WALSC®
AAC PANEL SYSTEMS

APRIL 2025

DESIGN AND INSTALLATION GUIDE

External Wall Cladding System LIGHT 75

For Multi-Residential Buildings

walsc.com.au

Contents

Front cover image courtesy of the Property Owners

Warranty

Walsc guarantees its AAC products to be free of defect in material and manufacture. Walsc AAC Panel Systems are customised to gain the most satisfaction and guaranteed to offer excellent performance when installed and maintained in line with the latest Design and Installation Guide. Minimum of 15 Years warranty of 75mm Reinforced Walsc AAC Panel within Walsc AAC Panel Systems from date of purchase are provided to our clients. Further information please call us or visit **www.walsc.com.au**

The 75mm Reinforced Walsc AAC Panel is the soul of all our Walsc AAC Panel Systems.

DESIGNED IN AUSTRALIA

TESTED IN AUSTRALIA

OUTSTANDING PERFORMANCE

NCC / BCA COMPLIANT

LOCAL TECHNICAL SUPPORT TEAM

CODEMARK ACCREDITED

The design versatility and flexibility of the panel and systems provide a better wall and flooring solution for home owners, developers, architects and all building consultants. Building a high quality energy efficient dream home is no longer a dream of the minority.

CodeMark Australia

CMI CERTIFICATION

Certificate CM40331

WALSC® AAC PANEL SYSTEMS

1 Introduction

1.1 About Walsc

Walsc AAC Panel Systems (Walsc) provide world leading innovative, top quality autoclaved aerated concrete, AAC products to the market. Our AAC Panel Systems provide high quality, superior performance and cost-effective solutions for wall applications for house and low-rise residential buildings, and also for high-rise commercial and residential buildings. Our AAC Panel Systems are tested and assessed for compliance with the requirements of the building codes of Australia and provide confidence and certainty to regulatory authorities and the market. The systems have been accredited CodeMark Certification via CertMark in Australia. Walsc was established in 2014 and has become one of the Australia's leading Autoclaved Aerated Concrete (AAC) suppliers. Over the past few years, Walsc has participated in hundreds of projects ranging from low-rise residences, aged care facilities, warehouses to high-rise apartments and commercial buildings. Now Walsc is widely recommended by architects, certifiers and builders because of its premium quality, comprehensive wall and flooring solutions, and strong technical support.

At Walsc, we provide better wall and flooring solutions for your project!

1.2 What is AAC?

Autoclaved aerated concrete is manufactured from water, cement, lime, silica sand and a small amount of aluminium powder as expanding agent. The produce techniques impart many unique properties to AAC, making it both economically and environmentally friendly better than other masonry building materials. It can be customised in blocks, wall, floor and roof panels with a range of sizes depending on specific applications, allowing for maximum efficiency and flexibility in construction.

1.3 How is AAC Made?

The raw materials are mixed into slurry state and poured into a mould (a very large cake tin). The expanding agent (aluminium powder) instantly initiates a chemical reaction to create numerous tiny and finely-dispersed hydrogen air bubbles. Meanwhile, it causes the mixture to expand to almost twice its original volume. Once the mixture turning is hard enough (semi-solid) to be wire cut into required panel sizes in a heated room, it will be transported into the cutting machine. Then the sliced semi-solid material will be cured with high-pressure steam in autoclaves for up to 12 hours. During this curing process, the hydration of the concrete is accelerated by the high-pressure steam.

The combination of the expanding chemical reaction and autoclave curing process gives AAC its unique properties that are beneficial to buildings.

1.4 Scope

This guide is intended for use by qualified and experienced architects, engineers and builders for the design, specification and construction of external wall of multi-residential buildings. Multi-residential buildings are assumed to be those within the scope of Class 1,2 & 10a buildings as defined in the National Construction Code - Building Code of Australia and include the following:

- Single dwellings (detached house).
- Attached dwelling separated by a fire resisting wall e.g. town houses, villa units etc.
- Non-habitable buildings e.g. private garages, sheds etc.

*Any variation of the system outlined in this guide is considered outside the scope and must be evaluated by the relevant professional consultant.

1.5 Limitation

This guide has been prepared by Walsc to provide design, installation and technical information for builders, building consultants, engineers and architects. The information related specifically to Walsc AAC products and must not be used in relation to other AAC manufacturers. The guide does not replace the need for qualified designers (e.g. engineers & architects) to specify project specific information and it is their responsibility to confirm the suitability of using Walsc AAC products for a particular project. Walsc accepts no liability for errors or omissions in this guide and the user must check with Walsc to ensure the current edition of this guide is being used.

1.6 National Construction Code (NCC)

The National Construction Code sets out the requirements for building construction work in Australia. It consists of Volume I (Class 2 - 9 buildings) and Volume II (Class 1 & 10 buildings). As defined in the scope, this guide relates to the external walls for low-rise residential buildings classified as Class 1, 2 & 10a of the NCC 2022 Volume 1 & 2. The performance requirements of the NCC that related to external walls for low-rise residential buildings as follows:

Table 1. *Relevant NCC 2022 Clauses*

Relevant NCC 2022 Clauses		
Description	**Volume 1 clauses**	**Volume 2 clauses**
Structural reliability and resistance	B1P1(1)(2)(a)(b)(c) & B1P2	H1P1(1)(2)(a)(b)(c) & (3)
Weatherproofing	F3P1	H2P2
Fire hazard and combustibility properties	C2D10	H3D2
Fire separation of external walls	C2D2(2)	H3D3
Fire-resistance of building elements	S1C2(b)(c)	S1C2(b)(c)
Construction in bushfire prone areas	G5D3	H7D5
Energy efficiency - External walls	J4D6(4)	H6D2(1)(b)(i)

The system performance section of this guide outlines the performance of the Walsc External Wall Cladding System with respect to the above NCC requirements.

2 Benefits

Fire resistance

AAC material has earned a reputation for its outstanding fire-resistant properties. It is non-combustible and offers the best fire-resistant performance among any building material currently on the market. In case of fire, it does not release toxic gases and smokes or drip burning materials and prevents spreading of fire.

Acoustic insulation

75mm Reinforced Walsc AAC Panel is proven to be an extraordinary acoustic insulation material by building a defence against external noise pollution. Its sound insulation value is greater than other materials of the same weight.

Thermal insulation

The low thermal conductivity along with thermal mass gives the 75mm Reinforced Walsc AAC Panel high R-values. These thermal efficiencies reduce energy costs by eliminating the original reliance on cooling and heating appliances.

Compliance Assured

The wall systems have been accredited CodeMark Certification and all systems are undergoing continuous testing by NATA accredited laboratory to ensure its compliance with various requirements especially in fire resistance and acoustic insulation.

Strong & Durable

75mm Reinforced Walsc AAC Panel enhances the strength and security by combining with the corrosion protected steel, the durability is quite similar to concrete.

Eco-friendly

All the ingredients contained in the 75mm Reinforced Walsc AAC Panel are natural and toxic-free which also means no pollutant and toxic gases will be generated during the manufacture and installation. Even the scrap material that is produced during the utilisation can be recycled.

Fast Construction

Panelised Walsc AAC products with flat packed delivery remarkably contribute to the speed of construction. It enables laborers to install much more square footage of AAC than that of traditional masonry materials within the same period of time, promoting the efficiency during the entire lifetime of the project.

Technical Support

We offer sales services, technical advice and support to meet the satisfaction. We actively cooperate with our customers to ensure the project is completed smoothly.

3 Material Properties

75mm Reinforced Walsc AAC Panel is supplied with a single layer of reinforced mesh located centrally in the panel thickness.

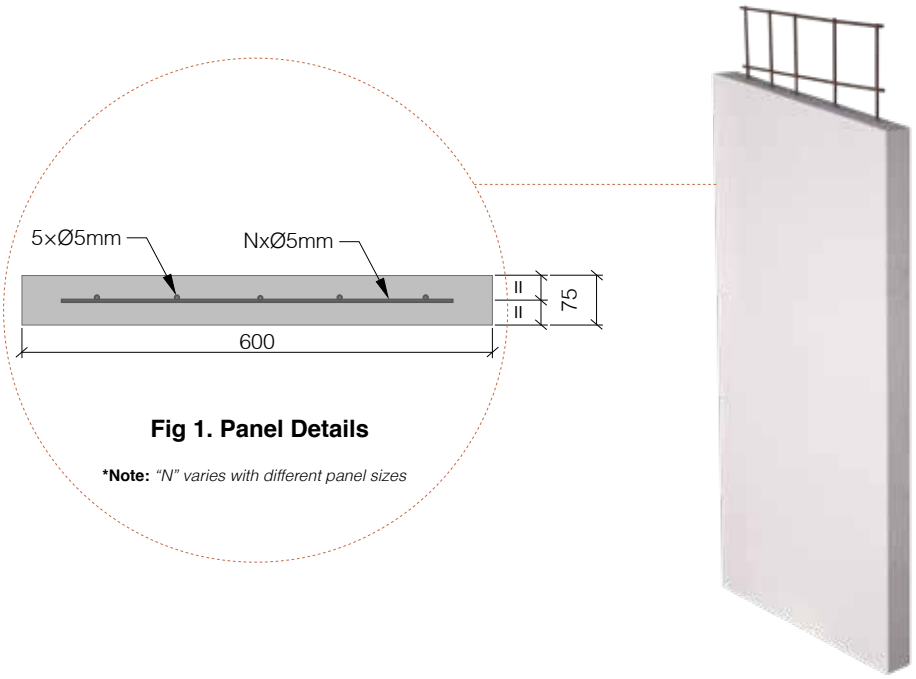


Fig 1. Panel Details

***Note:** "N" varies with different panel sizes*

The table below outlines the material properties of 75mm Reinforced Walsc AAC Panel.

***Table 2.** Material Properties*

Property			Value
Panel Thickness	d	(mm)	75
Panel Width	w	(mm)	600
Panel Length	L	(mm)	up to 3300
Panel Edge Profile			Square Edge
Dry Density	λ_{dry}	(kg/m^3)	450
Density for Design	λ_{design}	(kg/m^3)	525
Panel Weight per SQM		(kg/m^2)	42
Reinforcement Tensile Yield Stress	f_{yk}	(MPa)	500
Reinforcement Characteristic Weld Strength	V_{uk}	(kN)	3.1
Ultimate Strength Bending Capacity	$ØM_k$	(kNm/m)	1.0
Thermal Resistance	*R-Value*		0.584

Note:

- *Panel weight is calculated with 20% of moisture content, moisture content may varies from 6% to 30%.*
- *Material are tested in accordance with AS5146.*

4 System Overview

The Walsc External Wall Cladding System consists of 75mm Reinforced Walsc AAC Panel installed vertically as shown onto continuous horizontal steel top hats which fixed to the structural frame.

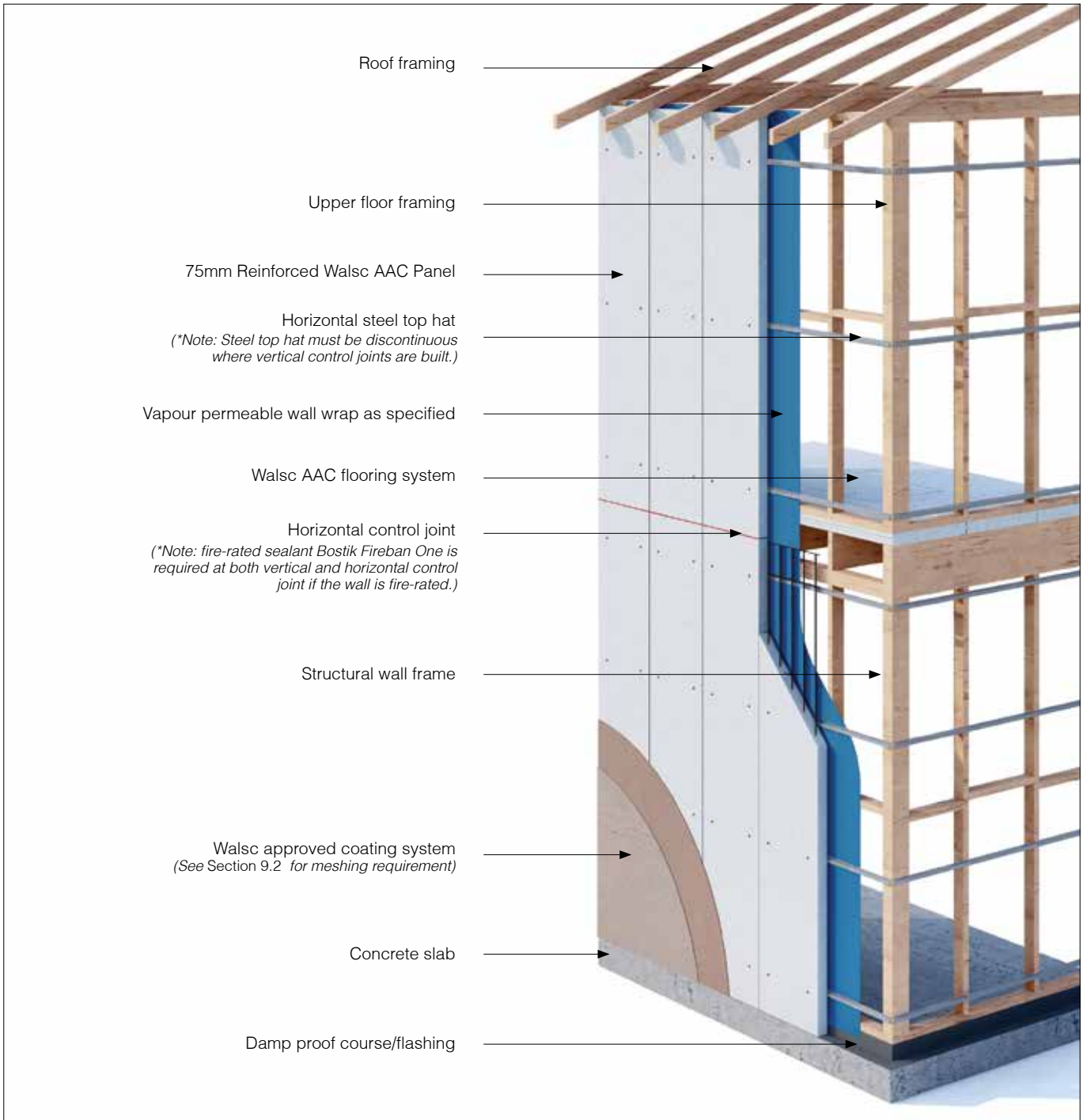


Fig 2. Walsc External Wall Cladding System Overview

5 System Performance

5.1 Structural

The 75mm Reinforced Walsc AAC Panels are non-loadbearing, therefore do not support vertical loads apart from the self-weight of the panel (refer to Material Properties section for panel density). Similarly, the panels should not be relied upon to support in-plane racking forces. The structural frame that the panels are fixed to, which can be either timber or steel, is the structural component of the wall system and must be constructed in accordance with the relevant standard (AS1684 series for timber and AS4600 or NASH Standard for steel). However, the panels will be subject to out-of-plane loading due to wind and earthquake. The tables below outline the maximum batten spacing and fixing requirements with respect to the wind loads for housing standard (AS4055-2021).

The designer of the building must ensure that the self-weight of the 75mm Reinforced Walsc AAC Panels plus coating is allowed for when undertaking design of the structure that supports the Walsc External Wall Cladding System. Refer to the ambient density in the Material Properties section of this Design and Installation Guide.

5.1.1 External Wall Fixing Details

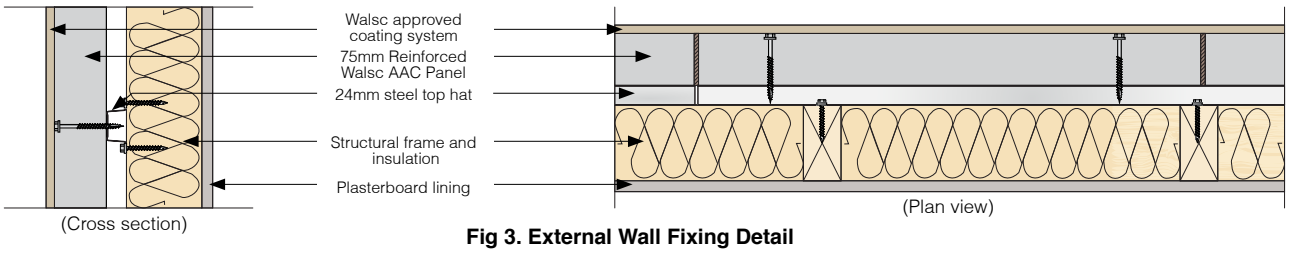


Fig 3. External Wall Fixing Detail

Table 3. *Fixing Specification for External Wall Installations*

Fixing type	Fixing specification
AAC panel to top hat	For 75mm Light panel: 14-10x100mm type 17 hex head screw (spacing as per Table 4)
Top hat to stud	For timber studs: 2/12-11x35mm type 17 hex head screws per stud
	For steel studs: 2/10-16x16mm self-drilling hex head screws per stud

Table 4. *Fixing Table for External Wall Installations*

		Wind Class (as per AS 4055-2021)			
		N1	N2	N3/C1	N4/C2
General areas	Max. stud spacing (mm)	600	600	600	600
	Max. top hat spacing (mm)	1200	1200	1200	900
	Fixings per panel per top hat	2	2	2	2
At corners	Max. stud spacing (mm)	600	600	600	450
	Max. top hat spacing (mm)	1200	1200	1200	900
	Fixings per panel per top hat	2	2	3	3

		Ultimate Limit State Wind Pressure (as per AS/NZS 1170.2:2021)			
		±1.0 kPa	±1.5 kPa	±2.0 kPa	±2.5 kPa
Any area	Max. stud spacing (mm)	600	600	600	600
	Max. Batten spacing (mm)	1200	1200	1200	1200
	Fixings per panel per batten	2	2	3	4

Note: *1. The wind class is as defined by AS 4055-2021.*
2. 'At corners' refers to areas of wall within a horizontal distance of 1200mm from corners of the building
3. The above table is for the System Components outlined in this guide when installed in accordance with the Construction Details contained in this guide.

5.1.2 Boundary Wall Fixing Details

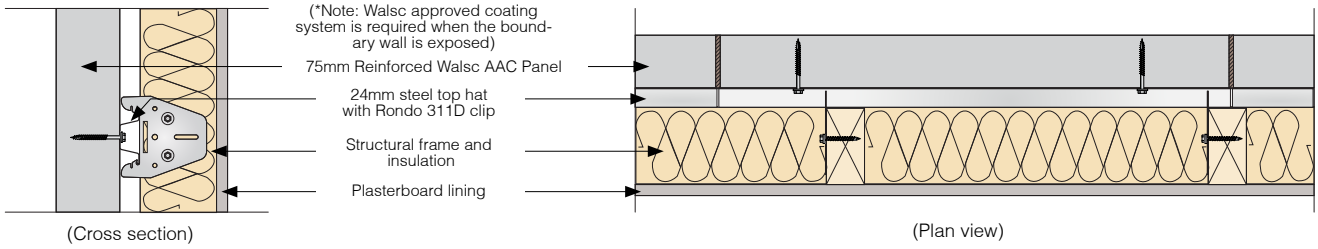


Fig 4. Boundary Wall Fixing Detail

Table 5. *Fixing Specification for Boundary Wall Installations*

Fixing type	Fixing specification
Top hat to AAC panel	For 75mm Light panel: 14-10x65mm type 17 hex head screw (spacing along batten as per Table 6)
Top hat to stud	For timber studs: Rondo 311D clip with 2/12-11x35mm type 17 hex head screws per stud
	For steel studs: Rondo 311D clip with 2/10-16x16mm self-drilling hex head screws per stud

Table 6. *Fixing Table for Boundary Wall Installations*

		Wind Class (as per AS 4055-2012)			
		N1	N2	N3/C1	N4/C2
General areas	Max. stud spacing (mm)	600	600	600	600
	Max. top hat spacing (mm)	1200	1200	700	500
	Fixings per panel per top hat	2	2	2	2
At corners	Max. stud spacing (mm)	600	600	600	450
	Max. top hat spacing (mm)	900	600	400	200
	Fixings per panel per top hat	2	2	2	2

Note:
1. *The wind class is as defined by AS 4055-2012.*
2. *'At corners' refers to areas of wall within a horizontal distance of 1200mm from corners of the building*
3. *The above table is for the System Components outlined in this guide when installed in accordance with the Construction Details contained in this guide.*
4. *Tophats need to be* ***discontinuous*** *at the control joints.*

5.2 Durability

AAC has a proven record as a durable material against the Australian environment since its introduction over 30 years ago. Like most concrete, the AAC material is porous and it's possible for corrosion of the reinforcing steel within the AAC to occur. To minimise the risk of this occurring, the reinforcement in all panels has a corrosion resistant coating applied during the manufacture stage.

The Walsc External Wall Cladding System detailed in this guide is suitable for building sites that are located more than 100m away from breaking surf. That is, within a mild, moderate or marine exposure environment as defined by AS 5146.1-2018. For sites within a severe marine or the industrial exposure environment, please contact Walsc for further advice regarding the durability of the system components. It is the designer's responsibility to confirm the suitability of the wall cladding system for the environment of each specific site.

5.3 Fire Resistance

External walls of low-rise residential buildings are required in certain circumstances (e.g. boundary walls) to be fire resistant as per part H3D3 of the NCC-BCA Volume II. When required, an FRL of 60/60/60 must be achieved. Walsc External Cladding System 75 Light has been tested to a FRL of 240/240/180 based on the test result from CSIRO Fire Testing Laboratory.

5.4 Bushfire Resistance

The Walsc External Wall Cladding System is suitable for use in bushfire prone areas since it meets the most extreme bushfire category BAL-FZ. This is achieved by having an FRL greater than 30/30/30 as required by Clause 9.4.1(c) of AS3959-2018.

5.5 Weatherproofing & Dampness

The Walsc External Wall Cladding System is designed to prevent the ingress of moisture that can cause unhealthy conditions or deterioration of building materials thus meeting the requirements of H2P2 & H2P3 of the NCC-BCA. This is achieved through the following system features:

Impermeable Coating	The inclusion of a two-coat acrylic paint in the Walsc approved coating system results in an external wall surface that is almost impermeable.
Control Joints	Control joints installed in accordance with this guide allow the expected movement of AAC panels due to shrinkage, thermal expansion and foundation movement to occur whilst minimising the risk of cracking which would otherwise allow moisture to penetrate. Fire-rated sealant must be used for fire-rated wall.
Drained Cavity	In the case where moisture passes through the AAC panel, the cavity and flashing direct the moisture back outside as per a conventional drained cavity for masonry construction.
Damp-proof course	To prevent the ingress of moisture due to rising damp the external wall cladding system should always be supported by a structure that contains a damp-proofing membrane in accordance with for slab-on-group construction or AS3700-2010 for masonry construction. For boundary walls, the external face of the AAC panels will not be able to be coated where constructed up against an adjacent boundary wall on the opposite side of the boundary. In this case the parapet capping and flashing to the roof on either side of the boundary maintain the weatherproofing of the building (refer to the construction details). In the event that the building on one side of the boundary is removed, leaving the uncoated AAC panel exposed to the weather, an approved coating system will need to be applied to the AAC panels along with rectification of the parapet capping and flashings.

5.6 Energy Efficiency

For energy efficiency purposes the external wall of a residence must achieve a certain thermal resistance as required by the NCC-BCA or relevant state-based regulations. Reinforced Walsc AAC Panels provide excellent thermal resistance which reduces the need for heating/cooling systems within the residence. The table below outlines the thermal resistance for variations of the Walsc External Wall Cladding System.

Table 7. *Energy Efficiency Performance*

Walsc External Wall Cladding System 75 Light with 10mm plasterboard internal lining	Total R Values, $m^2 \cdot K/W$ (All wall bridged)	
	Winter	Summer
AAC Panel Light alone	0.584	0.584
AAC Panel Light + 24mm top hat + 70mm reflective still air space pine stud (70x35mm) at 600mm centres	2.05	2.02
AAC Panel Light + 24mm top hat + 70mm R1.50 bulk insulation + pine stud (70x45mm) at 600mm centres	2.72	2.61
AAC Panel Light + 24mm top hat + 70mm R2.00 bulk insulation + pine stud (70x45mm) at 600mm centres	3.06	2.96
AAC Panel Light + 24mm top hat + 90mm R2.00 bulk insulation + pine stud+A8:A9 (90x45mm) at 600mm centres	3.16	3.03
AAC Panel Light + 24mm top hat + 90mm R2.20 bulk insulation + pine stud (90x45mm) at 600mm centres	3.30	3.17
AAC Panel Light + 24mm top hat + 90mm R2.50 bulk insulation + pine stud (90x45mm) at 600mm centres	3.50	3.38
AAC Panel Light + 24mm top hat + 90mm R2.70 bulk insulation + pine stud (90x45mm) at 600mm centres	3.63	3.51
AAC Panel Light + 24mm top hat + 70mm reflective still air space + pine stud (70x35mm) at 450mm centres	2.04	2.01
AAC Panel Light + 24mm top hat + 70mm R1.50 bulk insulation + pine stud (70x45mm) at 450mm centres	2.66	2.56
AAC Panel Light + 24mm top hat + 70mm R2.00 bulk insulation + pine stud (70x45mm) at 450mm centres	2.98	2.89
AAC Panel Light + 24mm top hat + 90mm R2.00 bulk insulation + pine stud (70x45mm) at 450mm centres	3.09	2.97
AAC Panel Light + 24mm top hat + 90mm R2.20 bulk insulation + pine stud (90x45mm) at 450mm centres	3.22	3.10
AAC Panel Light + 24mm top hat + 90mm R2.50 bulk insulation + pine stud (90x45mm) at 450mm centres	3.41	3.29
AAC Panel Light + 24mm top hat + 90mm R2.70 bulk insulation + pine stud (90x45mm) at 450mm centres	3.52	3.42
AAC Panel Light + 24mm top hat + 70mm reflective still air space + steel stud (76x35mm 0.55BMT) at 600mm centres	1.92	1.89
AAC Panel Light + 24mm top hat + 70mm R1.50 bulk insulation + steel stud (76x35mm 0.55BMT) at 600mm centres	2.52	2.43
AAC Panel Light + 24mm top hat + 70mm R2.00 bulk insulation + steel stud (76x35mm 0.55BMT) at 600mm centres	2.82	2.73
AAC Panel Light + 24mm top hat + 90mm R2.00 bulk insulation + steel stud (92x35mm 0.55BMT) at 600mm centres	2.85	2.74
AAC Panel Light + 24mm top hat + 90mm R2.20 bulk insulation + steel stud (92x35mm 0.55BMT) at 600mm centres	2.97	2.86
AAC Panel Light + 24mm top hat + 90mm R2.50 bulk insulation + steel stud (92x35mm 0.55BMT) at 600mm centres	3.13	3.02
AAC Panel Light + 24mm top hat + 90mm R2.70 bulk insulation + steel stud (92x35mm 0.55BMT) at 600mm centres	3.23	3.13
AAC Panel Light + 24mm top hat + 70mm reflective still air space + steel stud (76x35mm 0.55BMT) at 450mm centres	1.88	1.85
AAC Panel Light + 24mm top hat + 70mm R1.50 bulk insulation + steel stud (76x35mm 0.55BMT) at 450mm centres	2.43	2.35
AAC Panel Light + 24mm top hat + 70mm R2.00 bulk insulation + steel stud (76x35mm 0.55BMT) at 450mm centres	2.70	2.62
AAC Panel Light + 24mm top hat + 90mm R2.00 bulk insulation + steel stud (92x35mm 0.55BMT) at 450mm centres	2.74	2.64
AAC Panel Light + 24mm top hat + 90mm R2.20 bulk insulation + steel stud (92x35mm 0.55BMT) at 450mm centres	2.84	2.74
AAC Panel Light + 24mm top hat + 90mm R2.50 bulk insulation + steel stud (92x35mm 0.55BMT) at 450mm centres	2.98	2.89
AAC Panel Light + 24mm top hat + 90mm R2.70 bulk insulation + steel stud (92x35mm 0.55BMT) at 450mm centres	3.07	2.99

Note:
1. *The above table gives Total R Values (Australia) for the thermally bridged whole wall surface (no glazing). For New Zealand (8% M.C.) total R values will be R0.077 less.*
2. *R-value determinations based upon AS/NZS 4859 Parts 1&2:2018, Thermal insulation materials for buildings.*
3. *75mm reinfocred Walsc AAC Panel Light is assumed to have 0.128 thermal conductivity at 4% M.C. based on assumed 0.109 conductivity at 450 kg/m^3 dry density.*

6 System Components

Table 8. *System Components*

Product	Description	
75mm Reinforced Walsc AAC Panel	Lengths are various, please contact supplier for details.	
Steel Top Hat	For Vertically Aligned systems, use •24mm x 0.42BMT or •35mm x 0.55BMT or •45-55mm x 0.6BMT or •by project specification top hat batten, G550 galvanised.	
Fixing Screws	Refer to the Fixing Details for each system in the System Performance section of this guide for specification of fixing type and size. As a minimum, all fixings shall be Class III corrosion resistance (minimum) as per AS3566.2-2002.	
Vapour permeable wall wrap	A membrane that allows water vapour to escape while blocking liquid water, preventing moisture buildup and enhancing thermal efficiency.	
Walsc AAC Adhesive	Cement based AAC adhesive is applied to all adjoining panel edges and can also be used to patch up minor damaged areas.	
Corrosion Protection Paint	When panels are cut, the exposed ends of the reinforcement must be treated with corrosion protection paint.	
Flexible Sealant	External grade polyurethane sealant must be used in all control joints. It is recommended to use Bostik Seal 'N' Flex 1.	
Fire Rated Sealant	Fire rated sealant must be used in all control joints throughout the fire rated wall. Bostik Fireban One should be used .	

7 Detailing

7.1 Control Joints

Control joints must be installed through the Walsc External Wall Cladding System to minimise the risk of damage occurring to the panels or render coating due to expected movement of the residential structure. Movement in residential structures can occur due to various causes including:

- Movement of the foundation material.
- Thermal shrinkage/expansion of the building materials.
- Long term shrinkage of the timber.
- Long term deflection of suspended members.

Vertical control joints should be located:

A. For openings' width between 2400mm and 3600mm, along one of the vertical edges for the full height of the wall; and
B. For openings' width greater than 3600mm, along both vertical edges for full height of the wall; and
C. When the straight joint extends above or below the opening is less than 600mm long, on one side of the opening if its width less or equal than 2400mm or on both sides of the opening if its width greater than 2400mm; and
D. At corners either:
   a. At the intersection of the AAC panels that create the corner;
   b. Along one side of the corner, within 1275 mm from the corner; or
   c. Along both sides of the corner, with a maximum of 2400 mm from the corner.
E. At changes in wall heights; and
F. At changes in wall thickness or material types; and
G. At locations of joints in supporting structures e.g. concrete slabs; and
H. At the following maximum spacing for sections of walls without openings.

Table 9. *Vertical control joint spacing for walls without openings*

AS2870-2011 Site Class	Maximum horizontal spacing of vertical control joint
A or S	6.0 m
M or M-D	5.5 m
H1 or H1-D	5.0 m
H2 or H2-D	4.5 m

Horizontal control joints should be located at the level of the floor structure zone. That is, below the finish floor level and above the ceiling level (or above the underside of the suspend floor structure for sub-floor areas). This applies to every floor level.

7.2 Edge Distances & Minimum Width

The minimum edge distance for fixing 75mm Reinforced Walsc AAC Panel shall be 40mm.

The minimum panel width shall be 200mm and containing a minimum 2 longitudinal steel bars.

8 Installation

8.1 Installation Guide for Typical External Walls

Prior to any construction

1. Ensure the work area is clean and tidy prior to commencing work.
2. Confirm that all system components obtained for the installation are those listed in this installation guide.
3. Confirm the wind classification for the building in accordance with AS4055 and select the correct top hat and fixing spacings using this installation guide.

Preparing for panel installation

4. Ensure the stud frame has been completed and is ready for installation of the panels. This includes checking that the frame is plumb and straight, with special attention to corners of framing.
5. Plan the panel installation, starting from corners openings or any other critical features. Reduce cutting and maximise panel sizes where possible. Allow for control joints as specified by the design engineer.
6. Install the damp proof course, pest control and Vapour permeable wall wrap as appropriate and in accordance with the manufacturer's instructions.
7. Measure from the bottom of the rebate or as appropriate to determine the top hat locations, and mark these around all framing where 75mm Reinforced Walsc AAC Panels are to be installed. Extra top hats may be installed beyond the requirements of the fixing details if required for irregularities in framing or similar.
8. Fix the battens to each stud with fasteners listed in the System Components, ensuring the top hats follow the locations marked previously.

Installing the first panel

9. Starting from a location as chosen in the planning stage, place the first panel hard against the top hats. Ensure that the panel is level and plumb, then screw fix to the batten (or stud for the horizontally staggered system). The screw fixing of each panel is to be in accordance with the fixing details relevant to the chosen panel orientation system (refer to the System Performance section of this guide). Each screw should be screwed in until the screw head is flush with the panel exterior.

Installing subsequent panels

10. Cut the next panel to size as required for openings/corners. For any reinforcement that has been exposed, apply a suitable protective treatment as listed in the System Components.
11. Prepare the panel adhesive in accordance with the manufacturer's specifications. Do not use adhesive that has passed its use by date.
12. Apply panel adhesive, approximately 2mm thick, along the full edge to be joined. Ensure coverage to both the top and bottom edges of the panel. Where the panel joint is a control joint, instead leave the edges of the panels clean and create a 10mm nominal gap.
13. Lift the next panel into position against the battens, and then slide it hard against the adhesive coated edge. Ensure the new panel is level and plumb. Ensure adhesive is fully coating the joining edges of the panels, then remove excess adhesive that has been squeezed out of the joint. Screw fix the panel to the battens (or studs for horizontally staggered system) in accordance with the fixing details relevant to the chosen panel orientation system (refer to the System Performance section of this guide).
14. Repeat the above steps for all further panels.
15. Apply external grade sealant in accordance with the manufacturer's specifications to all openings and control joints.

Panel finishing

16. Where panels are being coated with an approved finish, external angle beads are required at all corners and openings.
17. The Walsc approved coating system is to be installed to the manufacturer's specifications, taking care to allow for movement at control joints.

8.2 Installation Guide for Boundary Walls

This section is suitable for where an external wall is being installed close to a boundary and there is an existing building close to it on the opposite site of the boundary. In all other circumstances, use the installation for typical external walls.

Prior to any construction

1. Ensure the work area is clean and tidy prior to commencing work.
2. Confirm that all system components obtained for the installation are those listed in this installation guide.
3. Confirm the wind classification for the building in accordance with AS4055 and select the correct batten and fixing spacings using this guide.

Preparing for panel installation

4. Locate the boundary with the assistance of a surveyor or otherwise deemed appropriate.
5. Mark out the desired offset from the boundary (minimum offset shall be 20mm).
6. Place plastic spacers at the base of the proposed external wall location and against the neighbouring building so that the installation of the AAC panels is aligned with the desired boundary offset.
7. Plan the panel installation starting from corners. Reduce cutting and maximise panel sizes where possible. Allow for control joints as specified by the design engineer.
8. Install the damp proof course, pest control and Vapour permeable wall wrap as appropriate and in accordance with the manufacturer's instructions.

Installing the panel

9. Starting from a location as chosen in the planning stage, place the first panel hard against the spacers at the base. Install temporary spacers at the top of the panel against the neighbouring wall ensuring that the panel is level and plumb and install temporary bracing to the panel.
10. Cut the next panel to size as required. For any reinforcement that has been exposed, apply a suitable protective treatment as listed in the System Components section.
11. Prepare the panel adhesive in accordance with the manufacturer's specifications. Do not use adhesive that has passed its use by date.
12. Apply panel adhesive, approximately 2mm thick, along the full edge to be joined. Ensure coverage to both the top and bottom edges of the panel. Where the panel joint is a control joint, instead leave the edges of the panels clean and create a 10mm nominal gap.
    (***Note:*** Tophats need to be **discontinuous** at the control joints.)
13. Lift the next panel into position against the spacers at the base and slide it hard against the adhesive coated edge. Ensure the new panel is level and plumb by installing temporary spacers at the top. Install temporary bracing to the panel. Ensure adhesive is fully coating the joining edges of the panels, then remove excess adhesive that has been squeezed out of the joint.
14. Repeat the above steps for all further panels ensuring that all panels are effectively braced before moving onto the next panel.
15. Install the backing rod and fire rated sealant to all control joints.
16. Screw fix the steel top hats to the installed to the 75mm Reinforced Walsc AAC Panels at the correct spacings as per the Fixing Details for boundary walls (refer to the System Performance section of this guide).
17. Install the structural frame in accordance with the relevant standard around the temporary bracing.
18. Install the Rondo 311D clip to each stud-top hat intersection and screw fix to the stud as per the fixing details.
19. Once the structural frame has been completed and approved following an inspection by the certifying authority, the temporary bracing can be removed.
20. Once the roof covering has been installed, ensure the fire resistant mineral fibre, parapet capping and flashings are all installed in accordance with the Plumbing Code of Australia.

8.3 Plumbing & Electrical services

It is preferred that any services be installed attached to the frame where possible. Penetrations should be neatly cut/drilled, and any clearance gap should be sealed with an approved sealant. Electrical cables should be installed in a conduit to prevent any possible contact with the battens. Channels may not be cut in the panels for services, however full openings may be done as needed (e.g. recessed power boxes) if planned for and appropriately sealed.

9 Coating System

9.1 General

75mm Reinforced Walsc AAC Panel works well with leading coating systems available in the market such as Acrylic Wallcote, Taubmans Armawall and Dulux AcraTex. All the coating systems have been formulated for use on AAC panels and are the basis of a system which provides water resistance, vapour permeability and the flexibility to resist surface cracking, combined with an attractive surface.

It is recommended to consult with the coating supplier before applying any coating system to the AAC panels.

9.2 Meshing

Fibreglass reinforcing mesh is not a mandatory requirement in AS5146.3 for the panel joints of 75mm Light thickness AAC panels.

9.3 Coating System Approval

The coating suppliers must confirm that they comply with external coating requirements of clause 2.8.4 of AS5146.3-2018. The coating suppliers should provide a minimum of 7 years manufacturer's warranty when used with the Walsc External Wall Cladding System.

9.4 Weatherproofing

The use of Vapour permeable wall wrap is required and it is a good building practice to use Vapour permeable wall wrap due to its advantages:

- It improves the R-Value of the wall system by contributing a reflective air-gap R-Value;
- It reduces the transmission of water vapour through the building structure;
- It improves energy efficiency by reducing draughts and allowing insulation to work more effectively;
- Protects the building frame from decay by reducing the entry of wind driven rain and dust.

Walsc requires using a Vapour permeable wall wrap, the design and installation of building wrap shall be in accordance with AS/NZS4200 Pliable building membranes and underlays Parts 1 and 2.

10 Delivery, Storage & Handling

10.1 Delivery

Before delivery of 75mm Reinforced Walsc AAC Panels on site, an appropriate unloading area should be designated. The unloading area should be:

- Capable of supporting the weight of the reinforced Walsc AAC Panel packs. Consult the project's structural engineer if required.
- On level support and elevated off any surface that may have water run across it (e.g. outside ground, interiors without roofing).
- Kept dry either by storing inside or protected from the rain (e.g. by use of plastic wrapping).
- Large enough to contain all panels for the construction stage without stacking packs on top of each other.
- As close as possible to the installation area, to minimise the additional lifting required. This may mean designating additional unloading areas depending on the project size.

10.2 Storage & Handling

Wherever possible, 75mm Reinforced Walsc AAC Panels should have the faces, corners and edges protected from damage. Whenever moving panels, the following precautions should be taken:

- Before lifting packs, ensure that the panels are securely strapped.
- Personnel operating lifting machinery (e.g. forklifts, cranes, trolleys) must use the appropriate techniques and equipment.
- When opening packs, appropriate measures should be taken to prevent panels from falling.
- Any opened packs are protected from the weather and secured while not in use.
- All workers have appropriate personal protection equipment (PPE) for the worksite conditions. Recommended PPE includes but is not limited to:
  - Hearing & eye protection
  - Safety clothing (e.g. safety boots, well-fitting clothing)
  - Respiratory protective equipment
  - Sun protection (e.g. hats, long sleeves, trousers, sunscreen).
- All workers are trained in an appropriate manner for the tasks undertaken. For example, proper equipment maintenance and usage, material safety and good lifting techniques would fall into this category.
- The sequence of installation should be planned to minimise panel movements and ensure installers will have appropriate room to lift the panels.
- Whenever manually lifting single panels, a minimum of two people should carry each panel and the panel should be carried on its side (not flat). Good lifting techniques (detailed below) and a clean worksite should be maintained to minimise injuries.

10.3 Good lifting techniques

There is no proven 'best' way of lifting, as it will vary with the weight and shape of the object being lifted. The better options available are a 'deep squat' and 'semi squat' lift. The deep squat is done by bending the knees and hip to their maximums, while keeping the upper body approximately vertical. The semi squat is done by leaning the upper body forwards as a whole (while keeping the spine straight) and bending the legs to a lesser degree than the deep squat. The basic principles of good lifting are to:

- Minimise the distance between the load and the body
- Bend the knees, allowing for use of the leg muscles
- Keep the back as Straight as possible

For more details refer to the relevant state-based safety regulation documentation (e.g. Safe Work Australia).

11 Health & Safety

75mm Reinforced Walsc AAC Panels, like all concrete members, contain crystalline silica (also known as silica dust). Prolonged exposure via inhalation can cause silicosis in the long term, among other possible conditions. As such, proper PPE usage during construction is necessary to create a safe work environment.

While AAC panels are left undamaged and intact, there is no potential health risk. As such, touching the material with bare skin is not an immediate problem. Protection may be suitable however, to prevent abrasion from skin contact. However, when the material has been broken down by any process such as cutting, drilling, chasing or sanding, silica dust is generated. As such, this generates an increased risk of health problems. Long term exposure increases this risk, so it is advised that precautionary measures are taken.

Either protective masks or dust extraction are recommended for usage as a preventative measure during any process that breaks down the panels. Wet cutting of the panels is not recommended. Protective respirators should be of Class P1 or P2 (to AS/NZS1715 and AS/NZS1716) and recommended for dust, at a minimum. Dust extraction systems should be appropriately filtered as required by local council regulations. The site should also be cleaned at regular intervals (e.g. daily) to prevent dust accumulation.

Other preventative measures not related to the inhalation of silica dust may include:

- Eye protection in accordance with AS1336
- Protective footwear in accordance with AS2210
- Ear plugs/earmuffs to an appropriate rating for the tools being used, in accordance with AS1270
- Protective clothing such as long sleeve shirts and trousers, or overalls to prevent possible skin irritation. This will also have the added benefit of protecting outside workers from the sun.

For further details, see the MSDS at www.walsc.com.au.

SAFETY ALWAYS COMES FIRST, WEAR PPE!

12 Construction Details

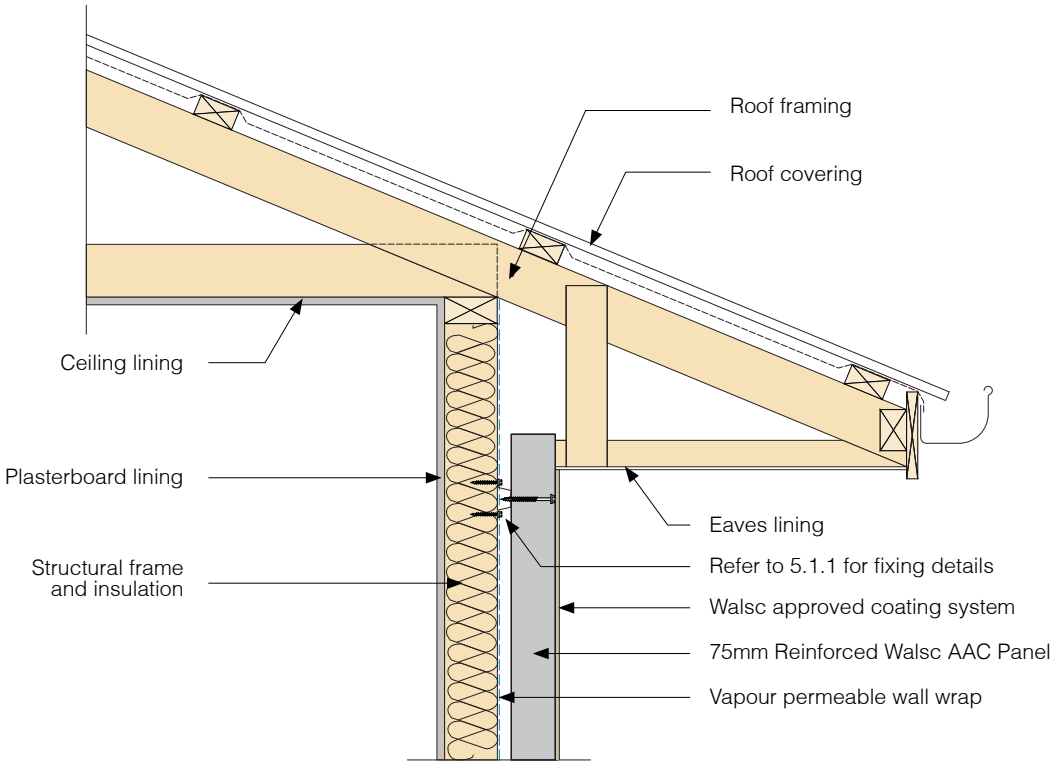


Fig 5. Eaves Detail 1

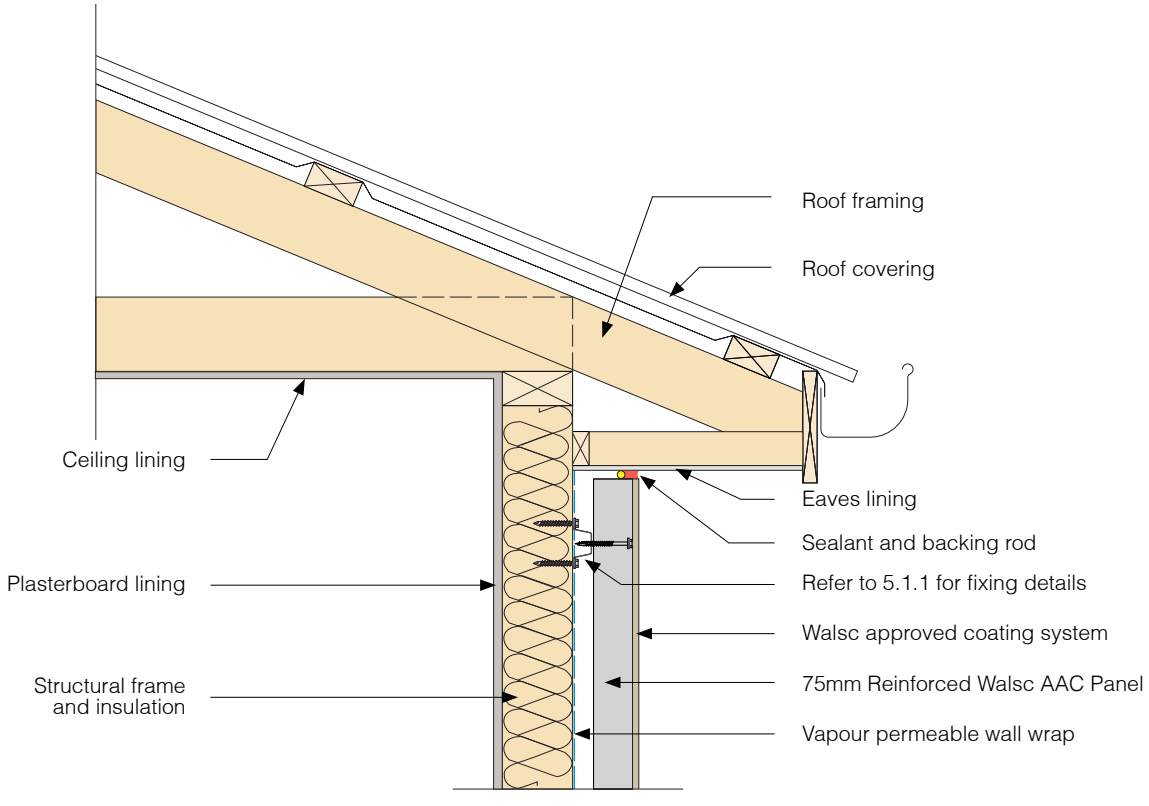


Fig 6. Eaves Detail 2

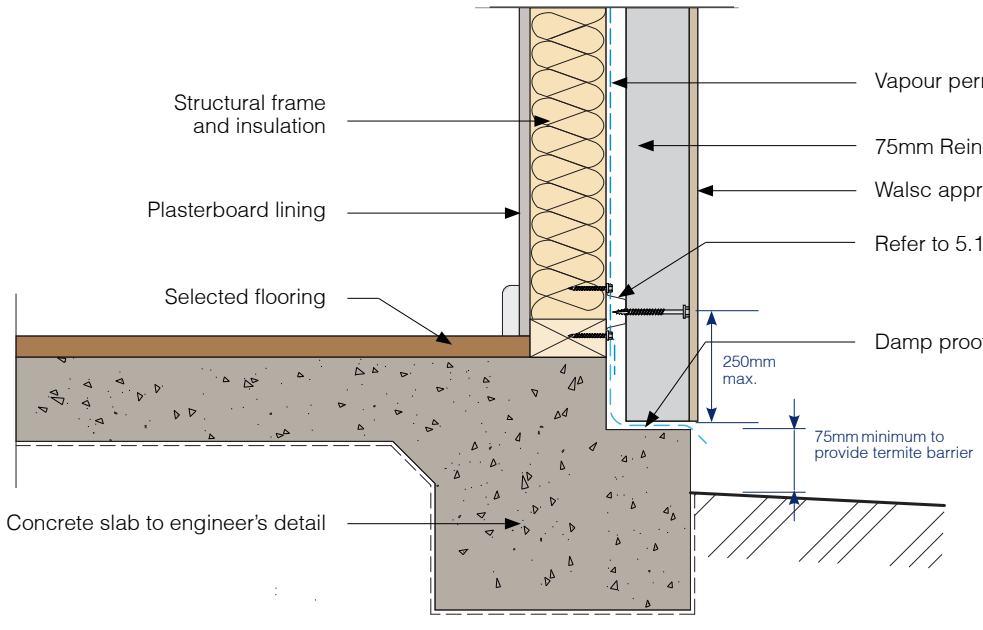


Fig 7. Slab Edge Detail

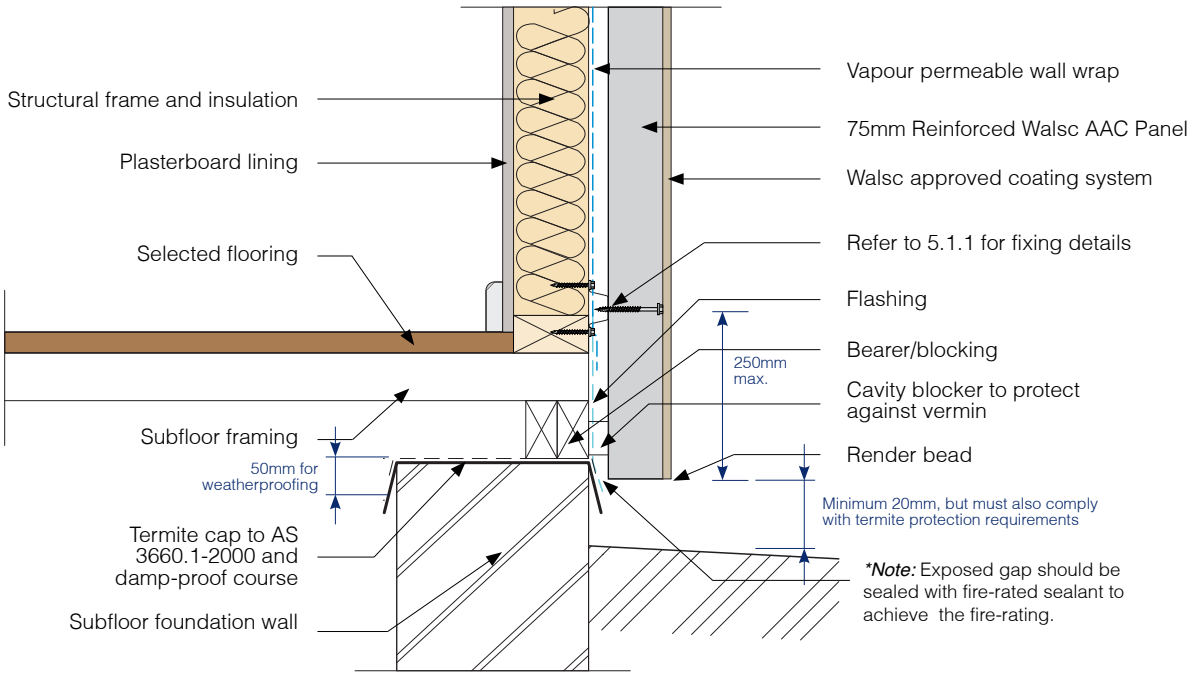


Fig 8. Suspended Floor Detail

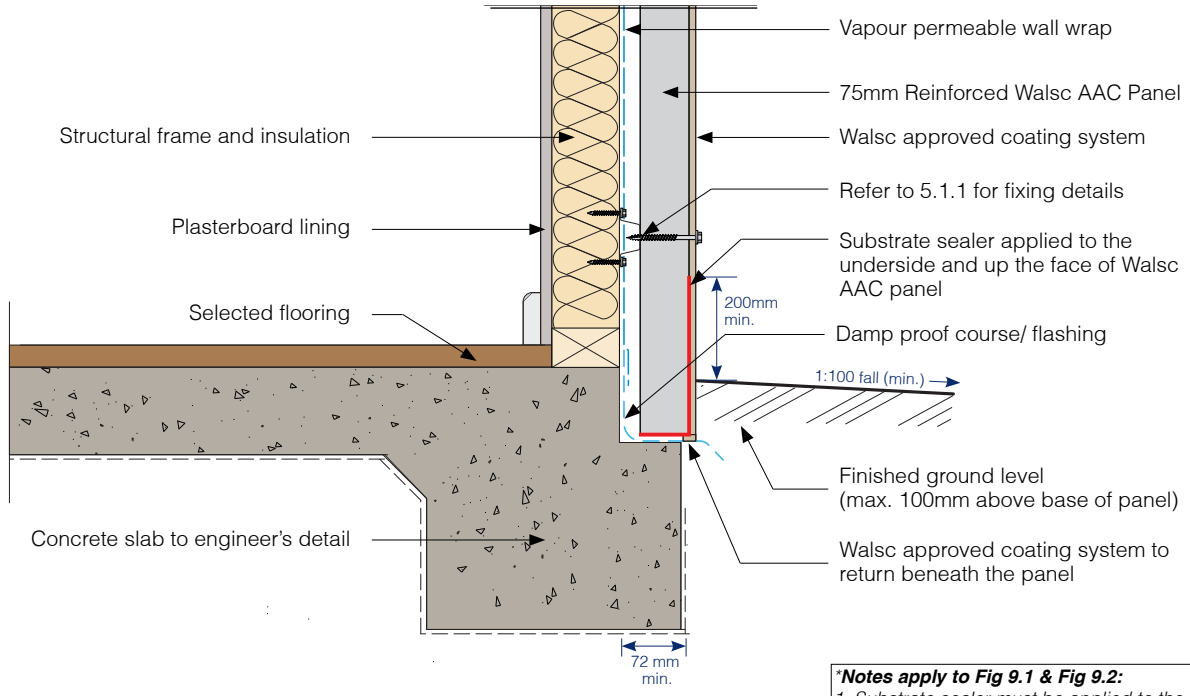


Fig 9.1 Junction to Panel Below Finish Ground Level Detail 1

Notes apply to Fig 9.1 & Fig 9.2:
1. Substrate sealer must be applied to the base of Walsc AAC panels before installation and must finish at least 200mm above the finished ground level (FGL).
2. Builders are responsible for complying with the requirements of termite-visible inspection zones and termite control systems.

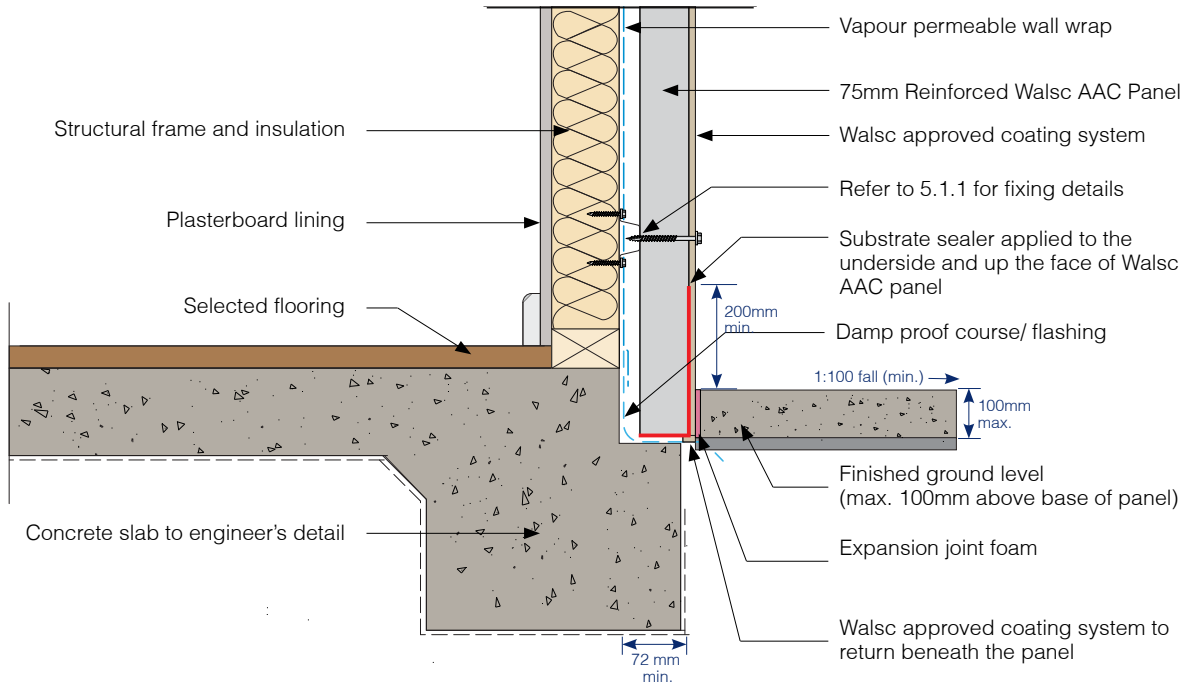


Fig 9.2 Junction to Panel Below Finish Ground Level Detail 2

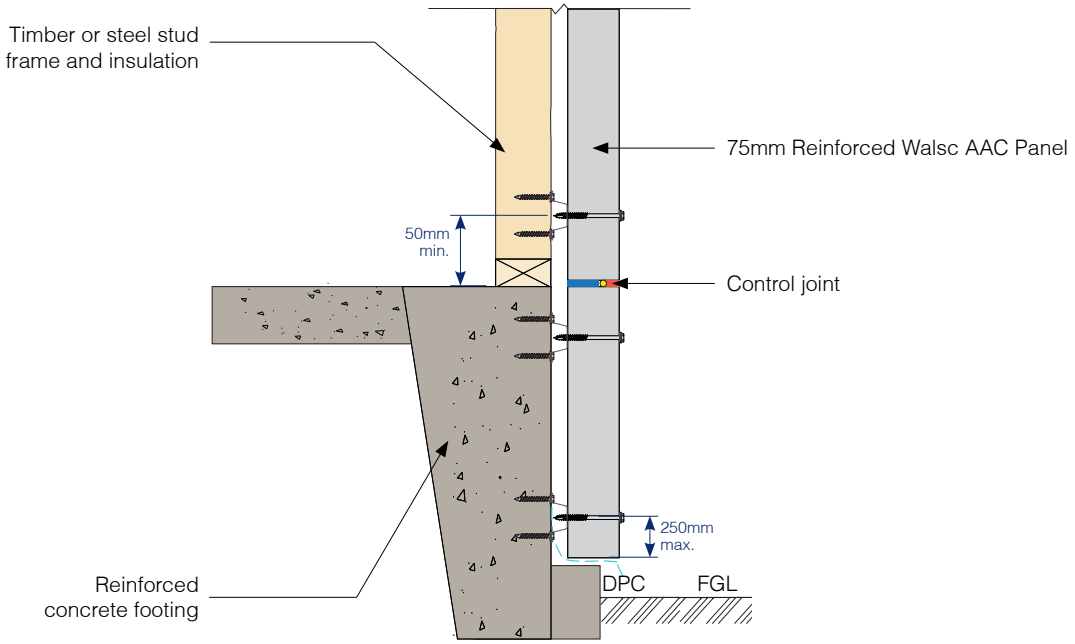


Fig 10. Junction to Deep Concrete Edge Beam

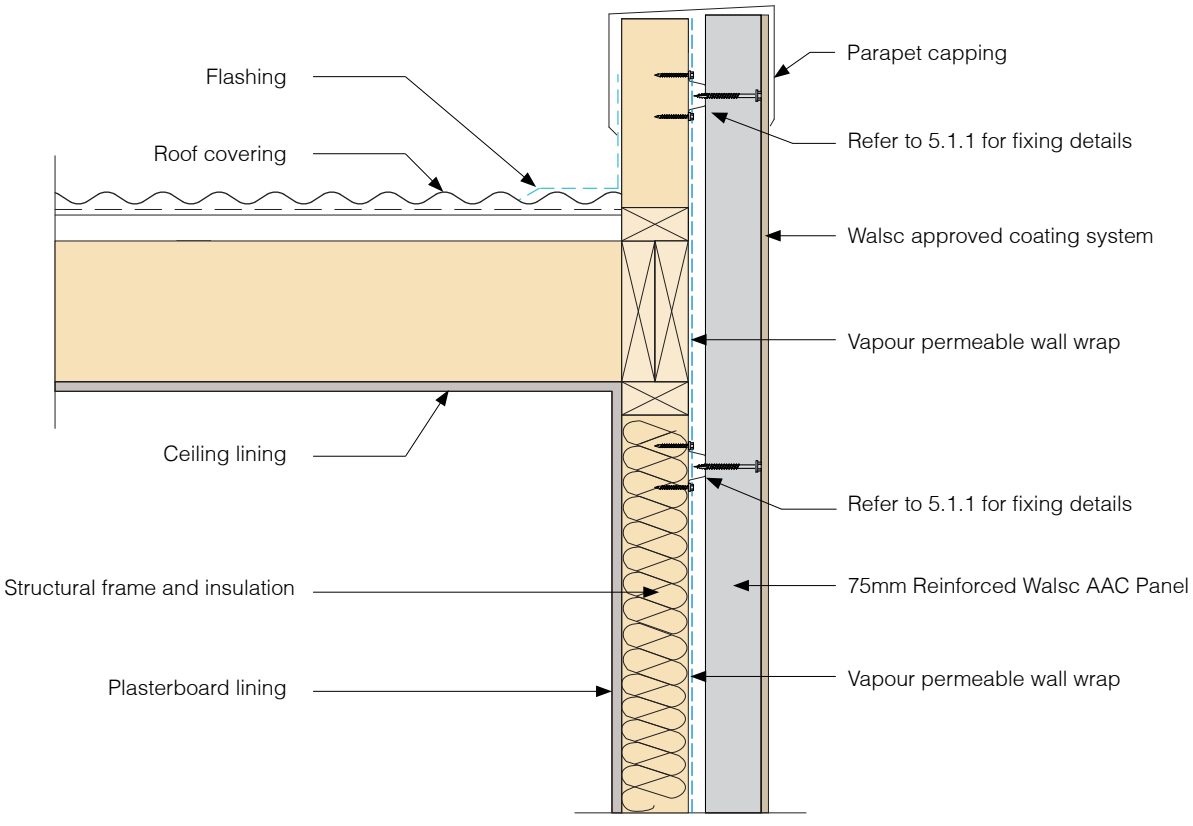


Fig 11. Parapet Wall Detail

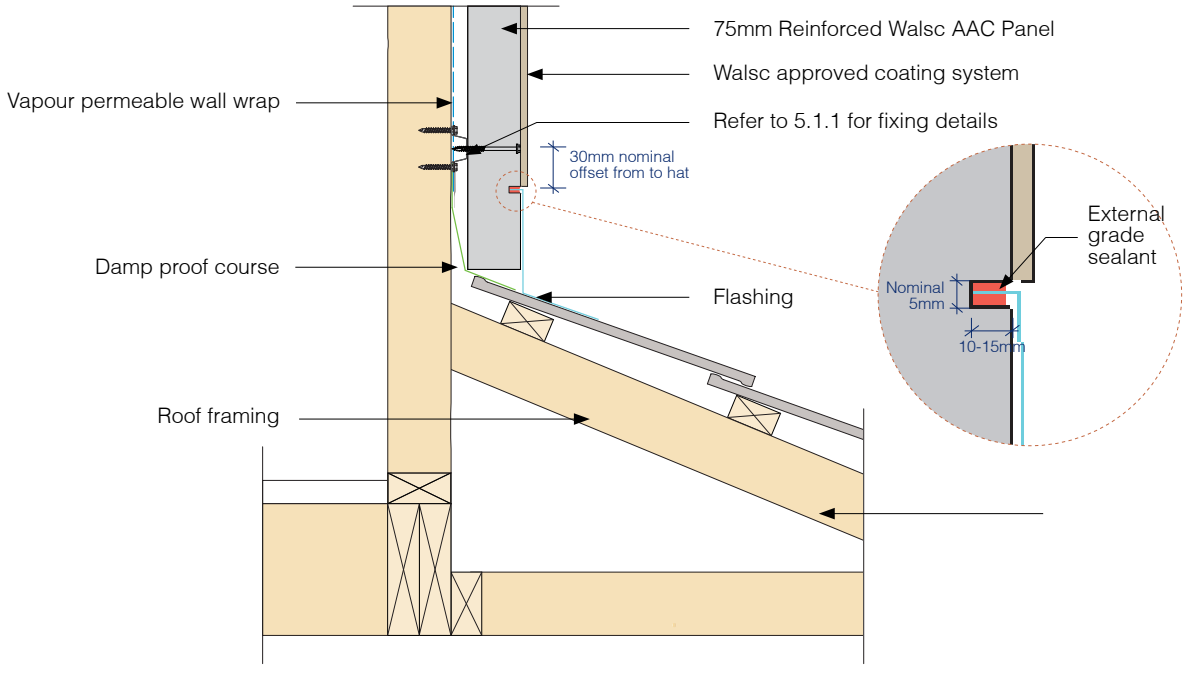


Fig 12. Panel to Roof Junction detail (Option 1)

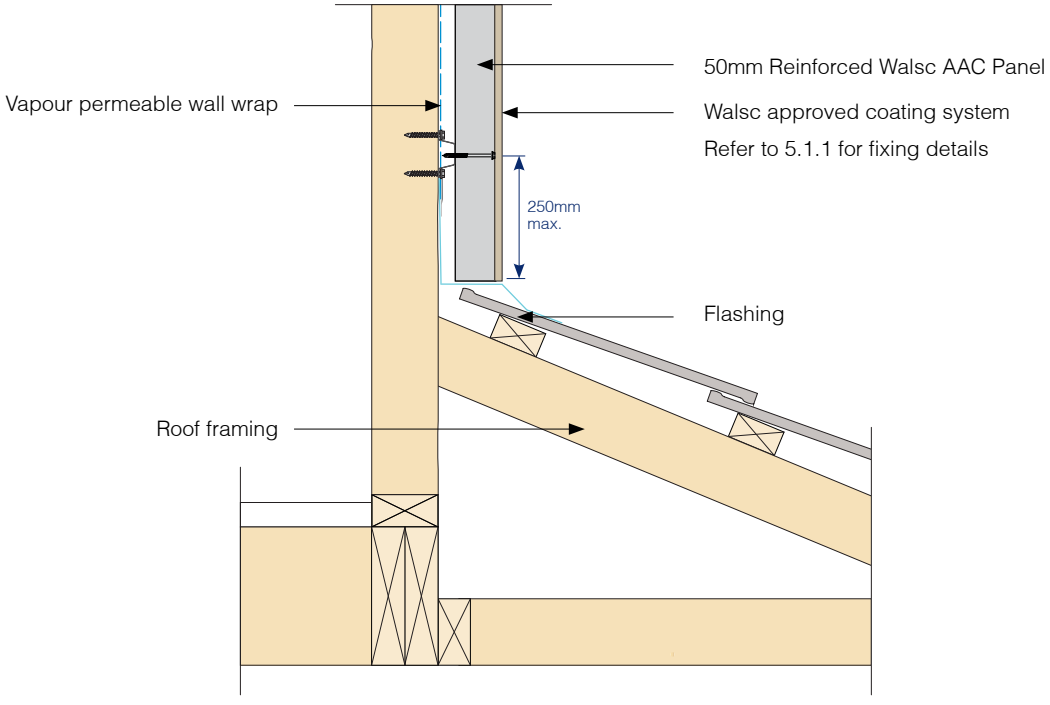


Fig 12.1 Panel to Roof Junction Detail (Option 2)

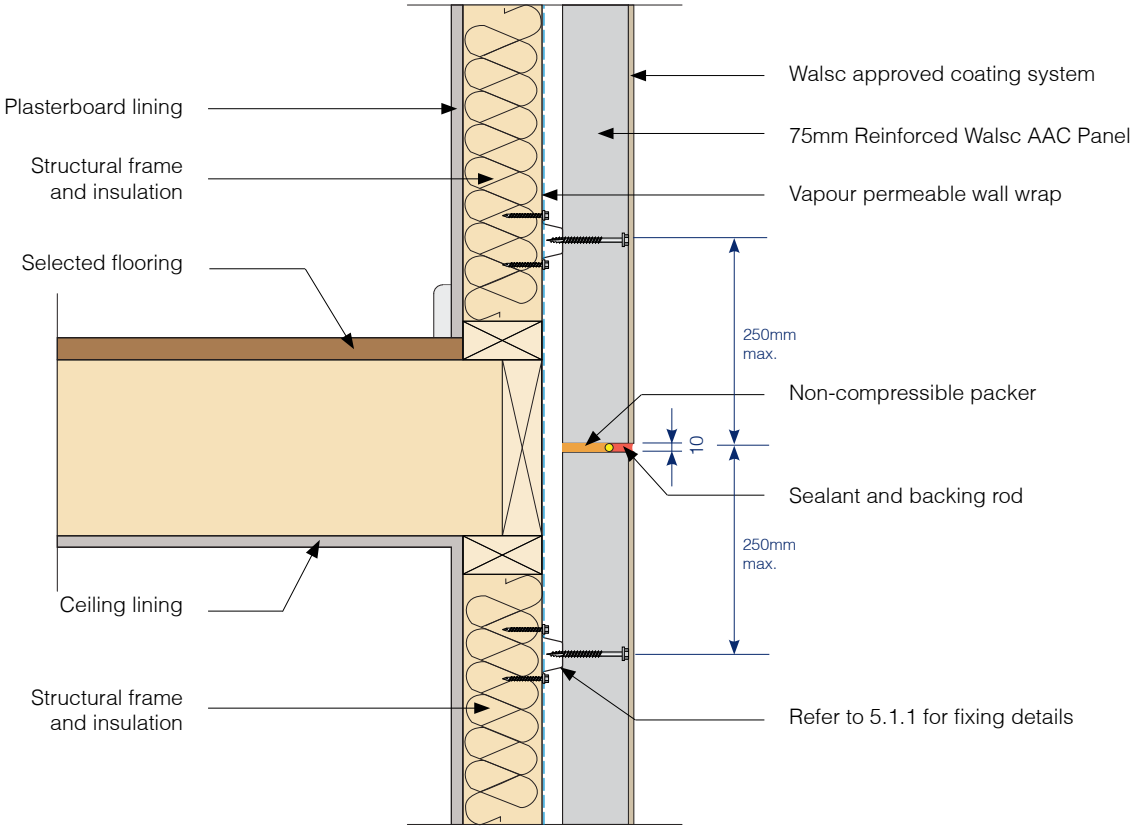


Fig 13. Inter-storey Junction Detail

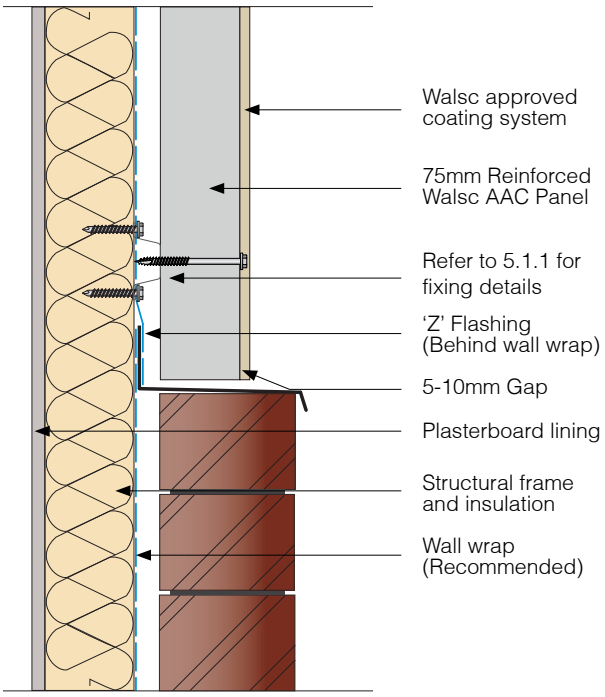


Fig 14. Conjunction detail between AAC Panel and Brick Veneer 1

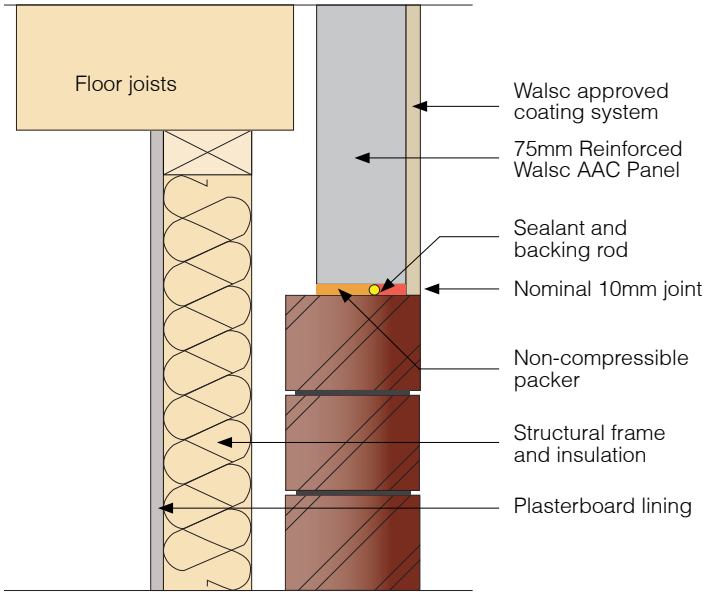


Fig 15. Conjunction detail between AAC Panel and Brick Veneer 2

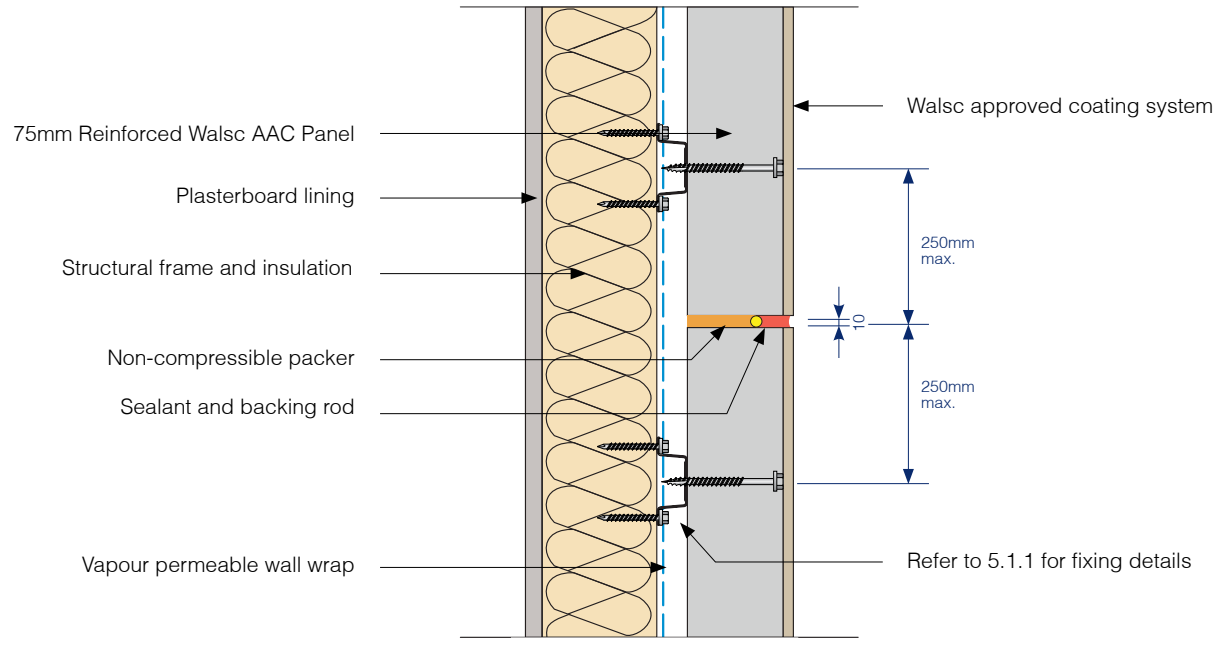


Fig 16. Horizontal Control Joint Detail

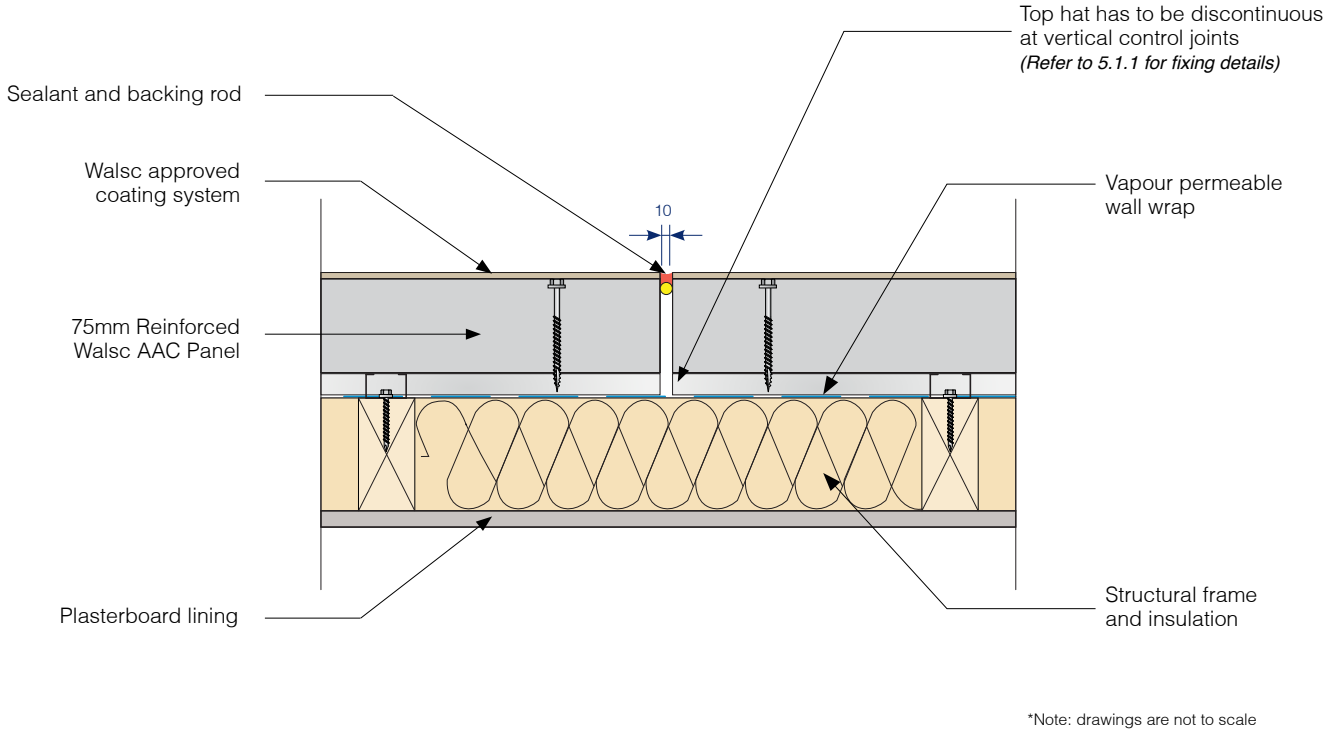


Fig 17. Vertical Control Joint Detail

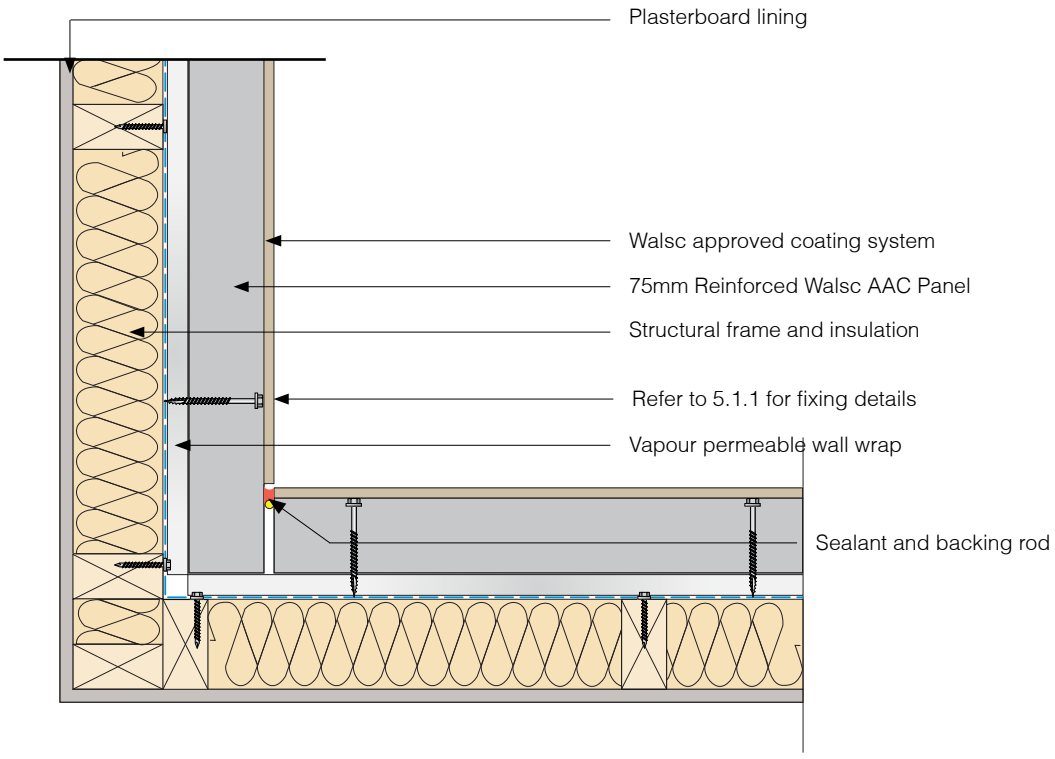


Fig 18. Internal Corner Control Joint Detail 1

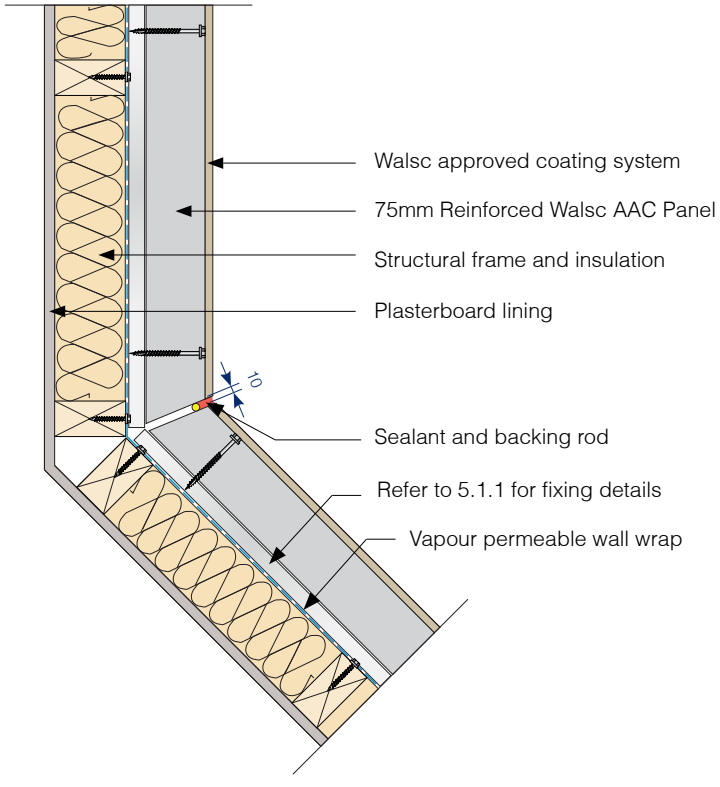


Fig 19. Internal Control Joint Detail 2

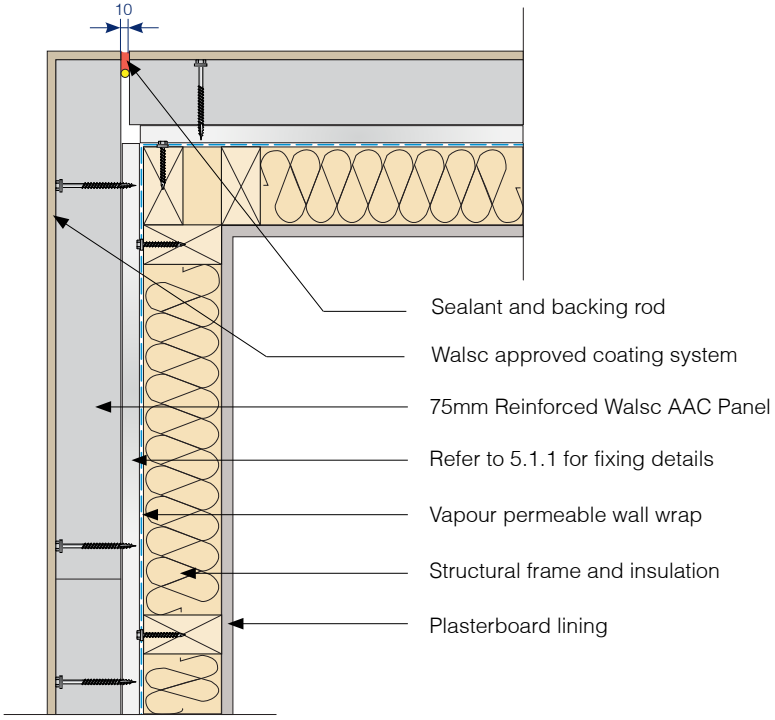


Fig 20. External Control Joint Detail 1

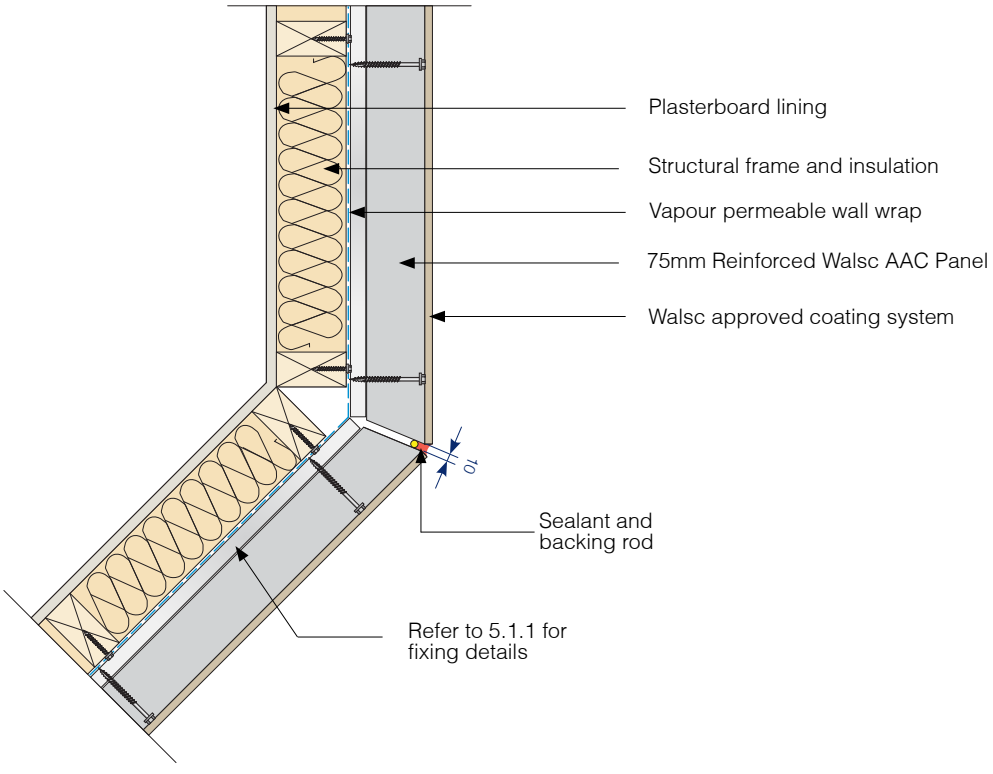


Fig 21. External Control Joint Detail 2

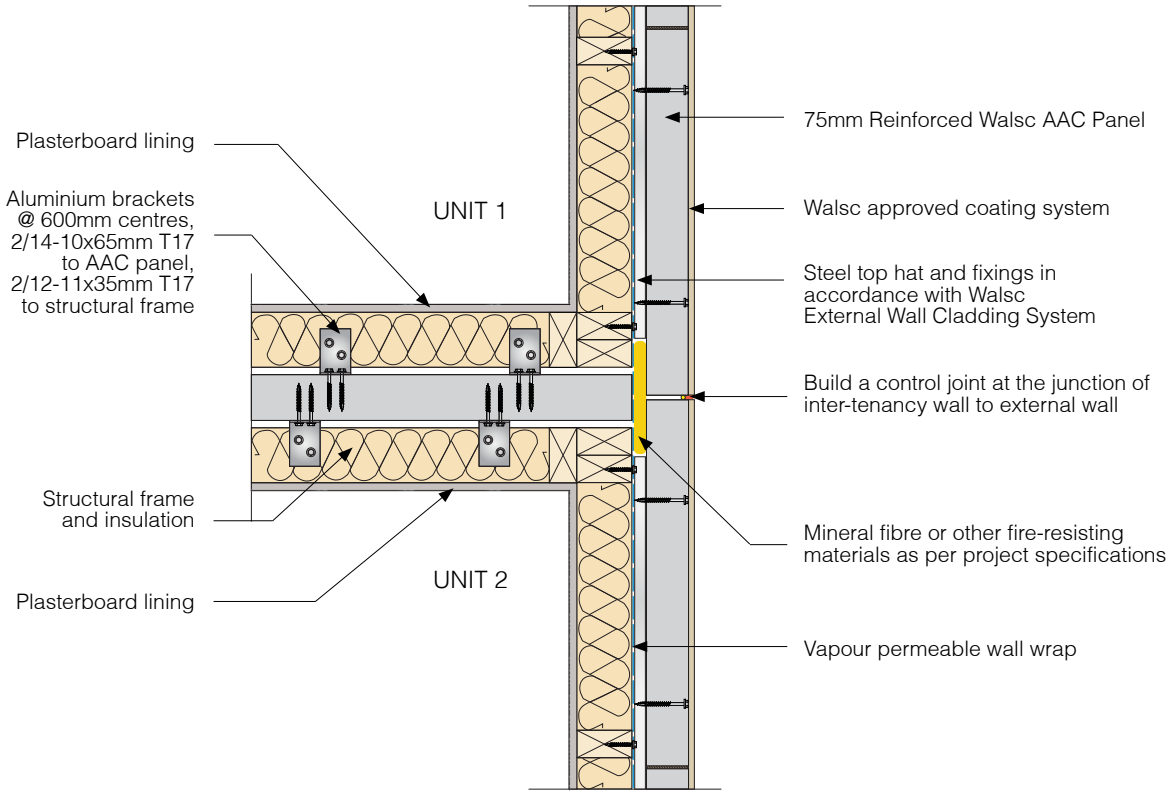


Fig 22. External Wall Junction Detail 1

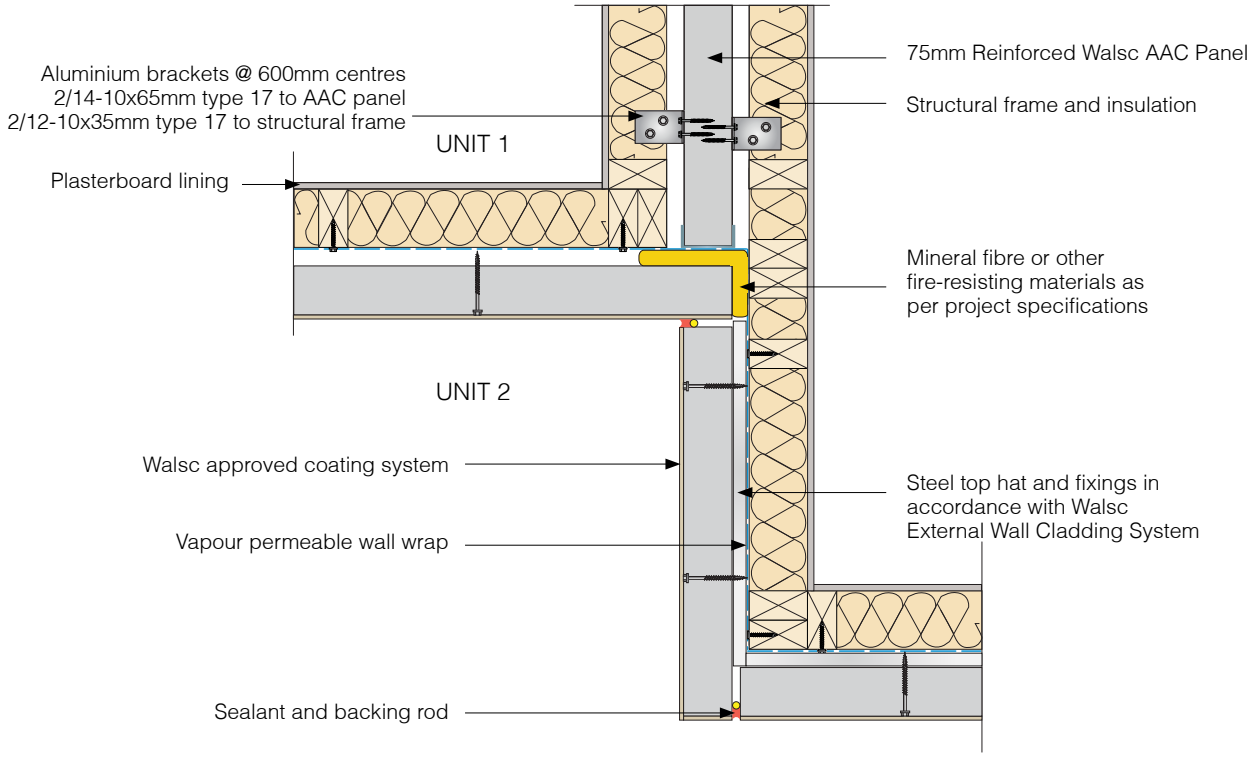


Fig 23. External Wall Junction Detail 2

Vertical control joints length	Opening Width		
	≤ 2400mm	2400mm to 3600mm	≥ 3600mm
≤ 600mm	1 control joint	2 control joints	2 control joints
≥ 600mm	No control joint	1 control joint	

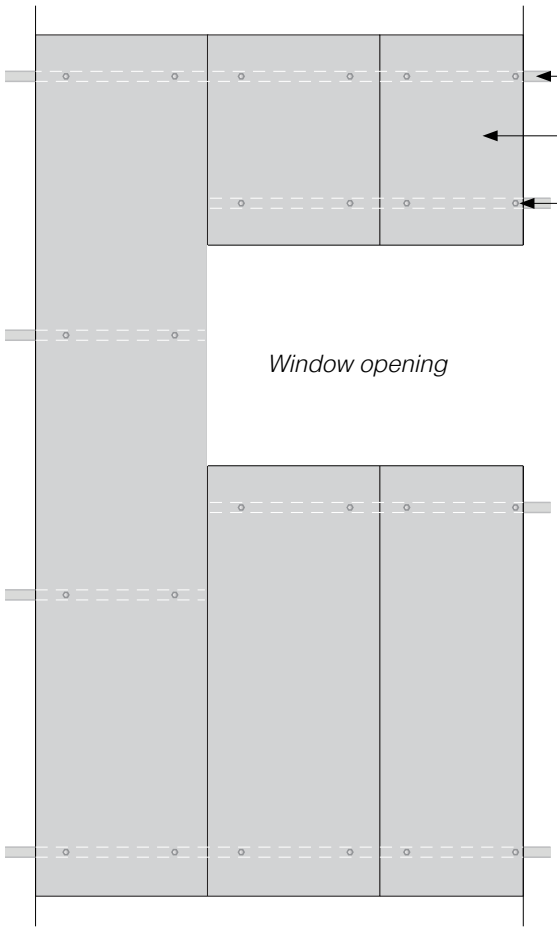
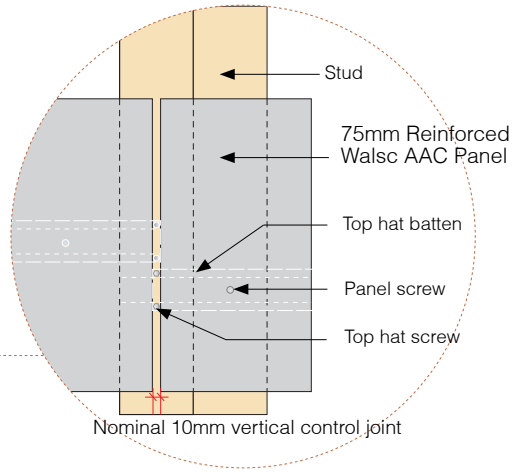


Fig 24. Vertical Aligned System - Typical Opening without Control Joint Detail



***Note:**
Steel top hat must be discontinuous where control joints are built.

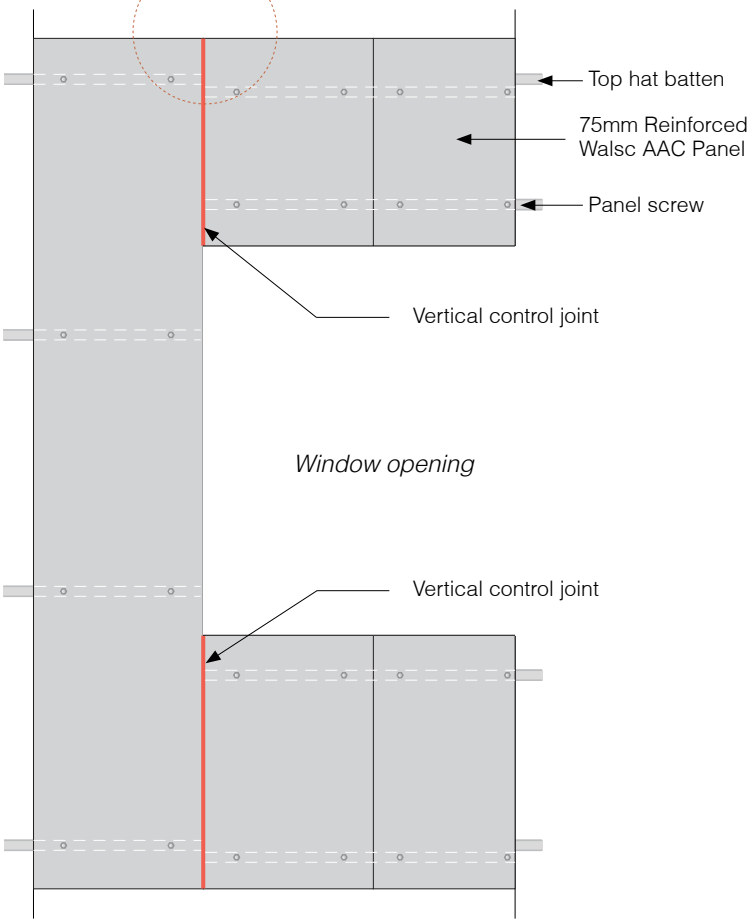


Fig 25. Vertical Aligned System - Typical Opening with Control Joint Detail

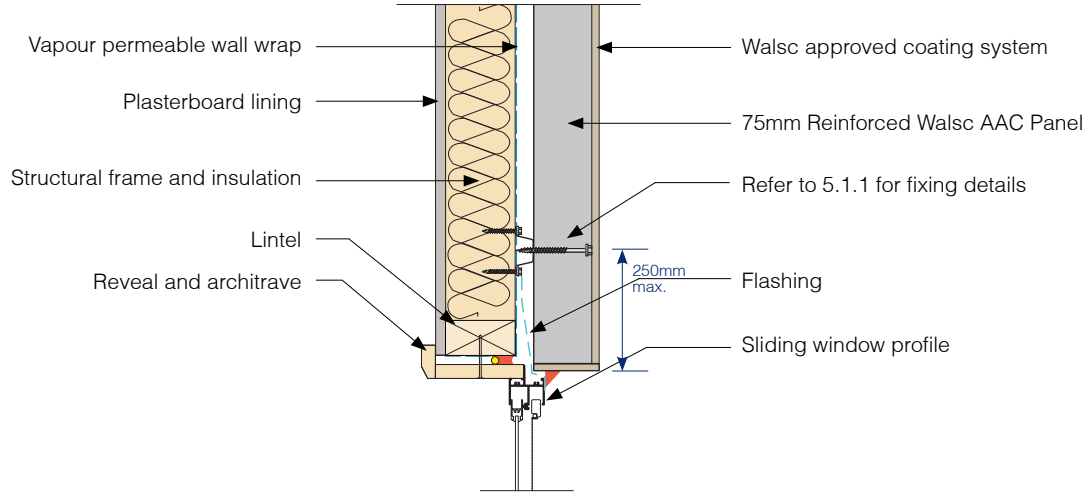


Fig 26. Window Head Detail

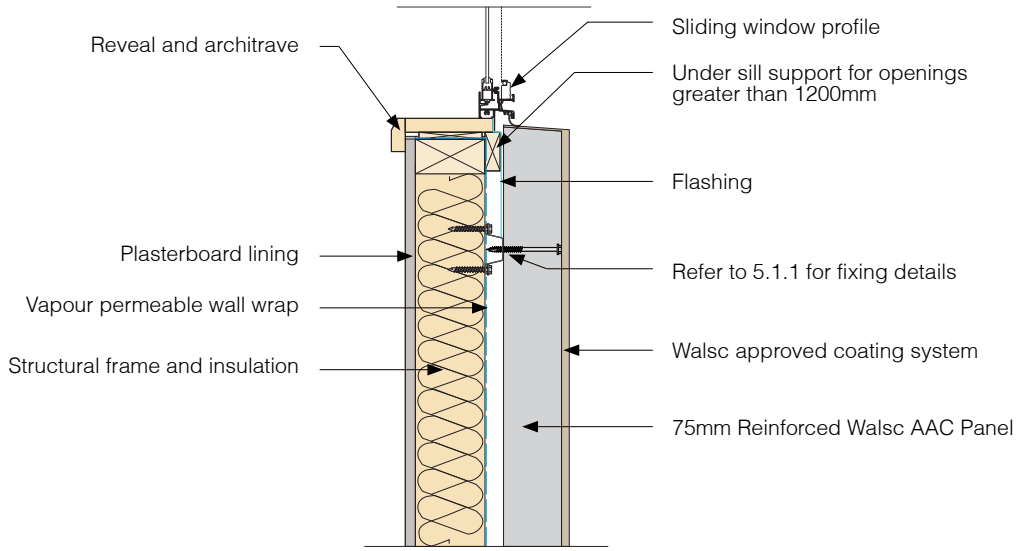


Fig 27. Window Sill Detail

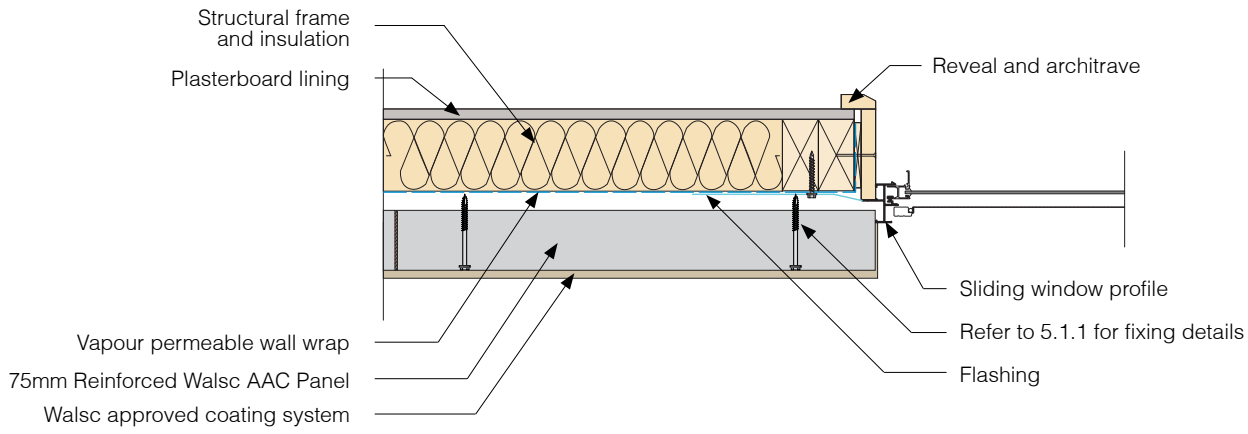


Fig 28. Window Jamb Detail

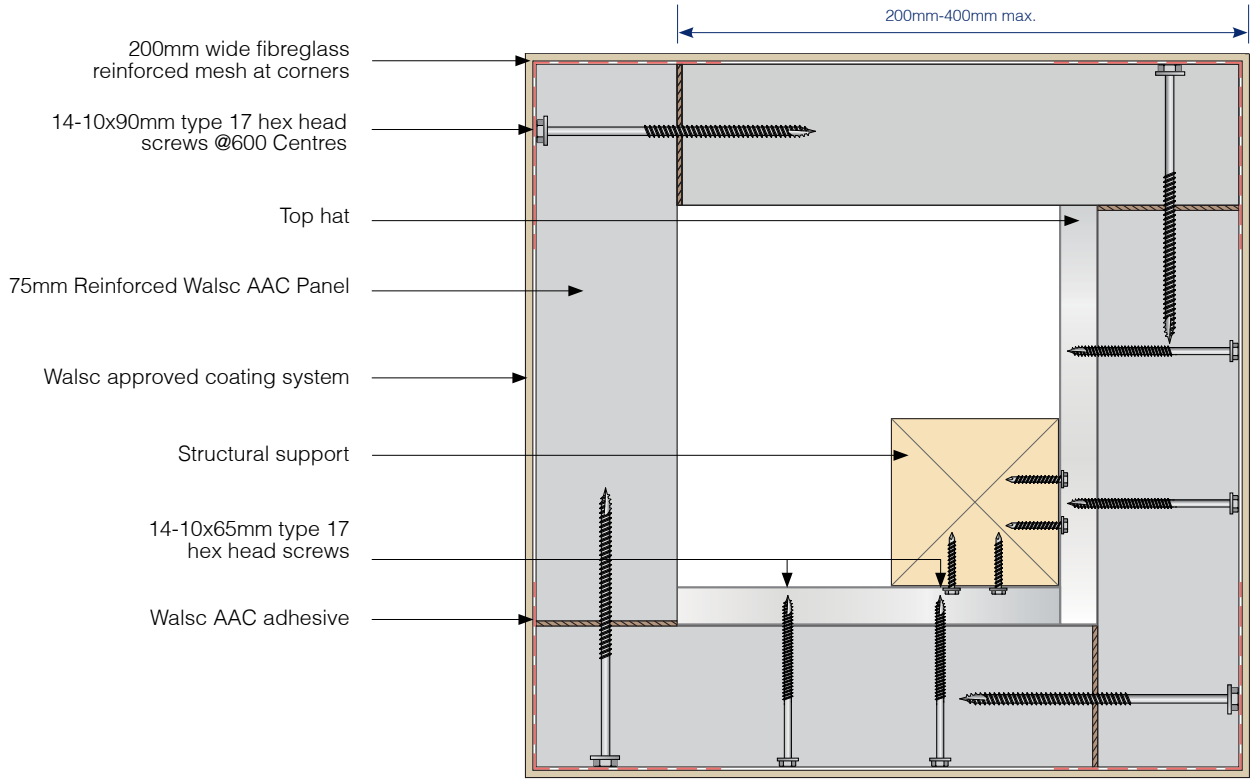


Fig 29. Column Detail 1

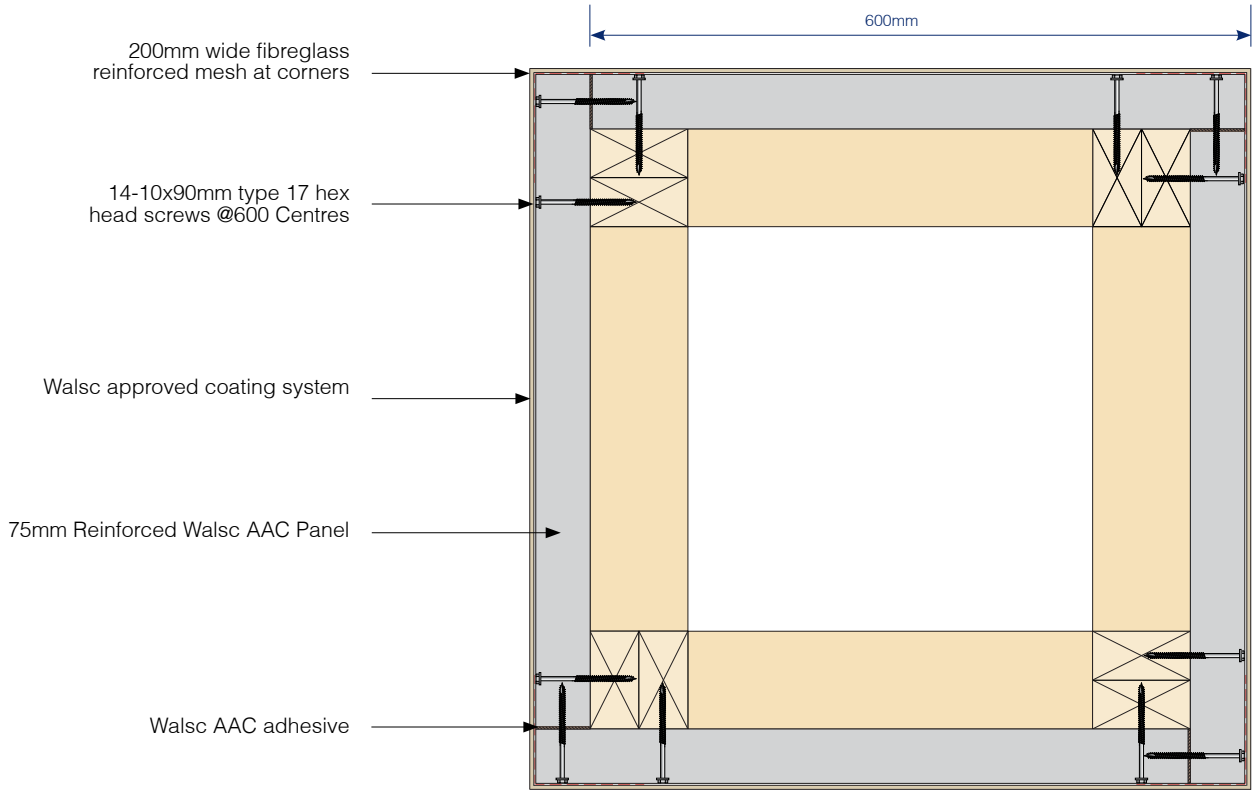


Fig 30. Column Detail 2

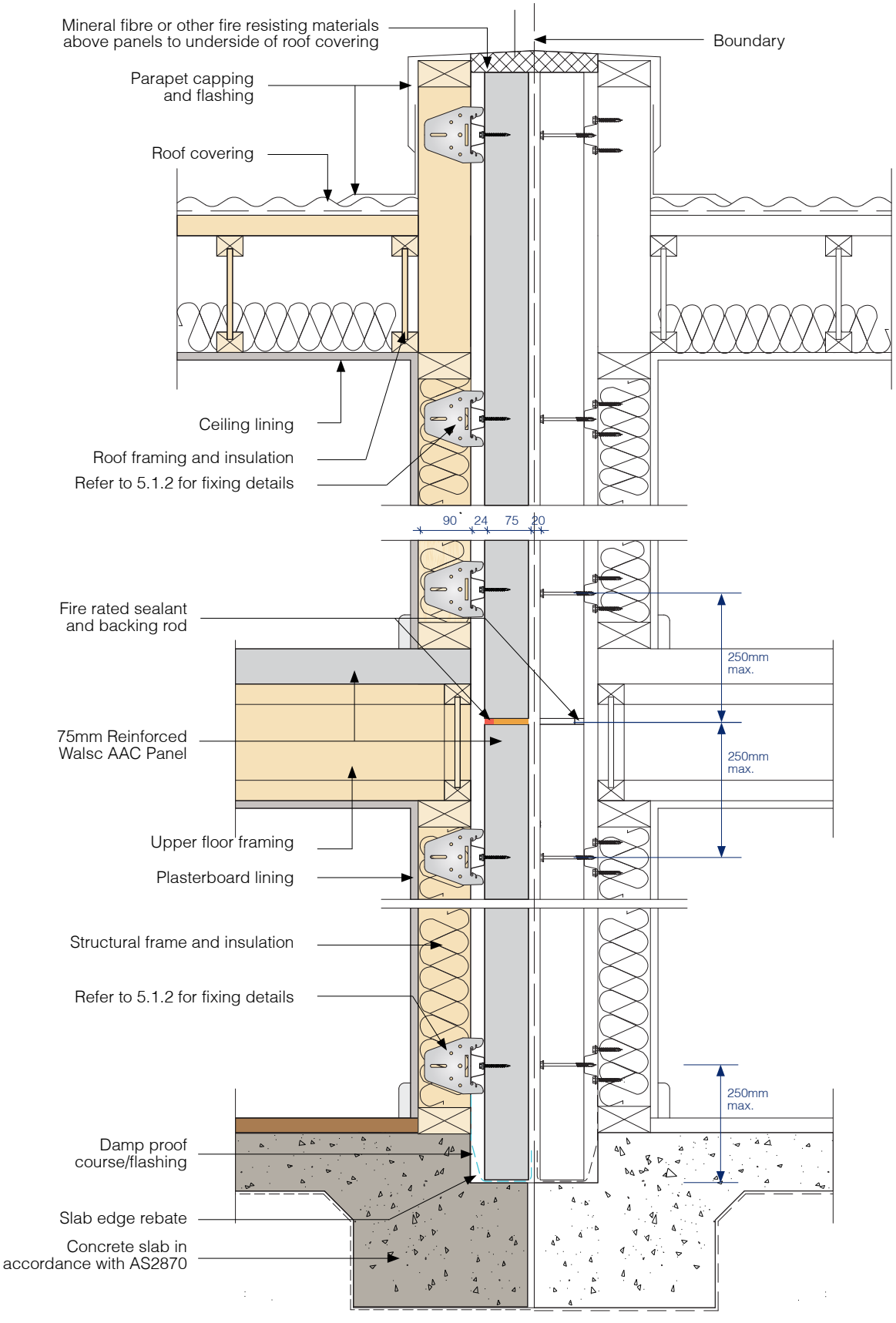


Fig 31. Boundary Wall Detail 1

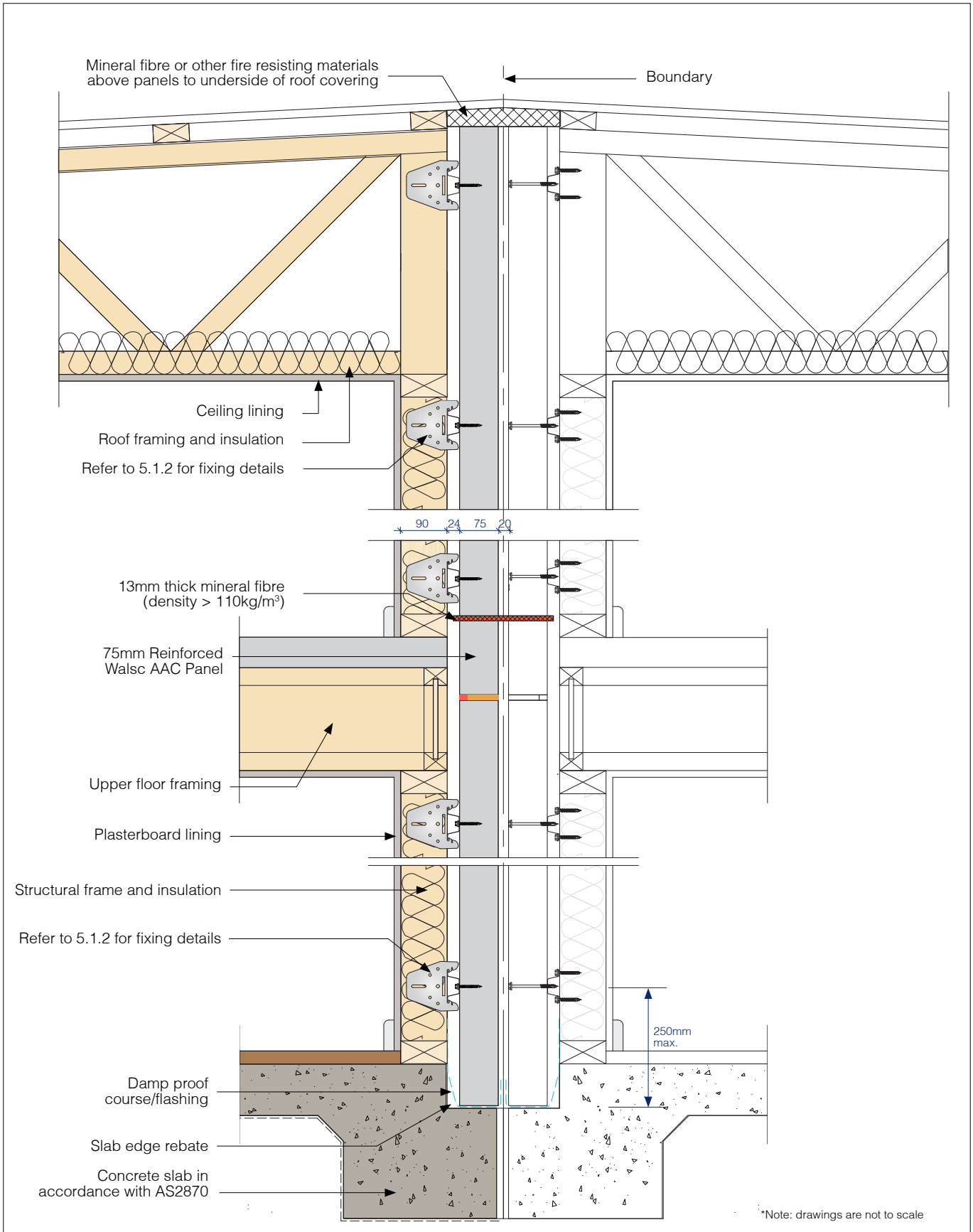


Fig 32. Boundary Wall Detail 2

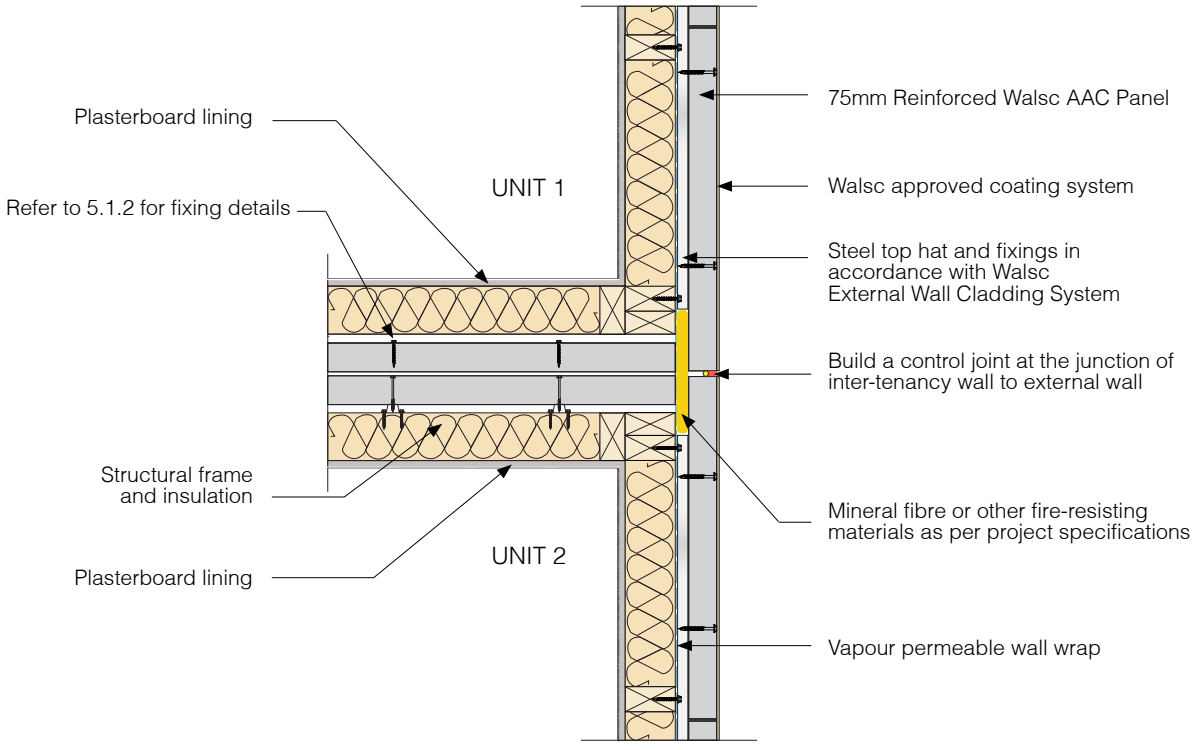


Fig 33. Boundary Wall Junction Detail 1

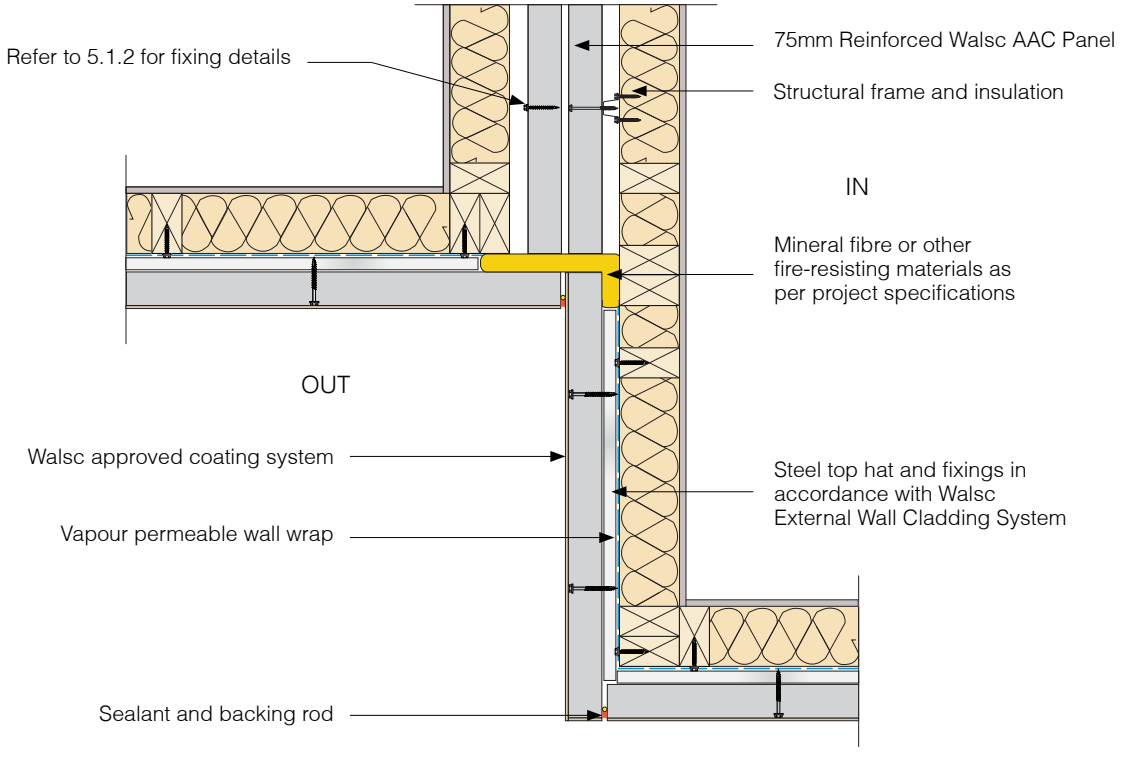


Fig 34. Boundary Wall Junction Detail 2

WALSC
AAC PANEL SYSTEMS

Use Walsc products in low-rise and multi-residential buildings as a better wall or flooring solution.

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- External Wall Cladding System 75 Light
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