External framed walls constructed using the Eastland 75mm AAC panel and supported by battens at spacings no greater than those listed in Section 3.3 of AS 5146.3:2018, the external wall achieves a maximum FRL of 180/180/180, from an external fire source.

For Fire Rated construction in both directions, the Internal side of the framing must be clad in Fire Resistant Plasterboard in accordance with manufacturer's instructions, or another layer of AAC panel.

Construction in Bushfire Prone Areas

The Eastland AAC external wall cladding system achieves FRLs as detailed above and includes non-combustible components.

When constructed in accordance with this technical manual, AS 5146.3:2018 and specific requirements of AS 3959:2018, the Eastland AAC external wall cladding system is suitable for use in all Bushfire Attack Level zones, up to and including BAL-FZ (Flame Zone).

4.6 Weatherproof Facade System

A facade and/or structural engineer shall be responsible to design the complete wall system in accordance with the appropriate standards, codes, project loads and details, thus ensuring compliance with all relevant parts of the National Construction Code (NCC).

Eastland AAC Cladding system presents options for a Rainscreen facade or face sealed external wall design. For all facade and external wall systems a weather resistant layer (rigid air barrier or flexible building membrane) shall be installed on the external surface of the building sub-frame and/or substrate, all joints in the weather barrier shall be tape sealed, all flexible membranes shall be lapped and taped at joints.

For rainscreen facades, the external wall cavity (outside the weather resistant barrier) shall be drained and ventilated. For face sealed external walls, the external cavity shall be sealed at all junctions, interfaces and penetrations.

For rainscreen and face sealed options, all flashing at windows, slab junctions and junctions with other building elements shall be installed to ensure all moisture is controlled and directed to the exterior of the building.

When designed, specified and constructed in accordance with AS 5146.3:2018, Eastland AAC Cladding System presents weatherproof external wall solutions compliant with the relevant Weatherproofing provisions of BCA 2022 Volume 1 F3D5 and BCA 2022 Volume 2 H2D6.

4.7 Condensation Management

All Eastland AAC cladding systems require a weather resistant barrier (flexible sarking membrane or Rigid Air Barrier) to be installed external to the supporting frame / substrate. The weather resistant barriers are required to be airtight and watertight. For Water Vapour control of the membrane, the following general rules apply (refer AS 4200.1:2017 for Vapour Control Membrane classifications):

- In Tropical climates, a Vapour Barrier (AS 4200.1 Class 1 & 2 Vapour Control Membrane) is recommended and should be installed external to the Primary Insulation layer.
- In Mixed and Cold climates, a Vapour Permeable Membrane (AS 4200.1 Class 3 & 4 Vapour Control Membrane) is recommended and should be installed external to moisture sensitive insulation and other construction materials.
- Refer specific BCA requirements below for Climate Zones 4, 5, 6, 7 & 8.

BCA – Condensation Management

For External Walls the BCA nominates the Vapour Permeability requirements of wall membranes for Climate Zones 4, 5, 6, 7 & 8 (this requirement is recommended to be matched when using a Rigid Air Barrier). Using the Deemed to Satisfy (DtS) provisions of the BCA for Condensation management, the following requirements apply:

- Climate Zones 4 & 5 require a Vapour Permeance not less than 0.143 µg/N.s (Class 3 Vapour Permeable)
- Climate Zones 6, 7 & 8 require a Vapour Permeance not less than 1.14 µg/N.s (Class 4 Vapour Permeable)

4.8 Energy Efficiency & Thermal Performance

Eastland AAC external wall cladding panels provide enhanced Thermal insulation properties when compared to other masonry or light weight cladding options, with the 50mm thick AAC panels providing panel only thermal performance of R0.397 and the 75mm thick AAC panels providing panel only thermal performance of R0.744, as outlined in section 2.1 of this technical manual.

When coupled with external wall construction elements including internal plasterboard, stud frame, internal wall insulation, weather resistant barrier options and external wall cavity, the complete wall system thermal performance provides excellent thermal separation from the outside elements.

50mm AAC External Wall System

The following table presents the overall wall system thermal performance when using Eastland 50mm AAC cladding panels, the calculations below include an estimate of the thermal bridging at construction elements.

EASTLAND 50mm AAC External Walls									
STRUCTURAL FRAME		TOP HAT BATTEN DEPTH	SARKING / WALL WRAP TYPE	"BULK INSULATION R VALUE"	INTERNAL LINING	INSULATION PATH R VALUE (m2.K/W)		TOTAL WALL R VALUE (m2.K/W)	
TYPE & SPACING	STUD SIZE					Winter	Summer	Winter	Summer
Timber at 600mm Centres	90x45	24mm, 35mm, 45mm	At Stud	-	10mm Plasterboard	R1.477	R1.467	-	-
			Foil Vapour Barrier	-		R1.395	R1.285	R1.405	R1.307
			Vapour Permeable	-		R0.965	R0.945	R1.025	R1.006
			Either Vapour Barrier or Permeable	R2.0		R2.795	R2.785	R2.642	R2.632
				R2.5		R3.295	R3.285	R3.083	R3.073
				R3.0		R3.795	R3.785	R3.525	R3.515
Timber at 450mm Centres	90x45	24mm, 35mm, 45mm	At Stud	-	10mm Plasterboard	As above		-	-
			Foil Vapour Barrier	-				R1.407	R1.311
			Vapour Permeable	-				R1.037	R1.019
			Either Vapour Barrier or Permeable	R2.0				R2.610	R2.600
				R2.5				R3.040	R3.030
				R3.0				R3.470	R3.460
Steel at 600mm Centres with R0.2 Thermal Break Tape	92x45x-0.55BMT	24mm, 35mm, 45mm	At Stud	-	10mm Plasterboard	R1.093	R1.083	-	-
			Foil Vapour Barrier	-		R1.395	R1.285	R1.360	R1.262
			Vapour Permeable	-		R0.965	R0.945	R0.980	R0.962
			Either Vapour Barrier or Permeable	R2.0		R2.795	R2.785	R2.597	R2.587
				R2.5		R3.295	R3.285	R3.039	R3.029
				R3.0		R3.795	R3.785	R3.480	R3.470
Steel at 450mm Centres with R0.2 Thermal Break Tape	92x45x-0.55BMT	24mm, 35mm, 45mm	At Stud	-	10mm Plasterboard	As above		-	-
			Foil Vapour Barrier	-				R1.353	R1.257
			Vapour Permeable	-				R0.983	R0.965
			Either Vapour Barrier or Permeable	R2.0				R2.556	R2.546
				R2.5				R2.986	R2.976
				R3.0				R3.416	R3.406

Notes:

1. The enclosed calculations are in accordance with AS/NZS 4859 Parts 1 & 2:2018
2. The above calculations are for total overall R value of opaque wall elements (no glazing)
3. Wall framing elements and insulated areas taken into consideration for weighted average R values (refer figure titled “Wall Framing Arrangement & Area Calculations”)
4. Winter and Summer ΔT values for Australia as defined in AS/NZS 4859.2:2018
5. Batten depths varying from 16 to 50mm has no influence on wall R values as air gaps are non-reflective
6. Thermal Conductivity of Eastland AAC panels in accordance with AS 5146.2:2018
7. Emissivity of reflective foil vapour barrier membranes assumed to be 0.05
8. Emissivity of non-reflective vapour permeable membranes assumed to be 0.8
9. Insulation path R values calculated at main insulation cavity (reflective or non-reflective air spaces assumed for no insulation options)
10. For U value calculation U = 1/R

75mm AAC External Wall System

The following table presents the overall wall system thermal performance when using Eastland 75mm AAC cladding panels, the calculations below include an estimate of the thermal bridging at construction elements.

EASTLAND 75mm AAC External Walls									
STRUCTURAL FRAME		TOP HAT BATTEN DEPTH	SARKING / WALL WRAP TYPE	"BULK INSULATION R VALUE"	INTERNAL LINING	INSULATION PATH R VALUE (m2.K/W)		TOTAL WALL R VALUE (m2.K/W)	
TYPE & SPACING	STUD SIZE					Winter	Summer	Winter	Summer
Timber at 600mm Centres	90x45	24mm, 35mm, 45mm	At Stud	-	10mm Plasterboard	R1.778	R1.768	-	-
			Foil Vapour Barrier	-		R1.696	R1.586	R1.706	R1.608
			Vapour Permeable	-		R1.266	R1.246	R1.326	R1.307
			Either Vapour Barrier or Permeable	R2.0		R3.096	R3.086	R2.943	R2.933
				R2.5		R3.596	R3.586	R3.384	R3.374
				R3.0		R4.096	R4.086	R3.826	R3.816
Timber at 450mm Centres	90x45	24mm, 35mm, 45mm	At Stud	-	10mm Plasterboard	As above		-	-
			Foil Vapour Barrier	-				R1.708	R1.612
			Vapour Permeable	-				R1.338	R1.320
			Either Vapour Barrier or Permeable	R2.0				R2.911	R2.901
				R2.5				R3.341	R3.331
				R3.0				R3.770	R3.760
Steel at 600mm Centres with R0.2 Thermal Break Tape	92x45x-0.55BMT	24mm, 35mm, 45mm	At Stud	-	10mm Plasterboard	R1.394	R1.384	-	-
			Foil Vapour Barrier	-		R1.696	R1.586	R1.661	R1.563
			Vapour Permeable	-		R1.266	R1.246	R1.281	R1.262
			Either Vapour Barrier or Permeable	R2.0		R3.096	R3.086	R2.898	R2.888
				R2.5		R3.596	R3.586	R3.340	R3.330
				R3.0		R4.096	R4.086	R3.781	R3.771
Steel at 450mm Centres with R0.2 Thermal Break Tape	92x45x-0.55BMT	24mm, 35mm, 45mm	At Stud	-	10mm Plasterboard	As above		-	-
			Foil Vapour Barrier	-				R1.654	R1.558
			Vapour Permeable	-				R1.284	R1.266
			Either Vapour Barrier or Permeable	R2.0				R2.857	R2.847
				R2.5				R3.287	R3.277
				R3.0				R3.716	R3.706

Notes:

1. The enclosed calculations are in accordance with AS/NZS 4859 Parts 1 & 2:2018
2. The above calculations are for total overall R value of opaque wall elements (no glazing)
3. Wall framing elements and insulated areas taken into consideration for weighted average R values (refer figure titled “Wall Framing Arrangement & Area Calculations”)
4. Winter and Summer ΔT values for Australia as defined in AS/NZS 4859.2:2018
5. Batten depths varying from 16 to 50mm has no influence on wall R values as air gaps are non-reflective
6. Thermal Conductivity of Eastland AAC panels in accordance with AS 5146.2:2018
7. Emissivity of reflective foil vapour barrier membranes assumed to be 0.05
8. Emissivity of non-reflective vapour permeable membranes assumed to be 0.8
9. Insulation path R values calculated at main insulation cavity (reflective or non-reflective air spaces assumed for no insulation options)
10. For U value calculation U = 1/R

Wall Framing Arrangement & Area Calculations

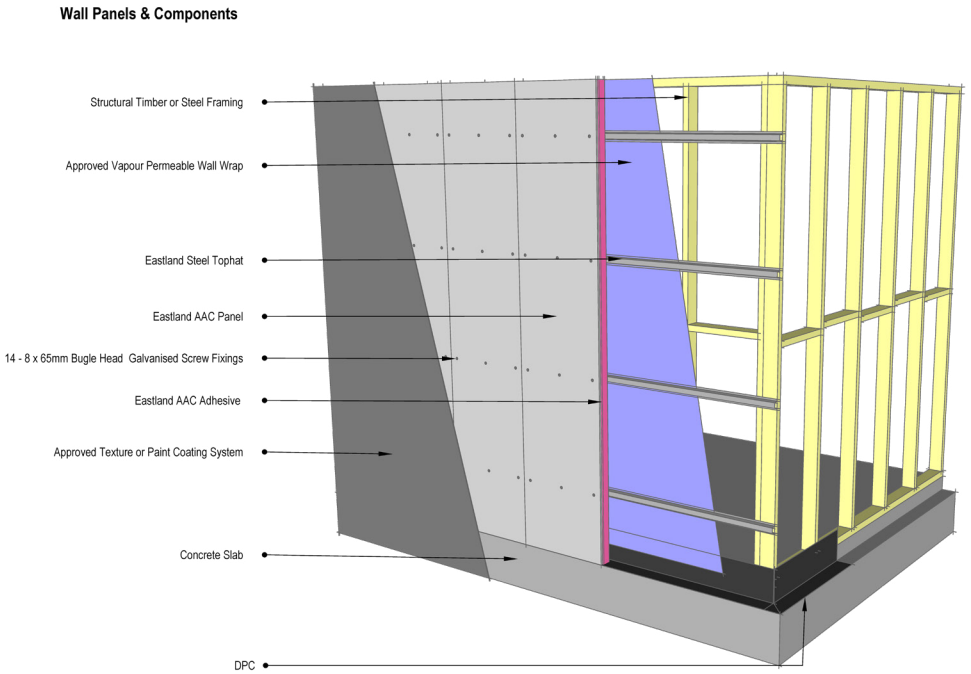
The figure below shows typical arrangements for stud framed walls (timber and steel studs), the relative areas used to estimate thermal bridging and calculate total wall system R values as shown above.

Wall Framing Arrangement & Area Calculations

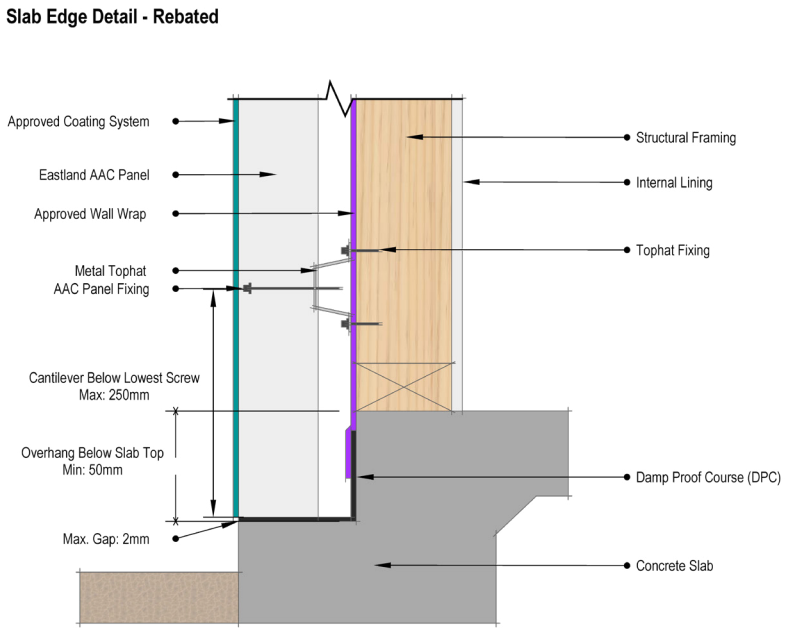
	"45mm wide Studs at 600mm Centres"			"45mm wide Studs at 450mm Centres"		
Top Plate	##	3000		##	3000	
	1432.5			1432.5		
Nogging	##			##		
	1432.5			1432.5		
Bottom Plate	45			45		
	555	45		405	45	
	600			450		
	Total Area	1.8		Total Area	1.35	
	Area Frame	0.21	11.66%	Area Frame	0.19	14.05%
	Area Insulation	1.59	88.34%	Area Insulation	1.16	85.95%

5. CONSTRUCTION DETAILS

5.1 Typical Wall Elevation

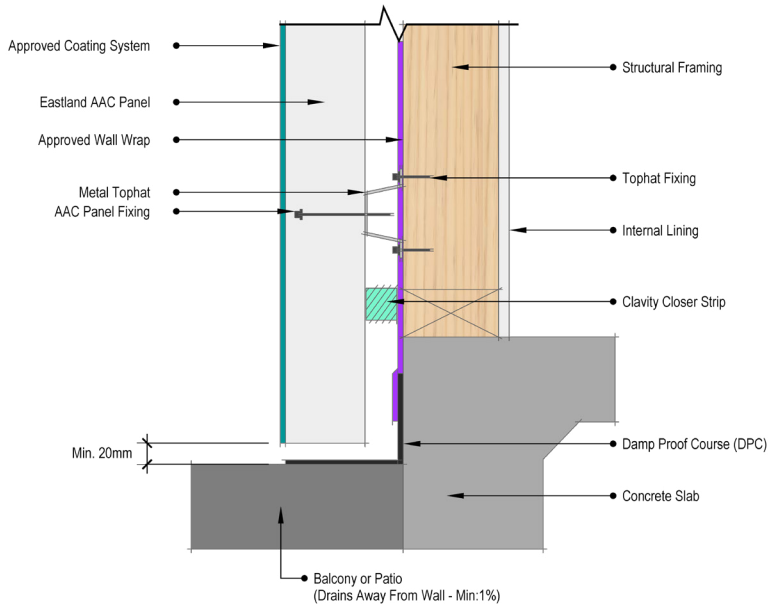


5.2 Wall Base Details



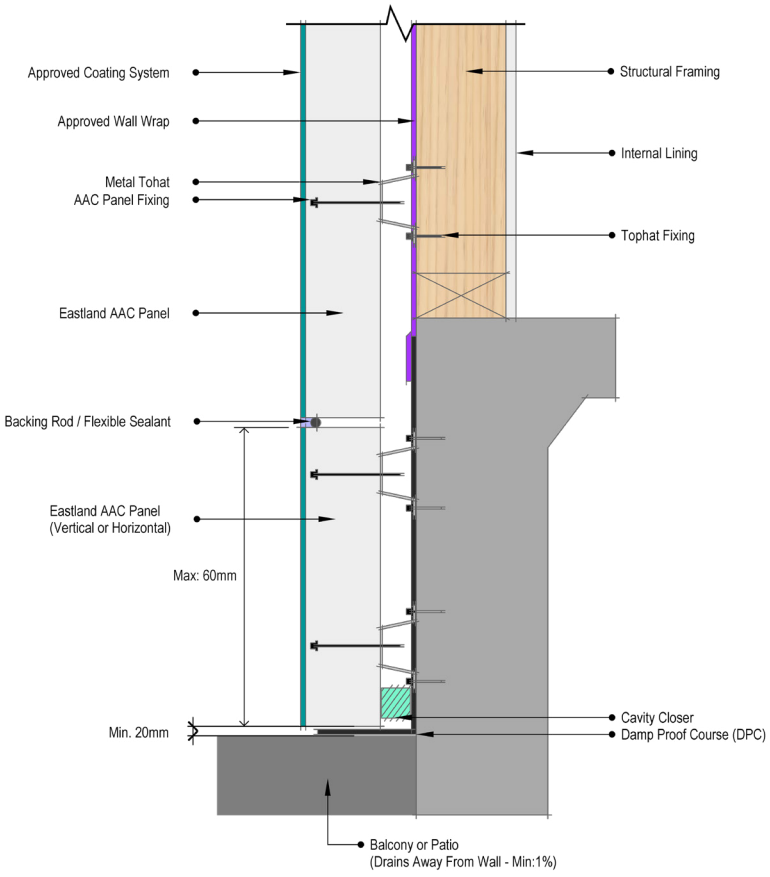
Rebated Slab Edge

Slab Edge Detail - Overhanging



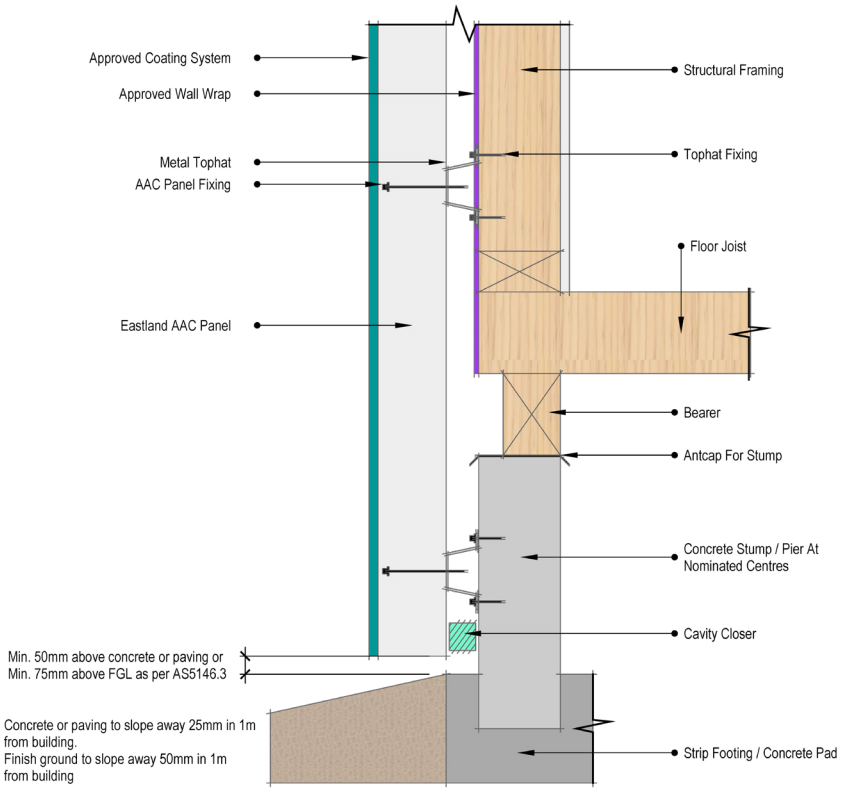
Panels Overhanging Slab Edge

Slab Edge Detail - Overhanging Deepened Edgebeam



Panels Overhanging Deep Edge Beam

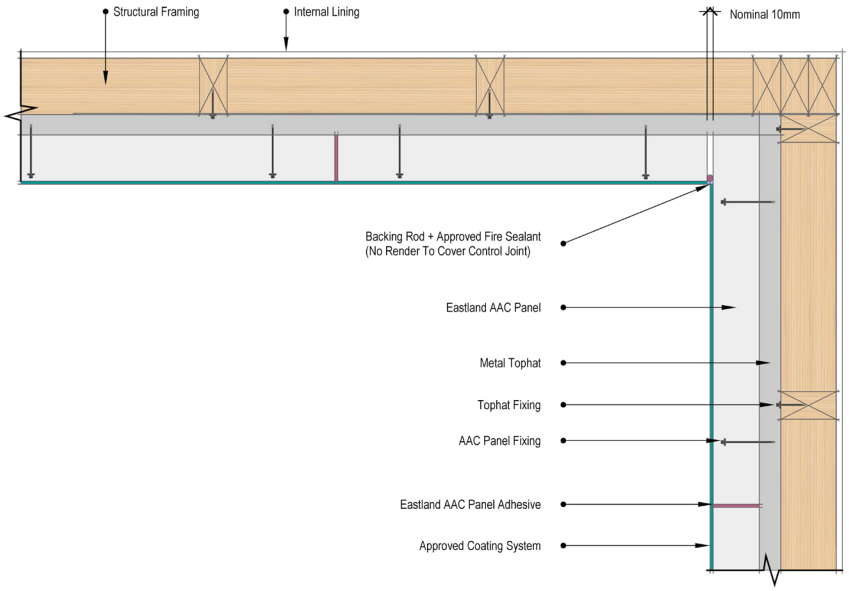
Slab Edge Detail - Subfloor Infill Between Stumps



Panels Overhanging Subfloor between Stumps

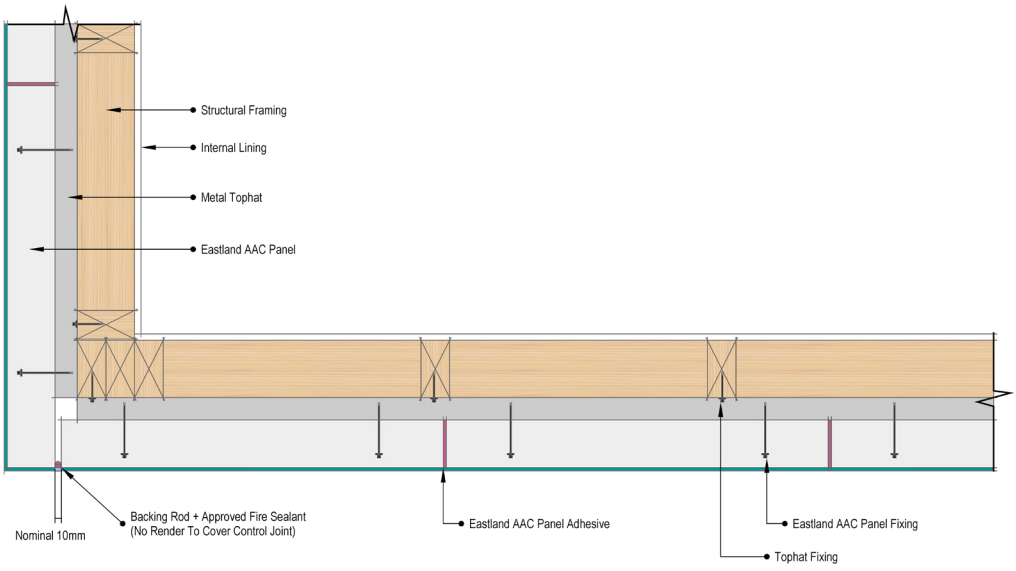
5.3 Corner Details

Corner Detail - Internal



Internal Corners

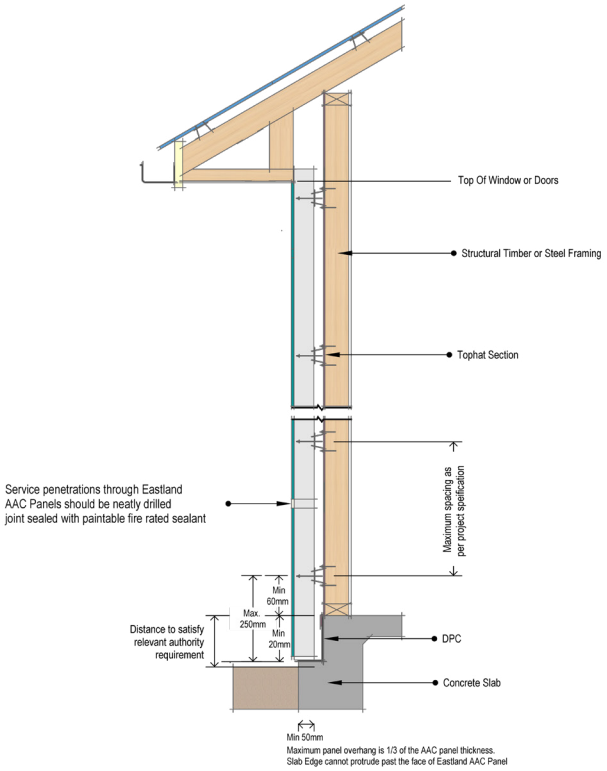
Corner Detail - External Corner



External Corners

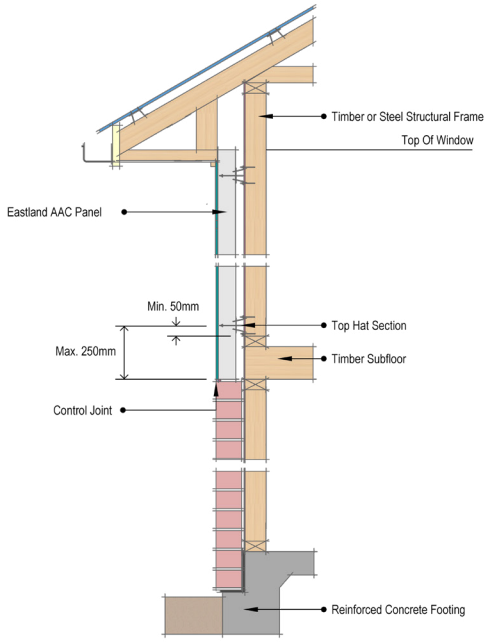
5.4 Sectional Elevations (Vertical Panels)

Single Storey Construction - Typical Section Detail



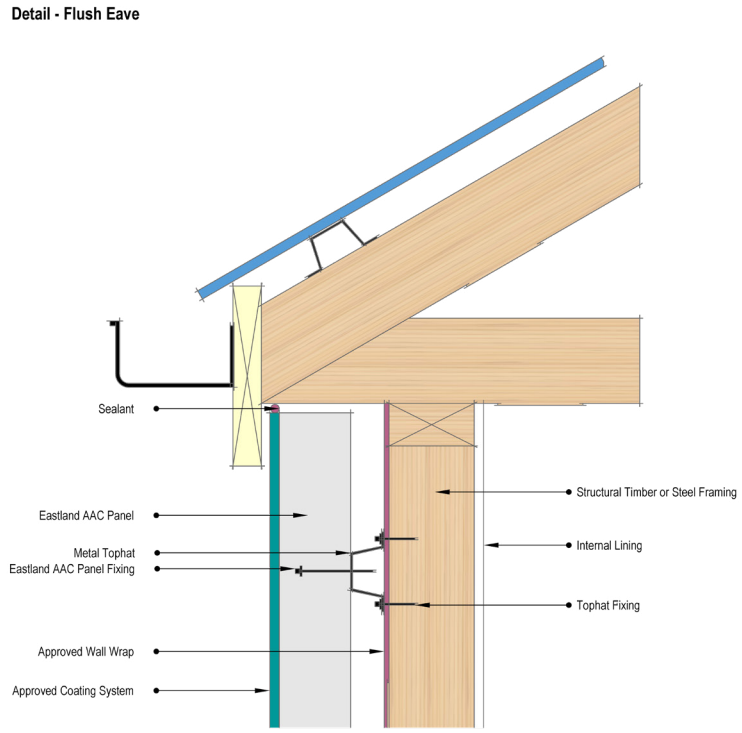
Single Storey Construction

Two Storey Additions - typical section with brick veneer below

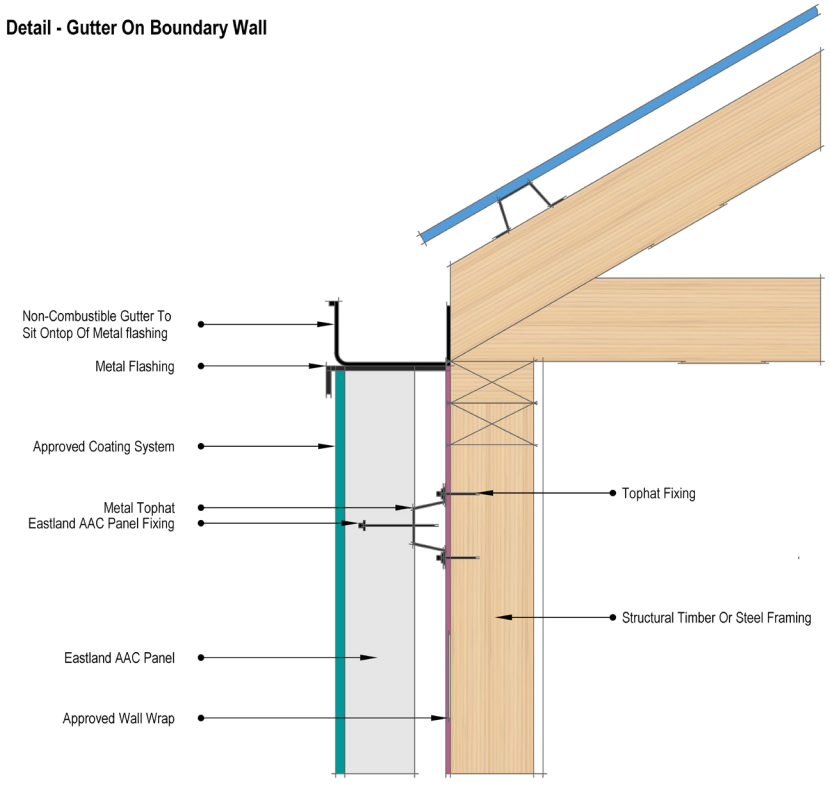


Two Storey Construction – Brick Veneer Below

5.5 Eaves and Boundary Details

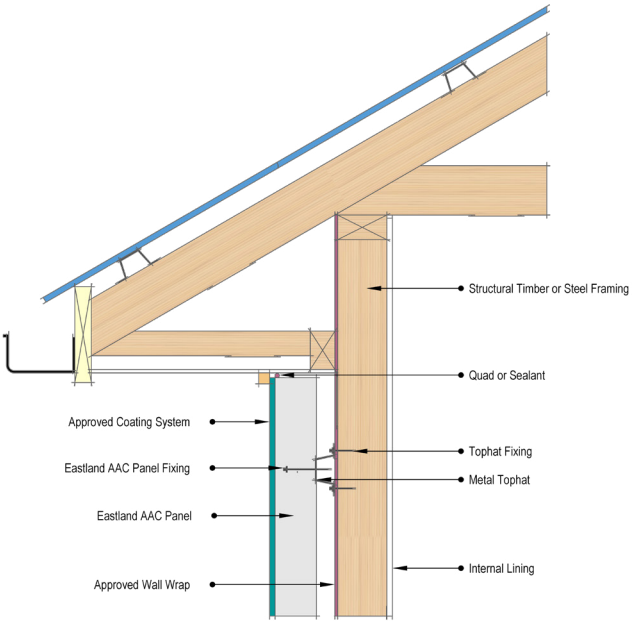


Flush Eaves



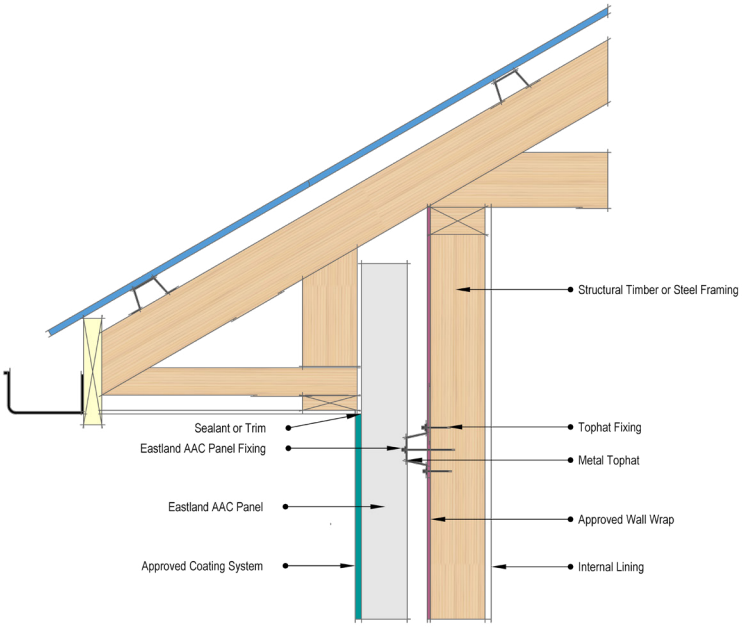
Gutter on Boundary

Eave Detail - Panel Under



Panel Under Eaves

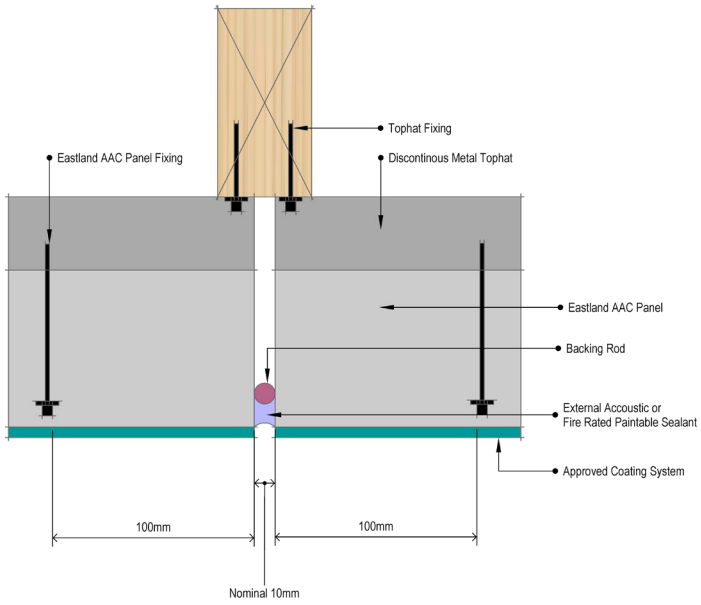
Eave Detail - Panel Flush With Lining



Panel Flush Behind Eaves

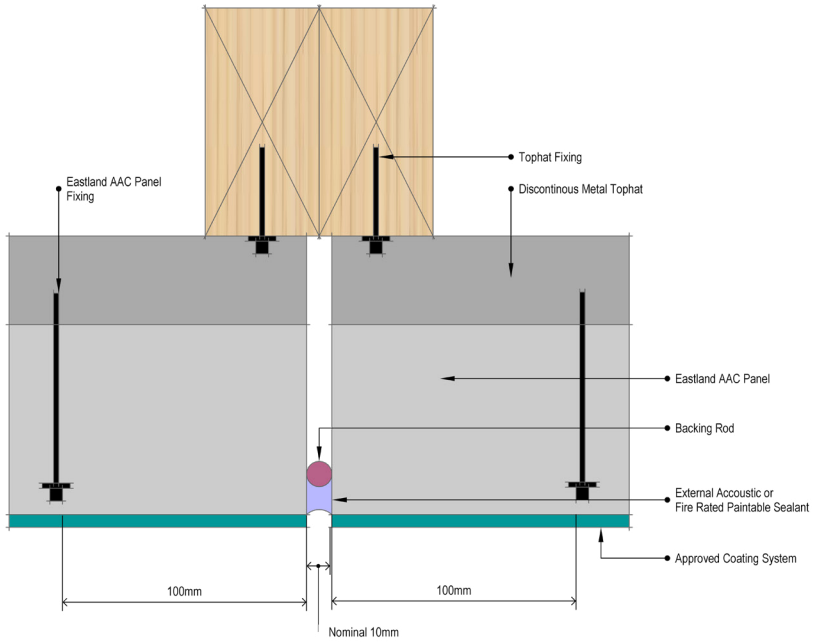
5.6 Vertical Control Joints

Detail - Vertical Control Joint Single Stud
(Achieves 90/90/90 when installed as part of the wall system)



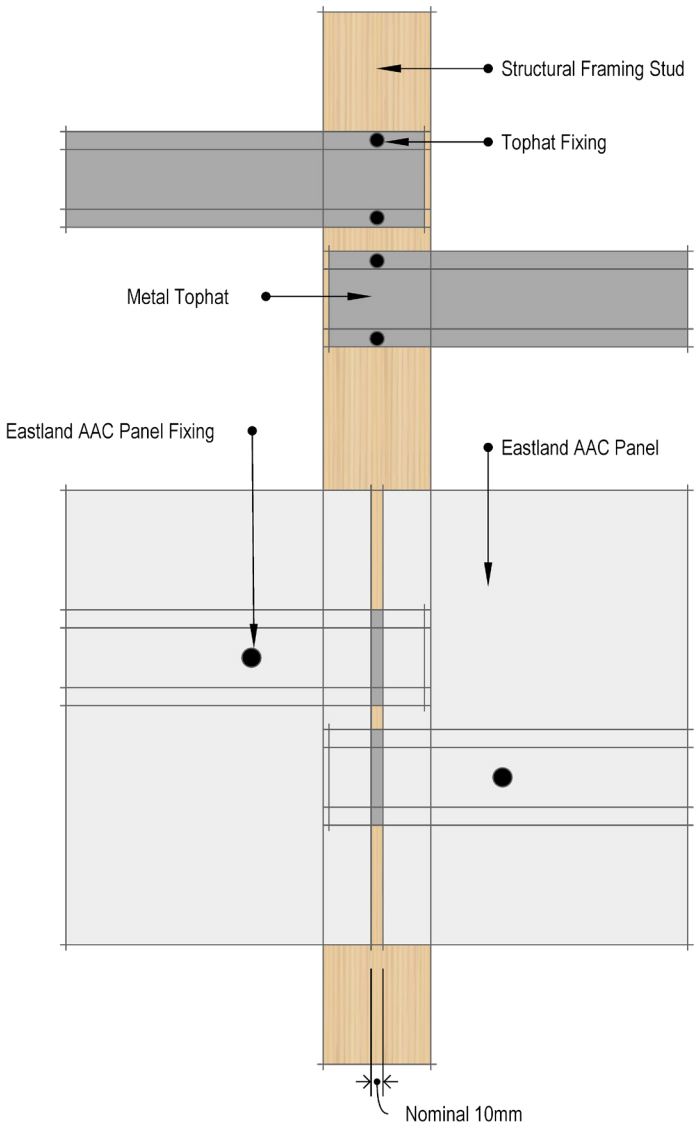
Vertical Control Joint at Single Stud

Detail - Vertical Control Joint Double Stud
(Achieves 90/90/90 when installed as part of the wall system)



Vertical Control Joint at Double Stud

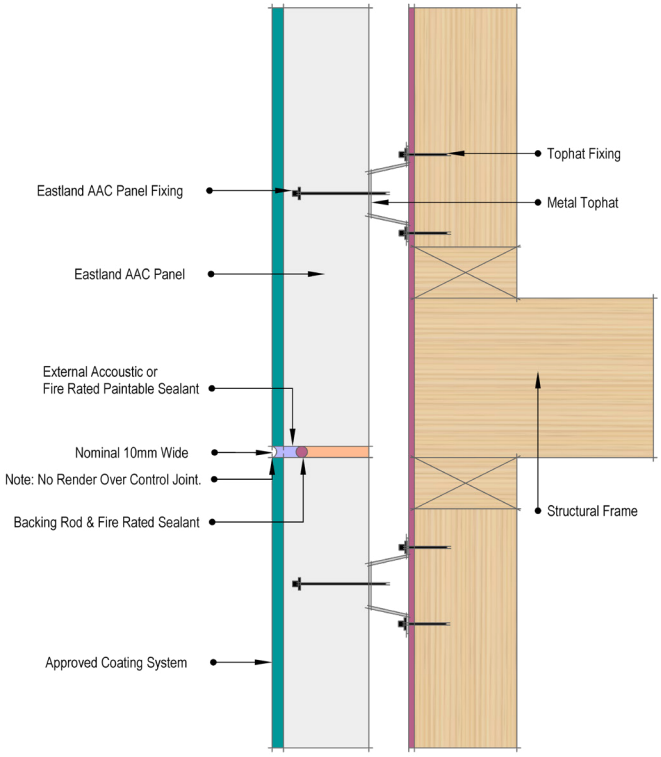
Detail - Vertical Control Joint Discontinuous Top Hat On Single Stud



Vertical Control Joint at Single Stud with Offset Battens

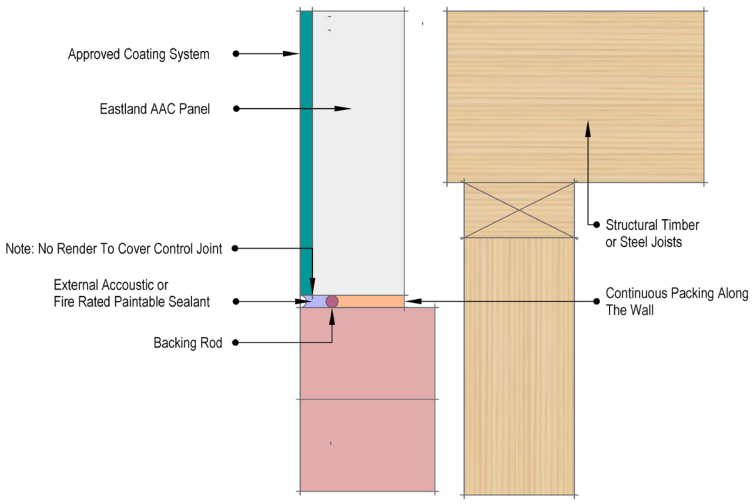
5.7 Horizontal Control Joints

Detail - Typical Control Joint Horizontal With Engineered Timber or Steel Frame
(Achieves 90/90/90 when installed as part of the wall system)



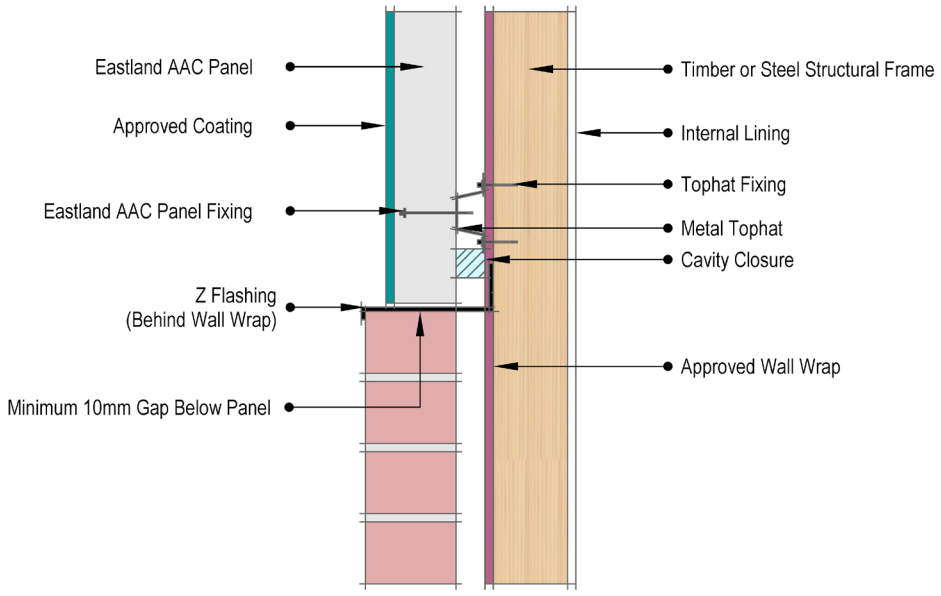
Typical Horizontal Control Joint at Intermediate Floor

Detail - Horizontal Control Joint - Brick Veneer To AAC Panel
(Achieves 90/90/90 when installed as part of the wall system)



Horizontal Control Joint at Brick Veneer Wall Transition

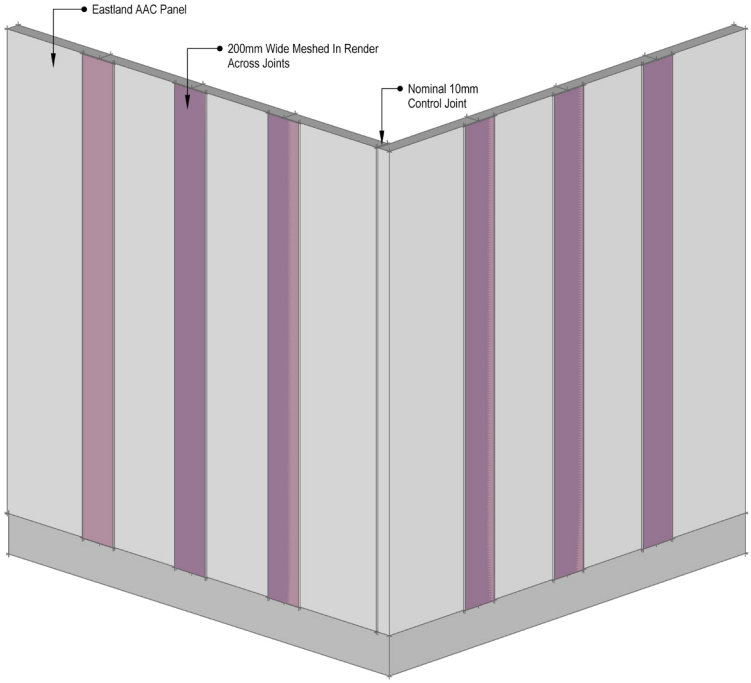
AAC Panel To Brick Detail



Horizontal Slip Joint (Flashed) at Brick Veneer Wall Transition

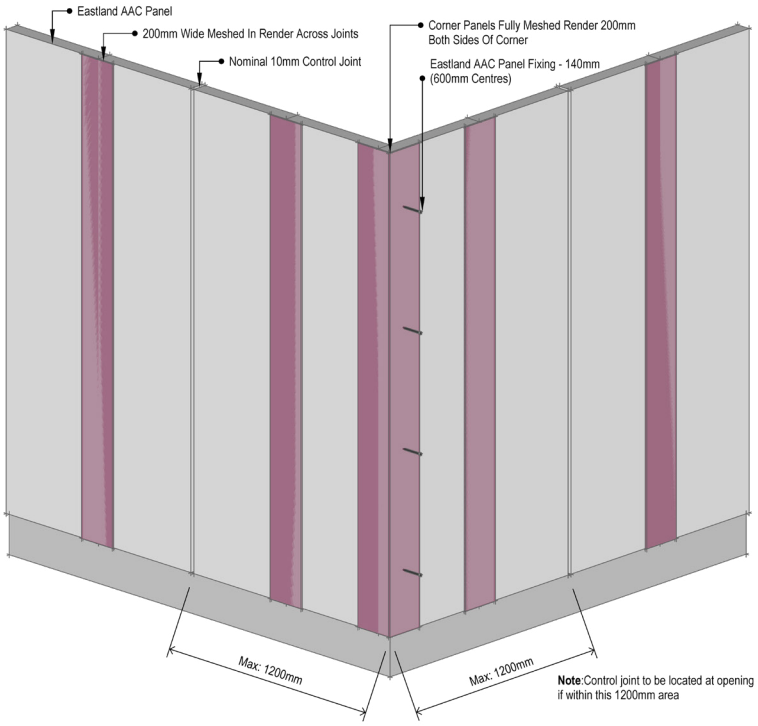
5.8 Planning of Control Joint Locations

Control Joint - Positioned In Corner



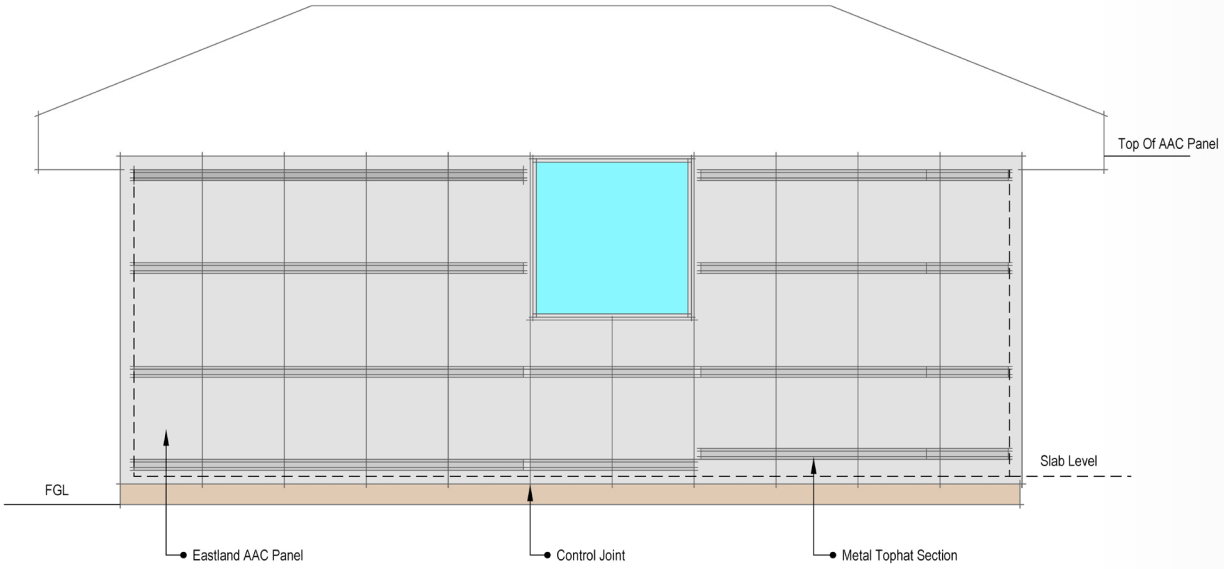
Vertical Control Joint at Building Corners

Control Joint - Positioned In Corner



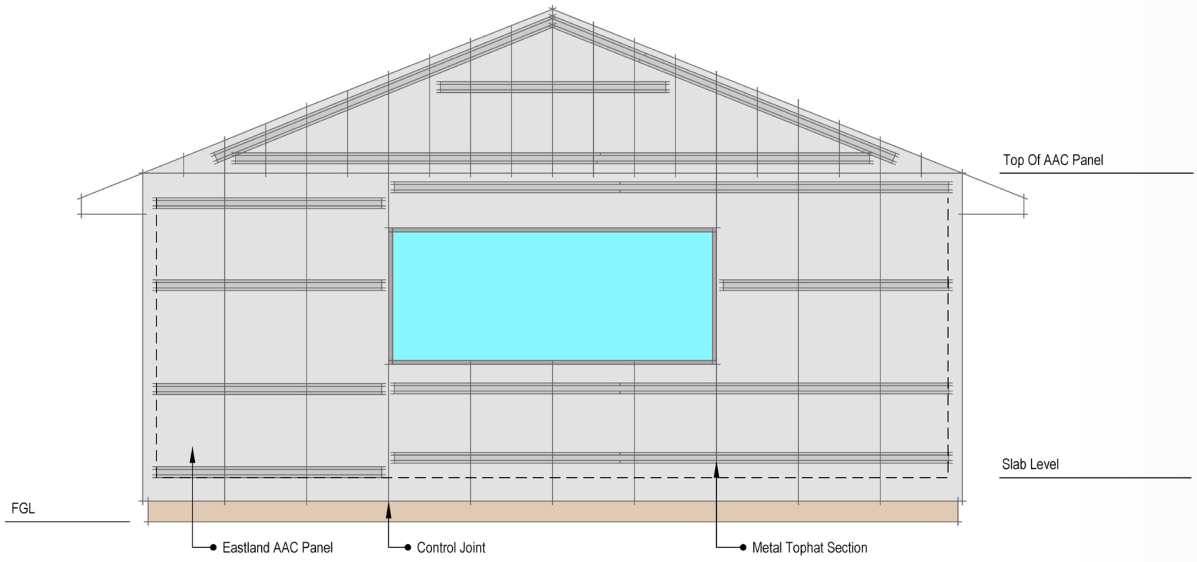
Vertical Control Joint adjacent to Building Corners

Control Joint - Single Storey Construction Hip & Roof Elevation



Control Joint at Corners & Windows

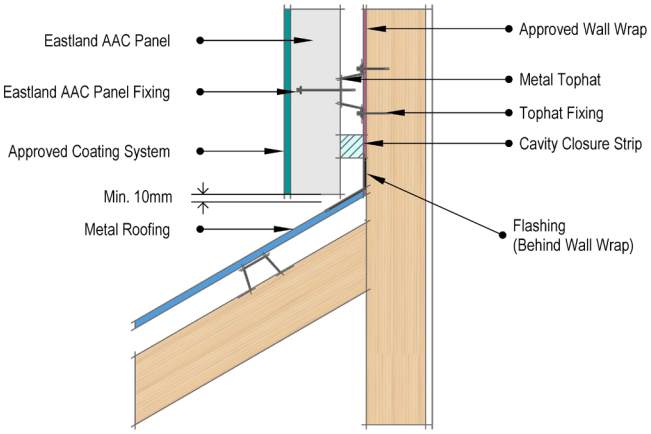
Control Joint - Single Storey Construction Gabel End Elevation



Vertical Control Joint at Gable Ends & Windows

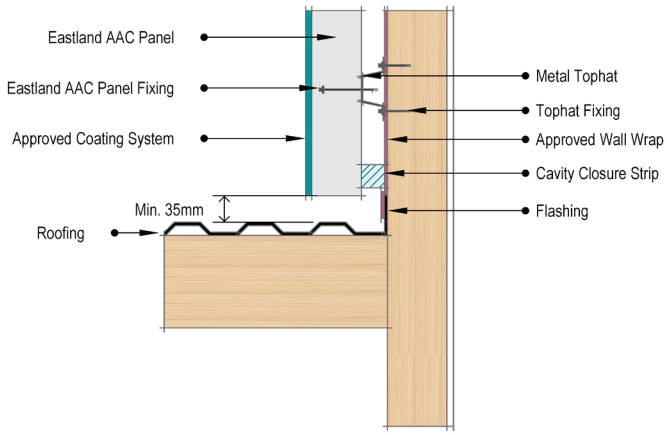
5.9 AAC Panel to Roof Details

AAC Panel To Angle Roof Detail



AAC Panel to Angle Roof

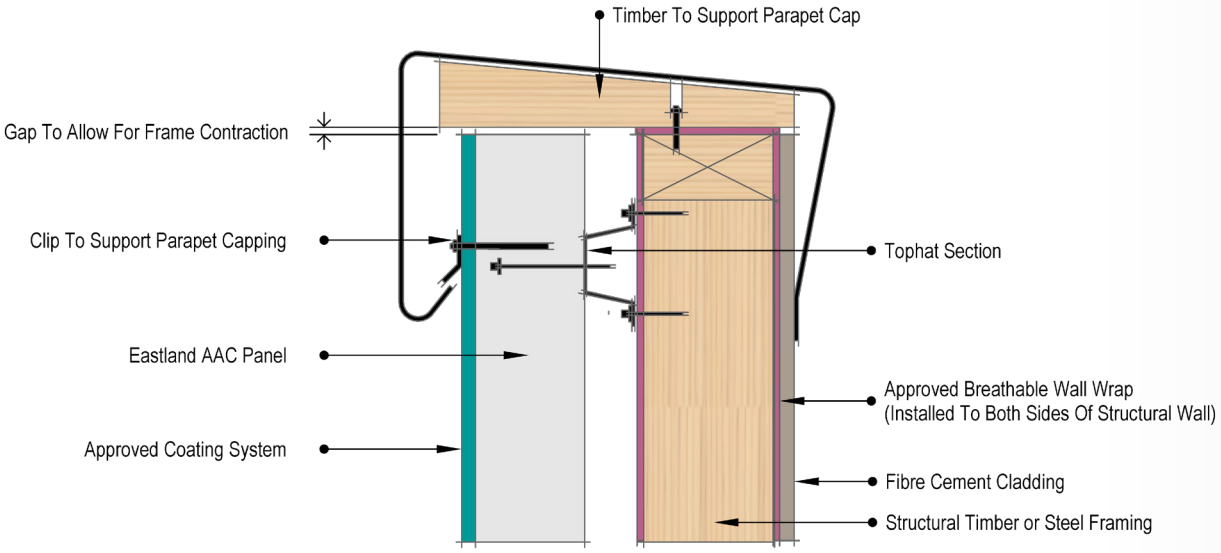
AAC Panel To Flat Roof Detail



AAC Panel to Flat Roof

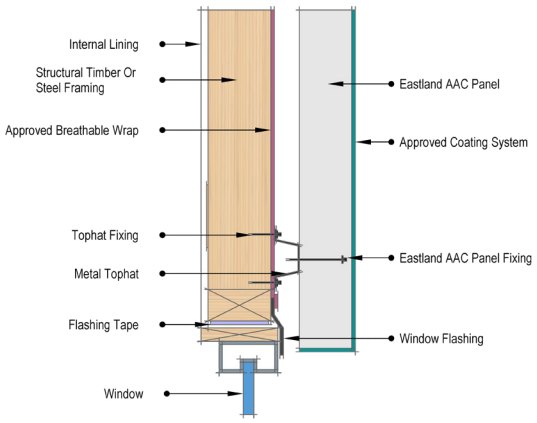
5.10 AAC Panel at Parapet & Capping Detail

Parapet Capping



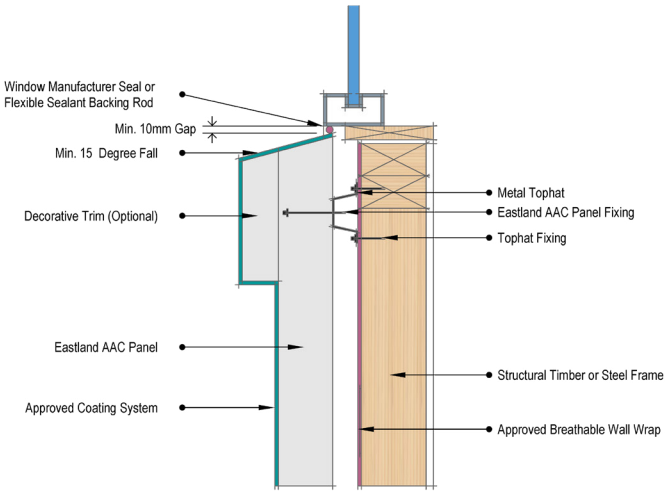
5.11 Window Details

Detail - Window Head



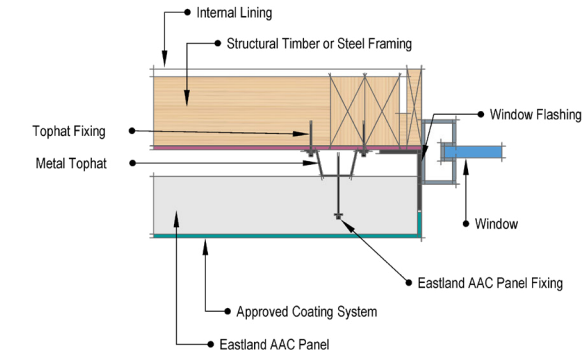
Window Head

Detail - Window Sill With Decorative Trim



Window Sill

Detail - Window Jamb



Window Jamb

6. SAFE HANDLING AND PPE

6.1 Site Safety

Local OH&S regulations must be adhered to when installing Eastland AAC Cladding, with specific reference to handling and cutting of masonry and steel.

6.2 Personal Protective Equipment (PPE)

In addition to normal construction site PPE, the following PPE is recommended when installing Eastland AAC Cladding:

- Eye protection
- Hearing protection
- P1 or P2 mask / respirator (when cutting AAC panels)
- Gloves

6.3 Manual Handling of AAC Panels

Eastland AAC panels should be stored on site, close to where they will be installed (if possible). Repeated movement of panels around sites may cause unnecessary damage to panels.

While Eastland AAC panels are much lighter than conventional concrete panels of the same dimensions, the panel sizes result in total panel weights that exceed the limits for single person lifts. All panels shall be lifted on their edges by at least 2 persons. If lifted when laying flat the panels are likely to crack. Site trolleys may be used for moving panels to reduce the strain on installers and to reduce the risk of damaging panels.

6.4 AAC and Dust

All concrete based products (including AAC) contain Crystalline Silica which can be released as dust when processing such products on site. Handling and moving AAC on site presents a low risk of dust.

Eastland AAC panels may be cut, chased, drilled and sanded using hand or power tools. When working with AAC panels, dust extraction and respirators must be used effectively to reduce dust exposure.

7. INSTALLATION

7.1 Tools

The following tools are required when installing Eastland AAC Cladding system:

Drop Saw (diamond blade)	Dust extraction / vacuum	Mallet / Hammer
Masonry (wet) Saw	Nail Gun / Screw Gun	Sealant / caulking gun
Angle grinder	Impact driver / cordless drill	Tape measure
Tin snips	Drill with mortar mixing paddle	Chalk line
Knives	Trowel for adhesive	Spirit level
Straight edge	Pencil	Chisels
Tool belt / nail bag	Adhesive mixing buckets	Power leads for tools
Render hawk & trowel	Sanding float	Packing wedges

The above assumes the wall framing / substrate has been installed by the builder and/or previous trades and is ready for installation of the Eastland AAC Cladding system.

7.2 Preparation

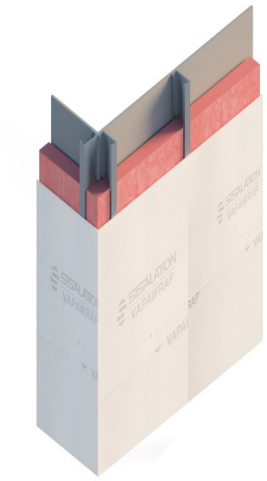
The supporting frame / substrate that the Eastland AAC Cladding system will be fixed to, should be vertical, aligned and capable of supporting the cladding loads.

- Timber framing shall be designed and constructed in accordance with AS 1684
- Steel framing shall be designed and constructed in accordance with AS 4600 and/or NASH Standard
- Masonry walls / substrates shall be designed and constructed in accordance with AS 3700
- Concrete substrates shall be designed and constructed in accordance with AS 3600
- Proprietary construction systems (such as permanent formwork walls) shall be constructed in accordance with the manufacturer's instructions and relevant standards
- Rigid air barriers and pliable building membranes shall be installed in accordance with AS 4200.2 and fit over the substrate prior to the Top Hats for the Eastland AAC cladding being installed
- Windows and external glazed doors shall comply with AS 2047
- Flashing shall comply with AS/NZS 2904

If the base wall frame / substrate is out of alignment, efforts should be made to bring the structure into alignment prior to installing any component for the Eastland AAC Cladding system.

If the substrate cannot be suitably aligned by prior trades, packing wedges may be required to align the Top Hats. Note, all materials used must comply to the relevant Building Code Clauses and Standards.

7.3 Weather Resistant Barrier



A weather resistant barrier shall be installed on the external surface of the frame / substrate. A high strength pliable building membrane compliant with AS4200.1 (and installed in accordance with AS4200.2) may be used in areas where ULS wind loads do not exceed 2.5 kPa or in accordance with manufacturers' instructions.

A rigid air barrier is recommended when pliable building membranes are unsuitable.

7.4 Flashing

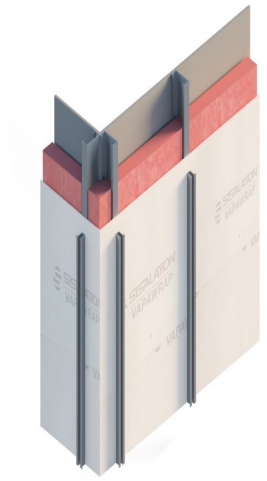
Flashings should be installed in accordance with AS/NZS 2904 to control moisture. Flexible and/or rigid flashings may be used in appropriate applications / locations around the building.

Rigid flashings should be located where the flashing can be seen from the exterior of the building and where required by the Building Code and Standards.

Rigid or flexible flashings may be required at the bases of walls and all floor edges. Flexible flashings may be used where the cavity is interrupted by an element such as a window or door and the flashing is hidden by external cladding or other materials.

Flashings shall be fixed to the substrate over the weather resistant barrier and extend a minimum of 150mm up from the lowest point and shall be fixed at 600mm maximum centres along the wall. All corners and joints shall be lapped by a minimum of 150mm.

7.5 Top Hats



The Eastland AAC Cladding system is fixed to horizontal or vertical top hats that are required to be spaced in accordance with section 4.2 for Vertically oriented panels and section 4.3 for Horizontally oriented panels.

The Top Hat supports must create a cavity between the weather resistant barrier and the Eastland AAC Cladding panels of at least 25mm.

Top Hats shall be fixed to the substrate in accordance with the Top Hat manufacturer's and/or project engineer's instructions for selection and spacing of fasteners to the frame / substrate.

7.6 Eastland AAC Panels

Eastland AAC panels are to be lifted carefully into position and then screw fixed to the Top Hats, preferably from the outside of the building to ensure the screws fix the panels against the Top Hats.

If access to the panel is only possible from inside the building, careful screw fixing through the Top Hats into the AAC panels must ensure screws are not over-torqued causing the AAC material to be stripped by the screw thread, which renders the fixing ineffective. Screws must be made snug into the AAC.

The vertical edge of the installed panels shall have Eastland AAC adhesive applied continuously along its vertical face, such that when the subsequent panel is lifted into place and gently pushed against the previous panel, the adhesive provides a 2-3mm wide continuous joint, once the new panel is in place it may be screw fixed to the Top Hats. Excess adhesive on the outside face of the panel should be trowelled off to spread across the face of the panel joint.

Refer to typical construction drawing details in section 5 for external and internal corner details.

7.7 Penetrations

All penetrations shall be caulked and sealed using backing rod and an approved caulking sealant joint material.

Penetrations may be drilled or cut into the Eastland AAC Cladding system using appropriate masonry cutting or drilling tools.

When fixing items to the external wall (such as clothes lines, distribution boards etc) the loading from such items shall be fixed directly to the substrate, such that no dead load shall be carried by the Eastland AAC Cladding panels or the Top Hats / vertical supports.

7.8 Windows & Doors

Windows and doors shall be flashed over the top, down both jambs and across the sill with flashing material compliant with AS/NZS 2904.

Aluminium window / door header and jamb trims may be installed so the Eastland AAC Cladding system butts directly into the trim, a caulking sealant may be used to seal these joints.

At windowsills, the windowsill flashing should extend over the top of the Eastland AAC Cladding system, to prevent water getting into the wall cavity behind the Eastland AAC cladding panels.

7.9 Control Joints

The provision for movement of and within the building structure is the responsibility of the building design professional and must be confirmed before proceeding with installation of the Eastland AAC Cladding system. The location of all control joints is required to be planned prior to commencing installation.

Construction of any wall framing or structure shall be discontinuous behind vertical control joints, including the Top Hats. All vertical control joints shall be sealed at the external face with backing rod and an approved caulking sealant joint material.

Framing at horizontal control joint locations shall permit vertical movement of the building without causing damage to the Eastland AAC Cladding system. Horizontal control joints shall generally be left open to permit airflow into and out of the external wall cavity, flashing may be installed to direct moisture out of the cavity, aesthetic considerations will determine if the flashing is rigid and decorative or flexible and hidden.

7.10 Base Coat Render, Texture Coat and Finishing

The coating / finishing system required to be applied to the Eastland AAC external wall system must be approved by the manufacturer for use / application onto AAC cladding panels.

An approved coating systems generally includes:

- PVC Corner Beads are recommended for enhanced visual appearance of corners, install prior to the Base Coat Render.
- Acrylic / cement Base Coat Render System
  For good panel alignment the Base Coat Render (Skim coat render) should be no more than 5mm thick. If panel joints can be seen through the Base Coat Render after curing, it may be too thin and a second coat will be required.
  For poor panel alignment the Base Coat Render (High build render) may need to be applied up to 10mm thick, check with the render manufacturer for special instructions on application and curing of the render, multiple coats of render may be required to build up the thickness.
  For panel misalignment greater than 10mm, re-installation may be required.
- Fibreglass reinforcing mesh strips (supplied in rolls, typical 100mm wide). This reinforcing mesh can be embedded into the Base Coat Render (while wet) at locations of potentially high stress and high risk of cracking (corners, window etc), the mesh holds the render and panel, reducing the risk of cracking.
- Acrylic / cement Texture Coat Render System, applied over the Base Coat Render (and fibreglass mesh).
- Finishing coat external acrylic paint system, up to 3 coats of external grade paint is often required.

Check with render system manufacturer for the requirements for Primer Coats at any stage of coating the Eastland AAC external wall cladding.

NOTES

DISCLAIMER:
Construction details enclosed are limited to the generalised design specification for Eastland AAC Cladding products and are intended for use by a suitably qualified building professional only. Any use of the enclosed is at their own discretion and risk.

Any structural framing shown in the enclosed details are to be reviewed and reassessed by a registered structural / facade engineer prior to installation.

EASTLAND AAC

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