

Axon™ Panel Fixed to Hardie™ CLD™ Structural Cavity Batten

Technical Specification
March 2024 New Zealand



NEW
Brushed
Concrete





We value your feedback!

To continue with the development of our products and systems, we value your input. Please send any suggestions, including your name, contact details, and relevant sketches to:

Ask James Hardie™
literaturefeedback@jameshardie.co.nz

Make sure your information is up to date

When specifying or installing Hardie™ fibre cement products, ensure that you have the current manual. Additional installation information, warranties and warnings are available at **www.jameshardie.co.nz** or **Ask James Hardie™** on 0800 808 868.

**THIS TECHNICAL
SPECIFICATION
IS FOR
AXON™ PANEL
FIXED TO
HARDIE™ CLD™
STRUCTURAL
CAVITY BATTEN.**

Contents

| | | | | | |
|----------|--|-----------|-------------------------|--|-----------|
| 1 | Product Information | 4 | 6 | Installation | 17 |
| 1.1 | Product Sizes and Accessories | 4 | 6.1 | Hardie™ CLD™ Structural Cavity Battens | 17 |
| 1.2 | Components and Accessories | 6 | 6.2 | Panels | 18 |
| 1.3 | Manufacturing and Classification | 8 | 6.3 | Fastener Durability | 18 |
| 2 | Application | 9 | 6.4 | Adhesive Sealant | 19 |
| 2.1 | Application | 9 | 6.5 | Framing | 19 |
| 2.2 | Scope | 9 | 6.6 | Flexible Underlay or HomeRAB™ Pre-Cladding | 20 |
| 2.3 | Limitations | 9 | 6.7 | Intermediate Support | 21 |
| 2.4 | Details | 9 | 6.8 | RAB™ Board or a Rigid Air Barrier | 21 |
| 3 | Compliance | 10 | 6.9 | Vent Strip | 21 |
| 3.1 | Compliance | 10 | 6.10 | Jointing | 21 |
| 4 | Design | 10 | 6.11 | Junctions and Penetrations | 22 |
| 4.1 | Responsibility | 10 | 6.12 | Board and Batten Look | 22 |
| 4.2 | Clearances | 11 | 7 | Finishing | 22 |
| 4.3 | Structure | 11 | 7.1 | Preparation | 22 |
| 4.4 | Moisture Management | 11 | 7.2 | Coating | 23 |
| 4.5 | Energy Efficiency | 12 | 7.3 | Flexible Sealant | 24 |
| 4.6 | Bracing | 12 | 8 | Care and Maintenance | 24 |
| 4.7 | Control of External Fire Spread | 12 | 9 | Details Section Index | 25 |
| 4.8 | Resistance to Moisture/Rotting | 12 | Product Warranty | 83 | |
| 4.9 | Fire Rated Walls | 12 | | | |
| 4.10 | Alpine Regions | 12 | | | |
| 4.11 | Steel Framing | 12 | | | |
| 4.12 | Cavity Construction | 13 | | | |
| 4.13 | Tolerances | 13 | | | |
| 4.14 | Movement Joints | 13 | | | |
| 5 | Safe Working Practices | 14 | | | |
| 5.1 | Storage and Delivery | 16 | | | |
| 5.2 | Tips for safe and easy handling of Axon™ Panel | 16 | | | |

1 Product Information

Grooved



Axon™ Panel 133mm Grooved

The grooves on the face panel are nominal 10mm wide x 2.25mm deep and spaced at 133mm centres.



Axon™ Panel 133mm Grooved Grained

The grooves on the face panel are nominal 10mm wide x 2.25mm deep and spaced at 133mm centres. Between the grooves is a look of traditional wood-grain texture.



Axon™ Panel 400mm Grooved

The grooves on the face panel are nominal 10mm wide x 2.25mm deep and spaced at 400mm centres.

Textured



Axon™ Panel Smooth

Formerly known as EasyLap™ Panel

Provides a durable, shiplap vertical joint panel appearance for residential/commercial building façades. The panel is finished with either a site applied roll on textured acrylic paint to create a rendered look with subtle vertical joint or a full mesh texture coating system.



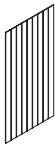
Axon™ Panel Brushed Concrete



Provides a durable, shiplap vertical joint panel appearance with an embedded textured surface suitable for residential/commercial building facades.

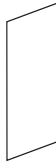

1.1 Product Sizes and Accessories

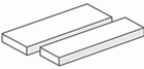
Table 1

Note: Axon™ Panel cladding is defined as a Light Weight Wall Cladding (not exceeding 30kg/m²) as per the NZS 3604.

| Axon™ Panel Grooved | | | | | |
|---|--|----------------|-------------|------------|--------------|
| Product | Description | Thickness (mm) | Size | | Product Code |
|  | Axon™ Panel 133mm Grooved Is a shiplap jointed panel to hide the panel joints. The panel is face primed. The panel has grooves at 133mm centres. The panel must be installed vertically. Nom. Panel Mass: 12.1kg/m ² | 9 | Length (mm) | Width (mm) | |
| | | | 2450 | 1200 | 403780 |
| | | | 2750 | 1200 | 403781 |
| | | | 3000 | 1200 | 403782 |
| | | | 3600 | 1200 | 404979 |

| Axon™ Panel Grooved | | | | | |
|---|--|----------------|------|------|--------------|
| Product | Description | Thickness (mm) | Size | | Product Code |
|  | Axon™ Panel 133mm Grooved Grained Is a shiplap jointed panel to hide the panel joints. The panel is face primed. The panel has grooves at 133mm centres. The panel must be installed vertically. Nom. Panel Mass: 12.1kg/m² | 9 | 3000 | 1200 | 404979 |
| | | | | | |
|  | Axon™ Panel 400mm Grooved Is a shiplap jointed panel to hide the panel joints. The panel is face primed. The panel has grooves at 400mm centres. The panel must be installed vertically. Nom. Panel Mass: 12.1kg/m² | 9 | 2450 | 1200 | 404414 |
| | | | 2750 | 1200 | 404415 |
| | | | 3000 | 1200 | 404416 |

| Axon Panel Textured | | | | | |
|---|---|----------------|-------------|------------|--------------|
| Product | Description | Thickness (mm) | Size | | Product Code |
|  | Axon™ Panel Smooth <i>Formerly known as EasyLap™ Panel</i> A shiplap edge panel for subtle vertical joints Nom. Panel Mass: 12.1kg/m² | 9 | Length (mm) | Width (mm) | |
| | | | 2450 | 1200 | 404764 |
| | | | 3000 | 1200 | 404763 |
|  | Axon™ Panel Brushed Concrete An embedded textured surface A shiplap edge panel with subtle vertical joints Nom. Panel Mass: 11.1kg/m² tbc | 8.5 | 2440 | 1200 | 405478 |
| | | | 2750 | 1200 | 405480 |
| | | | 3000 | 1200 | 405481 |
| | | | 3600 | 1200 | 405482 |

| Hardie™ Axent™ Trim information | | | | | |
|---|-----------------------------|----------------|-------------|------------|--------------|
| Product | Description | Thickness (mm) | Size | | Product Code |
|  | For box corners and facings | 19 | Length (mm) | Width (mm) | |
| | | | 3000 | 45 | 405260 |
| | | | 3000 | 70 | 405257 |
| | | | 3000 | 89 | 405258 |

Note: All dimensions and masses provided are approximate only and are subject to manufacturing tolerances.

1.2 Components and Accessories




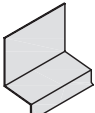
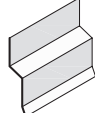






Table 2




| Accessories/tools supplied by James Hardie | | | |
|---|---|---|----------------------------|
| Accessories | Description | Quantity/Size (approx) | Code |
|  | Hardie™ CLD™ Structural Cavity Batten 19mm thick fibre cement cavity batten installed over RAB™ Board or a flexible underlay. Axon™ Panel are fixed to the battens. | 19 x 70mm, 3000mm long | 405308 |
|  | Hardie™ Aluminium Radius External Box Corner A box corner mould to form the external joints. 9mm etch primed. | 2750mm long 3000mm long 4000mm long | 306215 306216 306217 |
|  | Hardie™ Aluminium Invert External Box Corner A corner mould to form the invert external joints. 9mm etch primed. | 2750mm long 4000mm long | 306213 306214 |
|  | Hardie™ 9mm Panel Aluminium Horizontal 'h' Mould A horizontal flashing to flash the horizontal joints. 9mm etch primed. | 3000mm long | 304508 |
|  | Hardie™ 9mm Aluminium Angle T Socket A horizontal T flashing to flash the horizontal joints. 9mm etch primed. | 3000mm long | 306210 |
|  | Hardie™ Angle T Horizontal Jointer A jointer to cover the butt joint of T mould | 100mm long | 306221 |
|  | Hardie™ Angle T External Corner Jointer T mould external corner | | 306222 |
|  | Aluminium 'h' Mould Jointer A jointer to cover the butt joint of 'h' mould. | 100mm long | 304512 |
|  | Hardie™ 9mm Panel Aluminium h External Corner Jointer 'h' mould external corner | | 305940 |
|  | Hardie™ 9mm Aluminium Internal Corner to join two 9mm panels at an internal corner | 2750mm long 4000mm long | 306218 306219 |
|  | uPVC Vent Strip Used to provide protection from vermin entering cavity space. | 3000mm long | 302490 |
|  | CLD™ Batten Corner Flashing Aluminium Used at internal corner sealant joints at floor joist level. | | 304652 |
| Tools | | | |
|  | Hardie™ Blade Saw Blade Diamond tip 184mm diameter fibre cement circular saw blade. Spacers not included. | Each | 300660 |

Table 3

Accessories/tools not supplied by James Hardie

James Hardie recommends the following products for use in conjunction with Axon™ Panel. James Hardie does not supply these products and does not provide a warranty for their use. Please contact component manufacturer for information on their warranties and further information on their products.

| Accessories | Description |
|---|---|
|  | Flexible Underlay To comply with Table 23 of E2/AS1. |
|  | Flexible Tape A flexible self-adhesive tape used in preparation of a window. Refer to the Window installation section in this manual for more information. e.g. Super-Stick Building Tape® by Marshall Innovations or 3M™ All Weather Flashing Tape 8067 by 3M™ Marshall Innovations: 0800 776 9727 3M™: 0800 474 787 |
|  | Joint Sealant Paintable flexible sealants are recommended for filling the joints. Refer to Section 7.2 for information. e.g. Sika® Sikaflex® MS, Sika® AT Facade, Bostik® Seal N Flex™-1 or similar |
|  | Head Flashing Required over window heads to be supplied by window installer. Material must comply with Table 20 and 21 of E2/AS1. |
|  | Flashing Material as per Table 20, 'E2/AS1' |
|  | C-25 Stainless Steel Brad Nails 304SS brad nails used to install Axon™ Panel to the Hardie™ CLD™ Structural Cavity Battens used in a straight bradder. Paslode®: (09) 477 3000 |
|  | 65 x 2.87mm RoundDrive Ring Shank Nail For fixing Hardie™ CLD™ Structural Cavity Battens to the framing. Paslode®: (09) 477 3000 |
|  | Bostik® Seal N Flex™ -1 'Seal N Flex™-1' Polyurethane adhesive sealant manufactured by Bostik® for applying between the panels and battens, Refer to section 5 for more information. Bostik®: ALK: (09) 579 6253, WGTN: (04) 567 5119, CHCH: (03) 366 2583. |
|  | Sika® Sikaflex® 11FC Sika®: 0800 SIKa NZ (0800 745 269) |
|  | 200mm wide Polypropylene DPC Product used over flexible underlay at external and internal corners. ie. Super Course 500 |
|  | CRC® ADOS® Builders Fill Two part exterior grade fill to skim coat finish over brad nails. |

| | |
|---|--|
|  | Dulux® Acrasand or Dulux® Sedona acrylic texture 0800 800 424 |
|  | Full mesh texture coating system e.g. STO®, or Resene® Construction Systems Texture coating system |
|  | Stain Timbakote®, suitable for Axon™ Panel 133mm Grained Tel: 0800 846 225 |

1.3 Manufacturing and Classification

Axon™ Panel is an advanced lightweight cement composite building product. The basic composition is Portland cement, ground sand, cellulose fibre, water and proprietary additives. The panel are easily identified by the name 'Axon™ Panel' printed at regular intervals on the back face of panel. Axon™ Panel is sealed and primed on the face and back is clear sealed.

Hardie™ CLD™ Structural Cavity Battens are manufactured using a low density fibre cement formulation. The basic composition is Portland cement, ground sand, cellulose fibre, water and proprietary additives. The battens are sealed on all sides.

Axon™ Panel and Hardie™ CLD™ Structural Cavity Battens are manufactured in Australia to the to AS/NZS 2908.2 'Cellulose-Cement Products Part 2: Flat Sheets' (ISO 8336 'Fibre Cement Flat Panels') standards in New Zealand. James Hardie is an ISO 9001 'Telarc' certified manufacturer.

Axon™ Panel is classified Type A, Category 3 in accordance with AS/NZS 2908.2 "Cellulose-Cement Products".

For Safety Data Sheets (SDS) visit www.jameshardie.co.nz or Ask James Hardie on 0800 808 868.

Axon™ Panel cladding is defined as a Light Weight Wall Cladding (not exceeding 30kg/m²) as per the NZS 3604.

2 Application

2.1 Application

Axon™ Panel are classified as lightweight wall claddings suitable for residential and light commercial buildings using timber framing. Axon™ Panel are pre-sealed on the face to take a suitable paint finish in any colour.

This document is intended for use by architects, designers and specifiers who may be involved with the specification of Axon™ Panel.

For the use of Axon™ Panel and Hardie™ CLD™ Structural Cavity Battens outside the scope of this specification, the designer, architect or engineer must ensure that the applicable clauses of the New Zealand Building Code (NZBC) have been considered and the intent of their design meets the requirements of the NZBC. Project specific details that are not covered in this specification are required to be developed by the project designer/architect.

2.2 Scope

This specification covers the use of Axon™ Panel within the following scope:

- The Axon™ Panel must be installed vertically.
- An external wall structure that complies with the NZBC for an existing building or new building where the designer and/or installer has established that the external wall frame is suitable for this cladding installation.
- In all wind zones up to a design wind pressure of 3.2kPa (ULS) and a building height of 25m maximum. In wind zones greater than Very High (VH), a rigid air barrier must be used i.e. RAB Board.

2.3 Limitations

- Axon™ Panel must not be used on curved wall applications
- Axon™ Panel must not be installed horizontally or angled
- The minimum ground clearances specified must be maintained
- Timber window joinery/recessed openings is subject to an alternative design by the designer
- Maximum SLS inter-story seismic deflections up to span/180 when used in specific design buildings (SED) buildings above 10m height. To accommodate higher inter-story drifts, a deflection should be used.

2.4 Details

Various Axon™ Panel figures are provided in the Details section of this document. This specification and details in dwg, dxf, jpg and pdf file format are also available for download at www.jameshardie.co.nz.

All dimensions shown are in millimetres unless noted otherwise.

3 Compliance

3.1 Compliance

Axon™ Panel installed in accordance with this specification has been tested and meets the requirements of clauses E2, B1, B2 and F2 of the NZBC.

When installed in accordance with the conditions of CodeMark number CMNZ30165 Axon™ Panel complies with all relevant requirements of the NZBC. Please refer to www.building.govt.nz or www.jameshardie.co.nz for a copy of the certificate.



Axon™ Panel Hardie™ CLD™ Structural Cavity Batten technical specification has been BRANZ appraised. Appraisal No. 1211 (2022). Please refer to our website www.jameshardie.co.nz for a copy of the BRANZ appraisal 1211(2022).



4 Design

4.1 Responsibility

The specifier or other party responsible for the project must run through a risk matrix analysis to determine which construction method is to be used. The designer must also ensure that the figures published in this specification are appropriate for the intended application and that additional detailing is performed for specific design or any areas that fall outside the scope of this specification. The designers should ensure that the intent of their design meets the requirements of the NZBC.

Specifier

If you are a specifier or other responsible party for a project, ensure that the information in this document is appropriate for the application you are planning and that you undertake specific design and detailing for areas which fall outside the scope of these specifications.

Installer

If you are an installer ensure that you follow the design, moisture management principles, associated details and material selection provided by the designer. All of the details provided in this document must be read in conjunction with this specification.

Make sure your information is up to date

When specifying or installing Hardie™ fibre cement products, ensure you have the current manual. If you're not sure you do, or you need more information, visit www.jameshardie.co.nz or Ask James Hardie™ on 0800 808 868.

All New Zealand Standards referenced in this manual are current edition and must be complied with.

James Hardie conducts stringent quality checks to ensure that any product manufactured falls within our quality spectrum. It is the responsibility of the builder to ensure that the product meets aesthetic requirements before installation. James Hardie will not be responsible for rectifying obvious aesthetic surface variations following installation.

4.2 Clearances

The clearance between the bottom edge of cladding and paved/unpaved ground must comply with section 9.1.3 of E2/AS1. The finished floor level must also comply with these requirements. These clearances must be maintained throughout the life of the building.

Axon™ Panel must overhang the bottom plate on a concrete slab by a minimum of 50mm as required by NZS 3604.

Axon™ Panel must have a minimum clearance of 100mm from paved ground, and 175mm from unpaved ground.

On roofs and decks, the minimum clearance must be 50mm.

Do not install external cladding such that it may remain in contact with water or ground.

4.3 Structure

4.3.1 Timber Framing

Timber framing must be in accordance with NZS 3604 (Timber-framed buildings) or designed as for specific engineering design (SED) in accordance with NZS 3603 and AS/NZS 1170 where specific engineering design is required, the framing stiffness must be equivalent to or more than the framing provisions of NZS 3604.

4.3.2 Durability

The external framing must be treated to a minimum H1.2 treatment. Higher treatment levels may be used, but check for the compatibility of treatment chemicals with other materials. Refer to the NZBC Acceptable Solution B2/AS1 'Durability' for further information about the durability requirements.

For timber treatment and allowable moisture content information refer to the NZS 3602 (Timber and Wood-Based Products for use in Buildings) and NZS 3640 (Chemical Preservation of Round Sawn Timber) for minimum timber treatment selection and treatment requirements.

Also refer to the framing manufacturer's literature for further guidance on timber selection. Framing must be protected from moisture at site in accordance with the recommendation of the framing manufacturers.

4.4 Moisture Management

It is the responsibility of the specifier to identify moisture related risks associated with any particular building design.

Wall construction design must effectively manage moisture, considering both the interior and exterior environments of the building, particularly in buildings that have a higher risk of wind driven rain penetration or that are artificially heated or cooled.

Walls must include those provisions as required by the NZBC Acceptable Solution E2/AS1 'External Moisture'. In addition all wall openings, penetrations, junctions, connections, window sills, heads and jambs must incorporate appropriate flashings for waterproofing. The other materials, components and installation methods used to manage moisture in external walls, must comply with the requirements of relevant standards and the NZBC.

For further guidance on designing for weathertightness refer to BRANZ Ltd, and the Ministry of Business Innovation and Employment (MBIE) updates on the following websites respectively, www.branz.co.nz and www.building.govt.nz

4.5 Energy Efficiency

External walls constructed as per this technical specification, using Axon™ Panel cladding must use suitable bulk insulation to meet the minimum thermal insulation requirements as per Clause H1/AS1 'Energy Efficiency' of the NZBC.

4.6 Bracing

Axon™ Panel installed to Hardie™ CLD™ Structural Cavity Battens as per this specification cannot be used to achieve structural bracing. However, bracing can be achieved by using HomeRAB™ Pre-Cladding/RAB™ Board installed direct to framing instead of a flexible underlay or by using Villaboard™ Lining bracing system on the internal face.

4.7 Control of External Fire Spread

Axon™ Panel material is classified as 'Type-A' as per Table C1.3 when tested to the requirements of Appendix C7.1.1 (b) of C/AS2 of the NZBC and is suitable for use where 'Non Combustible Material' or 'Limited Combustibility Material' is required for use in buildings located anywhere in relation to the relevant boundary for building within the scope of C/AS1 or C/AS2.

- Where the upper floors contain sleeping uses or other property, a horizontal flashed joint must be provided to block the top of lower cavity at intervals of no greater than 3.5m vertical height. Refer to Figure 55.
- On buildings greater than 10m in height a RAB™ Board must be used.

4.8 Resistance to Moisture/Rotting

Axon™ Panel has demonstrated resistance to permanent moisture induced deterioration (rotting) and has passed the following tests in accordance with AS/NZS 2908.2:

- Heat Rain (Clause 6.5).
- Water Permeability (Clause 8.2.2).
- Warm Water (Clause 8.2.4).
- Soak Dry (Clause 8.2.5).

4.9 Fire Rated Walls

Axon™ Panel when fixed to Hardie™ CLD™ Structural Cavity Battens, a fire resistance rating of up to 60 minutes can be achieved when used in conjunction with RAB™ Board and the fire rated system requirements as specified in the 'Fire and Acoustic Design Manual' by James Hardie. Ask James Hardie on 0800 808 868 for further information.

Nogs in fire rated walls must be at 800mm centres maximum.

Axon™ Panel are suitable for use where non-combustible materials are required on walls close to boundary.

4.10 Alpine Regions

In regions subject to freeze/thaw conditions, Axon™ Panel must not be in direct contact with snow or ice build up for extended periods, e.g. external walls in alpine regions must be protected where snow drifts over winter are expected.

The Axon™ Panel has been tested in accordance with AS/NZS 2908.2 Clause 8.2.3.

4.11 Steel Framing

Refer to Steel Frame Technical Supplement by James Hardie about the installation of Axon™ Panel to steel frame.

4.12 Cavity Construction

Buildings with a risk score of 7-20 calculated in accordance with the NZBC Solution 'E2/AS1' Table 2, Axon™ Panel must be installed on a cavity.

Note: Refer to Axon™ Panel Timber Cavity Batten technical specification when fixing to timber cavity battens or Axon™ Panel Direct Fix technical specification for direct fix.

4.13 Tolerances

In order to achieve the required performance and an acceptable wall finish, it is imperative that framing is straight and true.

Framing tolerances must comply with the requirements of NZS 3604. All framing shall be made flush.

4.14 Movement Joints

Due consideration must be given to accommodate framing movement in timber framed walls longer than 12m .

5 Safe Working Practices

WARNING - DO NOT BREATHE DUST AND CUT ONLY IN WELL VENTILATED AREA

Hardie™ fibre cement products contain sand, a source of respirable crystalline silica

May cause cancer if dust from product is inhaled. Causes damage to lungs and respiratory system through prolonged or repeated inhalation of dust from product.

Intact fibre cement products are not expected to result in any adverse toxic effects. The hazard associated with fibre cement arises from the respirable crystalline silica present in dust generated by activities such as cutting, rebating, drilling, routing, sawing, crushing, or otherwise abrading fibre cement, and when cleaning up, disposing of or moving dust.

When doing any of these activities in a manner that generates dust, follow James Hardie instructions and best practices to reduce or limit the release of dust.

If using a dust mask or respirator, use an AS/NZS 1716 P1 filter and refer to Australian/New Zealand Standard 1715:2009 Selection, Use and Maintenance of Respiratory Protective Equipment for more extensive guidance and more options for selecting respirators for workplaces. For further information, refer to our installation instructions and Safety Data Sheets available at www.jameshardie.co.nz.

FAILURE TO ADHERE TO OUR WARNINGS, SAFETY DATA SHEETS, AND INSTALLATION INSTRUCTIONS MAY LEAD TO SERIOUS PERSONAL INJURY OR DEATH.

Crystalline Silica is

- Commonly known as sand or quartz
- Found in many building products e.g. concrete, bricks, grout, wallboard, ceramic tiles, and all fibre cement materials

Why is Crystalline Silica a health hazard?

- Silica can be breathed deep into the lungs when present in the air as a very fine (respirable) dust
- Exposure to silica dust without taking the appropriate safety measures to minimise the amount being breathed in, can lead to a potentially fatal lung disease – silicosis – and has also been linked with other diseases including cancer. Some studies suggest that smoking may increase these risks
- The most hazardous dust is the dust you cannot see!

When is Crystalline Silica a health hazard?

- It's dangerous to health if safety protocols to control dust are not followed when cutting, drilling or rebating a product containing crystalline silica and when cleaning up
- Products containing silica are harmless if intact (e.g. an un-cut sheet of wall board)

Avoid breathing in crystalline silica dust

Safe working practices

- ✗ NEVER use a power saw indoors or in a poorly ventilated area
- ✗ NEVER dry sweep
- ✓ ALWAYS use M Class or higher vacuum or damp down dust before sweeping up
- ✗ NEVER use grinders
- ✓ ALWAYS use a dust reducing circular saw equipped with a sawblade specifically designed to minimise dust creation when cutting fibre cement – preferably a sawblade that carries the Hardie™ Blade name or one with at least equivalent performance – connected to an M Class or higher vacuum
- ✓ Before cutting warn others in the area to avoid dust
- ✓ ALWAYS follow tool manufacturers' safety recommendations
- ✓ ALWAYS expose only the minimum required depth of blade for the thickness of fibre cement to be cut
- ✓ ALWAYS wear a properly-fitted, approved dust mask or respirator P1 or higher in accordance with applicable government regulations and manufacturer instructions
- ✓ Consider rotating personnel across cutting tasks to further limit respirable silica exposures.

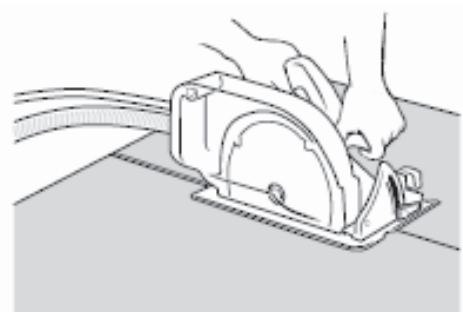
When cutting Axon™ Panel:

- ✓ Work outdoors only
- ✓ Make sure you work in a well ventilated area
- ✓ Position cutting station so wind will blow dust away from yourself and others in the working area
- ✓ Rotate employees across cutting task over duration of shift
- ✓ Cut products with a Hardie™ Blade Saw Blade (or equivalent) and a dust reducing circular saw connected to a M Class or higher vacuum
- ✓ When sawing, sanding, rebating, drilling or machining fibre cement products, always:
 - Wear your P1 or higher (correctly fitted in accordance with manufacturers' instructions), ask others to do the same.
 - Keep persons on site at least 2 metres and as far as practicable away from the cutting station while the saw is in operation
 - If you are not clean shaven, then use a powered air respirator with a loose fitting head top
 - Wear safety glasses
 - Wear hearing protection
- ✓ Make sure you clean up BUT never dry sweep. Always hose down with water/wet wipe or use an M Class or higher vacuum

Working Instructions

Hardie™ Blade Saw Blade

The Hardie™ Blade Saw Blade used with a dust-reducing saw is ideal for fast, clean cutting of Hardie™ fibre cement products. A dust-reducing saw uses a dust collector connected to a M Class or higher vacuum. When sawing, clamp a straight edge to the sheet as a guide and run the saw base plate along the straight edge when making the cut.



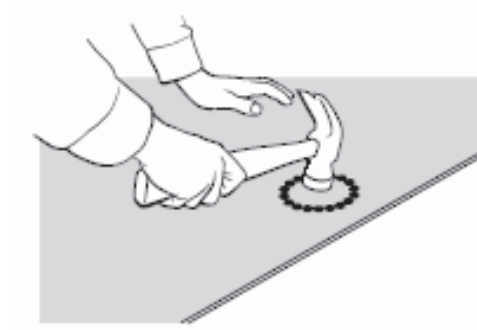
Hole-Forming

For smooth clean cut circular holes:

- Mark the centre of the hole on the sheet
- Pre-drill a 'pilot' hole
- Using the pilot hole as a guide, cut the hole to the appropriate diameter with a hole saw fitted to a heavy duty electric drill

For irregular holes:

- Small rectangular or circular holes can be cut by drilling a series of small holes around the perimeter of the hole then tapping out the waste piece from the sheet face
- Tap carefully to avoid damage to sheets, ensuring that the sheet edges are properly supported



5.1 Storage and Delivery

Keeping products and people safe

Off loading

- ✓ Hardie™ fibre cement products should be off-loaded carefully by hand or by forklift
- ✓ Hardie™ fibre cement products should not be rolled or dumped off a truck during the delivery to the jobsite

Storage

Hardie™ fibre cement products should be stored:

- ✓ In their original packaging
- ✓ Under cover where possible or otherwise protected with a waterproof covering to keep products dry
- ✓ Off the ground – either on a pallet or adequately supported on timber or other spacers
- ✓ Flat so as to minimise bending

Hardie™ fibre cement products must not be stored:

- ✗ Directly on the ground
- ✗ In the open air exposed to the elements

James Hardie is not responsible for damage due to improper storage and handling.

5.2 Tips for safe and easy handling of Axon™ Panel

- ✓ Carry with two people
- ✓ Hold near each end and on edge
- ✓ Exercise care when handling sheet products to avoid damaging the edges/corners

6 Installation

Note: This specification is not for timber cavity battens. Refer to separate technical specification from James Hardie.

6.1 Hardie™ CLD™ Structural Cavity Battens

The Hardie™ CLD™ Structural Cavity Batten must be fixed to the framing as specified in Table 4. A minimum distance of 50mm from the end of the batten must be maintained when fixing the Hardie™ CLD™ Structural Cavity Battens.

6.1.1 Batten Layout

Hardie™ CLD™ Structural Cavity Battens must be fixed to the wall framing over flexible underlay or an E2/AS1 compliant rigid air barrier. The smoother face of batten should face towards the cladding.

For batten fixing, refer to section 6.1. Ensure the battens are straight and provide a flat surface to fix Axon™ Panel to. Site cut ends of battens must be sealed on site with Dulux® Acraprime® 501/1 sealer or Resene® Quick Dry.

The battens are run continuously over the studs but they must not be run continuously over the floor joists. There must be a 15mm gap between the battens at floor joist level to allow for structural shrinkages and deflections. Refer to Figure 29.

Hardie™ CLD™ Structural Cavity Battens can be butt jointed over the studs within the floor height. The batten ends must be cut between 20° to 45° and be installed in a way that the butt joint deflects the moisture to the exterior. The ends must be sealed and jointed with the adhesive sealant before butting them together. Refer to Figure 18.

The smallest section of Hardie™ CLD™ Structural Cavity Battens must be at least 300mm long.

At corners ensure 200mm minimum wide polypropylene or flashing tape is applied to flexible underlay over timber framing prior to Hardie™ CLD™ Structural Cavity Battens installation for protection.

6.1.2 Fasteners

Before starting the panel installation, plan the location of panel joints to suit the house design/elevations.

Table 4

| Hardie™ CLD™ Structural Cavity fixing | | | | |
|---|--------------|---|-------------------------------|---------------------------|
| Fixing Type | Framing | Design Wind Pressures kPa (ULS) | Stud/Batten centres max. (mm) | Fixings centres max. (mm) |
| 65mm x 2.8mm RounDrive ring shank nail hot dip galv./ s.steel | Timber/Steel | Up to 1.5 (Up to and including VH wind zone) | 600 | 250 |
| | | Up to 3.2 | 400 | 200 |

For fastener durability information, refer to Clause 6.2 of this document.

Hardie™ CLD™ Structural Cavity Battens less than 400mm in length must have fixings at maximum 150mm centres.

Battens must be fixed over studs.

6.2 Panels

Axon™ Panel must be kept dry and under cover whilst in storage or during the installation. Every endeavour must be made to keep framing dry once panel fixing commences. All site-cut panel edges must be sealed prior to installation.

- The shi lap jointing of panels is only suitable for vertical fixing of panels.
- Ensure the sheets are from the same batch.
- It is recommended to fix from the centre of the panel and work outwards.
- Do not overdrive fasteners.
- Fixings must be finished flush with the panel surface.
- Do not fix in the groove of Axon™ Panel.
- Minimum sheet width around window/door openings or corners etc. to be 200mm

Fix Axon™ Panel to Hardie™ CLD™ Structural Cavity Battens using one of the following fixings specified in Table 5. The edge distance at panel corner must be minimum 75mm vertically from panel corners. Refer to Figure 3.

Table 5

| Axon™ Panel Fixing | | |
|---|--|--|
| Types of fixing to be used with adhesive sealants | Suitable up to Design Wind Pressures kPa (ULS) | Fixing to Hardie™ CLD™ Structural Cavity Batten centres (mm) |
| C-25 straight 'T'- Head stainless steel brad nail | 3.2kPa (Up to and including VH wind zone) | 150 |

Notes: Nails must be finished flush with panel surface.

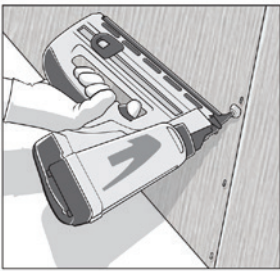
Set up nail gun in accordance with manufacturers instructions.

Use small piece of fibre cement and timber to test nail depth before installation of panels.

For best results, leave nail heads proud and carefully tap flush with a smooth hammer.

Check: If using a pneumatic hose, fit a pneumatic pressure gauge to ensure consistent firing pressure.

When installing Axon™ Panel Brushed Concrete, it is recommended to position the gun nail sideways so the brad nail heads are aligned with the texture pattern.



6.3 Fastener Durability

Fasteners must meet the minimum durability requirements of the NZBC. NZS 3604 specifies the requirements for fixing material to be used in relation to exposure conditions and are summarised in Table 6.

Table 6

| Exposure conditions and nail selection prescribed by NZS 3604 | | |
|---|-------------|-------------------------|
| Zone | Application | |
| D (sea spray) and geothermal hot spots | General | Stainless steel 304/316 |
| | Fire | |
| | Bracing | |
| C and B* | General | Hot dip galvanised ** |
| | Fire | |
| | Bracing | |

* Zone C areas where local knowledge dictates that increased durability is required, appropriate selection shall be made. Microclimate conditions as detailed in the NZS 3604, Paragraph 4.2.4 require SED.

**Hot dip galvanised must comply with AS/NZS 4680.

Also refer to the NZBC Acceptable Solution E2/AS1 Table 20 and 21 for information regarding the selection of suitable fixing materials and their compatibility with other materials.

6.4 Adhesive Sealant

A polyurethane adhesive sealant Seal N' Flex™ - 1 manufactured by Bostik® or SikaFlex® 11FC by Sika® are recommended for use in the installation of these products. Apply a 6mm continuous bead of this adhesive sealant over the face of the Hardie™ CLD™ Structural Cavity Batten before fixing the Axon™ Panel. Refer to Figures 6 to 8.

When using external box corner flashing, use a 10mm thick bead of adhesive over the aluminium box corner flanges. Refer to Figure 10.

Note: Do not use excessive adhesive.

6.5 Framing

Framing to be in accordance with the NZS 3604, or SED. The following must be provided for fixing Axon™ Panel:

- Studs at 600mm centres maximum for all wind speed zones up to and including very high (VH)
- Studs at 400mm centres maximum for wind pressures more than 1.5 kPa (uls)
- Double studs are required at internal corners
- Extra packers may be required at external corners
- Extra studs are required for aluminium internal corner sections

6.5.1 Specific Engineering Design (SED)

For specific engineering design projects the timber framing is required to be designed in accordance with NZS 3603 and AS/NZS 1170. The minimum framing sizes and stud spacing layout must comply with this specification, as listed above.

6.5.2 Gable Ends

In case of gable end trusses sitting on top plates of the external wall frame, the frame size must be in accordance with truss design and specification supplied by the frame and truss manufacturer/supplier supported by independent design producer statement.

6.5.3 Tolerances

In order to achieve an acceptable wall finish, it is imperative that framing is straight and true. Framing tolerances must comply with the requirements of NZS 3604 and the manufacturer's specifications. All framing must be made flush. The visual aspects of the finished cladding can differ between two different sites or the builders installing the product. It is recommended that you also refer to a building guidance document published by MBIE to understand an acceptable level of tolerances allowed in building materials and workmanship. www.building.govt.nz Guide to tolerances, materials and workmanship in new residential construction 2015

6.5.4 T-Head Brad Nails

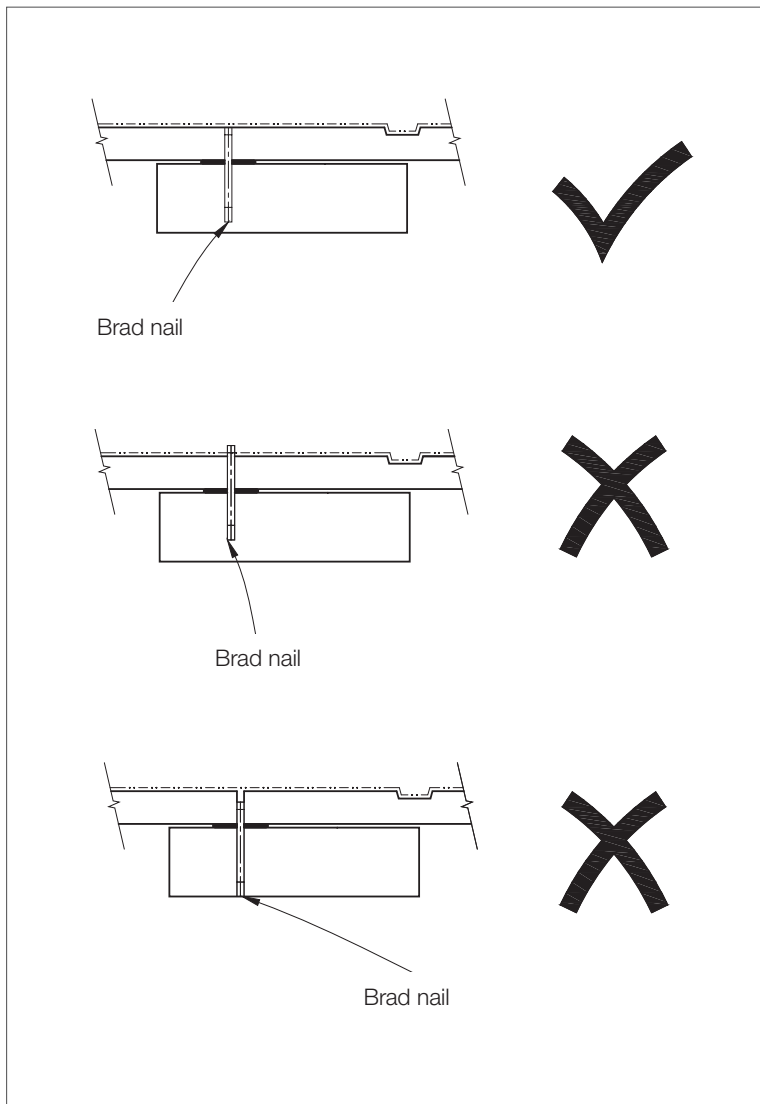
A combination using stainless steel straight T-head brad nail and Bostik® 'Seal N Flex™ -1' or Sika® 'Sikaflex® -11FC' adhesive sealant method of panel installation minimises the preparation required before painting the panels. T-head brad nails are fixed using a brad nail gun.

Apply a 6mm thick continuous bead of Bostik® 'Seal N Flex™ -1' or Sika® 'Sikaflex® -11FC' adhesive sealant to the face of the Hardie™ CLD™ Structural Cavity Batten first, then fix the panel with T-head brad nails, securing the panel in place while the adhesive cures. A good practice is to set the brad nail gun to fire nails 2-3mm proud of the panel surface,

keeping a consistent pressure on the panel while fixing. Let the adhesive cure for approximately 1-2 hours, whilst continuing work on the next section. Come back later and hammer the nails flush with the panel surface. Use Paslode® C-25 304 stainless steel brad nails.

The edge distance required for fixing T-head brad nails is 18mm from the underlap edge and 16mm from the overlap edge. Refer to Figure 6.

Note: Do not use this fixing method in specific engineering design (SED) wind zones.



6.6 Flexible Underlay or HomeRAB™ Pre-Cladding

Flexible underlay or HomeRAB™ Pre-Cladding must be provided as per the requirements of the NZBC Acceptable Solution E2/AS1 'External Moisture' and NZS 3604. The flexible underlay must comply with Table 23 of E2/AS1 and AS/NZS 4200.1. The flexible underlay must be fixed in accordance with E2/AS1, NZS 3604 and AS/NZS 4200.2 and the underlay manufacturer's recommendations.

Walls which are not lined on the inside face (e.g. garage walls or gable ends) must include a rigid sheathing or an air barrier behind the cladding which complies with the requirements of the NZBC Acceptable Solution E2/AS1 Table 23. For attached garages, flexible underlays must be selected in accordance with the NZBC Acceptable Solution E2/AS1, paragraph 9.1 3.4. HomeRAB™ Pre-Cladding is suitable for use in these applications. It must be installed in accordance with the HomeRAB™ Pre-Cladding/RAB™ Board installation manual.

6.7 Intermediate Support

Where studs are at 600mm centres an intermediate means of restraining the flexible underlay and insulation from bulging into the cavity shall be installed. An acceptable method to achieve this is using a:

- 75mm galvanised mesh; or
- polypropylene tape at 300mm centres fixed horizontally and drawn taut.

No intermediate supports are required:

- when studs are spaced at 400mm centres; or
- when a rigid air barrier instead of flexible underlays are used.

6.8 RAB™ Board or a Rigid Air Barrier

In EH wind zone or for specific design wind zone, a rigid air barrier eg RAB™ Board, must be used instead of flexible underlay. For building heights over 10m, RAB™ Board by James Hardie must be used.

To achieve the temporary weathertightness using pre-cladding products from James Hardie, windows/doors must be installed with required flashing tapes and seals etc. Refer to HomeRAB™ Pre-Cladding/RAB™ Board installation manual for information regarding its installation and requirements to achieve temporary weathertightness. For other rigid air barriers please refer to that manufacturers technical specification.

6.9 Vent Strip

The Hardie™ uPVC cavity vent strip must be installed at the bottom of all walls constructed using the drained and ventilated cavity construction method. It is important that the openings in the vent strip are kept clear and unobstructed to allow free drainage and ventilation of cavities. Hardie™ uPVC vent strip has an opening area of 1000mm²/m length.

6.10 Jointing

Axon™ Panels are fixed to form a shiplap joint at vertical edges. The panels have factory-made edges to suit this jointing.

6.10.1 Vertical Joint

Fix the Hardie™ CLD™ Structural Cavity Batten over the studs. Refer to Figures 2 and 3. The vertical shiplap joint is formed along the centre line of the batten. A bead of continuous sealant is applied to the vertical edge of the Axon™ Panel to seal the shiplap joint before fixing the panels. Refer to Figures 6 and 7. The edge distance for a brad nail must be 16mm and 18mm. Refer to Figures 6 and 7.

6.10.2 Horizontal Joint

At floor joist levels a horizontal joint must be provided to accommodate the movement resulting from timber joist shrinkage and settlement. A Hardie™ 9mm panel aluminium horizontal 'h' mould or a Hardie™ 9mm panel aluminium horizontal angle 't' flashing is used to form a horizontal joint. Use the aluminium 'h' mould / 't' flashing joiner to cover over the butt joint of flashing. A purpose made metal 'Z' flashing could also be used to flash the horizontal joint. Refer to Figures 29 - 38.

6.10.3 Horizontal Drainage Joint

The wall cavities must be drained every two floors to facilitate moisture drainage and ventilation. Refer to Figure 45.

6.10.4 External Corner

A Hardie™ 9mm panel aluminium radius/invert box corner mould is used to form the external corner. The site-cut sheet edges must be sealed before butting them into the box corner. Refer to Figures 10 and 11.

On a two storey construction the aluminium box corner is finished under the aluminium flashing. A Hardie™ 9mm aluminium 'h' mould external corner must be used over the corner when in this situation. Refer to Figure 32.

The bead of adhesive must be 10mm thick to accommodate for the thickness of the aluminium.

Alternatively, on a two storey construction the aluminium corner is finished under the aluminium 't' flashing. A Hardie™ 9mm aluminium 't' external corner must be used over the corner when in this situation. Refer to Figure 37.

Alternatively, the corner can extend up corner and have horizontal flashings butting into corner mould.

6.10.5 Internal Corner

For Hardie™ CLD™ Structural Cavity Batten internal corner joint the Hardie™ 9mm aluminium internal corner must go to bottom of the panel. Refer to Figure 9.

6.10.6 Flashing Material Durability

Please refer to Table 20 of E2/AS1 of the NZBC regarding the durability requirements of various flashing materials.

6.11 Junctions and Penetrations

Refer to Clause 2.5 of this specification for moisture management requirements. All windows and doors must be detailed as per the requirements of this specification. James Hardie has developed the window details for Axon™ Panel which meet the requirements of E2 'External Moisture', an approved document of the NZBC. Refer to Figures 22 to 28.

6.12 Board and Batten Look

In order to achieve a board and batten look, Hardie™ Axent™ Trim can be fixed vertically over the panel surface.

The trims can be placed to suit the project's aesthetic requirements. However, we recommend the trim spacing @ 200mm centres minimum maintained between the trims. For any closer spacing of trims, Ask James Hardie™ on 0800 808 868 for assistance.

Refer to Figures 12 - 17 for information.

7 Finishing

7.1 Preparation

Painting of Axon™ Panel is mandatory to meet the durability requirements of the NZBC and 15 year James Hardie product warranties. Axon™ Panel must be dry and free of any dust or grime before painting. The panels must be painted within 90 days of their installation. There is no restriction on the LRV of paint to be applied on the Axon™ Panel.

All exposed faces, including the top edges under the sills and bottom edges of Axon™ Panel, Hardie™ Axent™ Trim and accessories must be finished with an exterior paint system. Dark paints can be used when using the aluminium flashings.

Panels are pre-primed and are suitable for site applied acrylic paints. Axon™ Panel Grooved and Smooth is an unsanded fibre cement sheet.

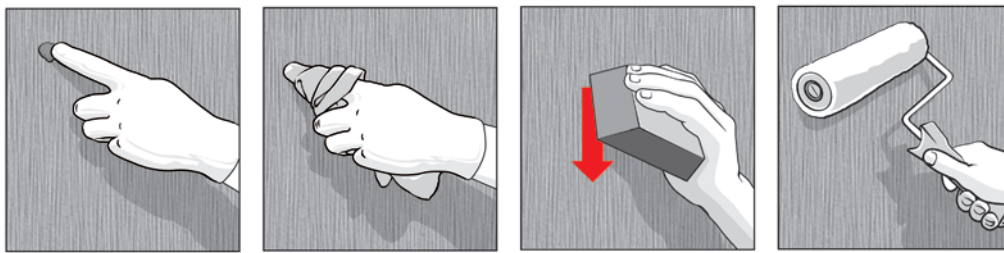
In order to seal cut edges or sanded patches, Dulux® 1 Step, Resene® quick dry, Taubmans® Underproof Acrylic Primer Undercoat or a similar product should be applied. The primer should be compatible with the paint to be used.

Where panels are fixed with brad nails, the nail heads must be finished flush with panel surface. The nail gun should be set to nail "proud" of the panel surface and nail heads to be manually finished flush with surface. Any nail heads that get

slightly below the surface (1 mm max) can be skimmed over with an exterior grade 2 part builders fill, if required. The skimmed area must be primed prior to site-applied finishing.

When filling over a nail head in Axon™ Panel Brushed Concrete, the following process can be followed.

1. Wearing appropriate gloves, place filling compound on finger and wipe over nail hole.
2. If there is excess of filling compound around the nail head, gently wipe away with a moist sponge or cloth before the compound sets.
3. Only when patching Axon™ Panel Brushed Concrete, any compound excess can be removed using a 120 grit angled sanding sponge in a vertical motion. When required, a folded piece of 120 grit sanding paper can be used for finer detailing in the valley areas of the panel.



For site applied paint finishes, James Hardie recommends an undercoat and a minimum of two coats of acrylic paint. Follow the paint manufacturer's recommendations to prepare the surface.

For best aesthetic results, a low sheen paint is recommended.

7.2 Coating

7.2.1 Paint

Axon™ Panel are supplied pre-primed.

Panels must be painted within 90 days of installation. Use only quality exterior paints complying with AS 3730.

Manufacturer's specification for the selected paint must be followed.

7.2.2 Staining - Only for Axon™ Panel 133mm Grooved with grained finish

Stains containing linseed oil are specifically designed for wood and may not be suitable for fibre cement cladding products, primed or unprimed. Semi-transparent stains can vary in uniformity of appearance depending on method of application and conditions, requiring a high level of skill and craftsmanship to achieve a uniform appearance. Clear coats have not proven durable in exterior exposure and James Hardie considers them a maintenance item that may require application of a refurbishing sealer at regular intervals. James Hardie does not warrant the appearance and durability of the use of semi-transparent stains and clear coats.

For further information contact the stain manufacturers. Refer to Section 12 for stain manufacturer details.

7.2.3 Roll on Texture - Only for Axon™ Panel Smooth

Axon™ Panel Smooth can be finished with rolled on texture acrylic texture coatings. Panels are supplied pre-primed and are ready for acrylic textures to be applied directly to it. Acrylic texture products are available in a range of textures that vary from fine finish to rough texture for a fast application on site. Refer to Dulux® or other similar texture coating suppliers for further information.

7.2.4 Jointing and Texture Coating - Only for Axon™ Panel Smooth

A full mesh jointing and texture coating systems must comply with EM4 requirements of the NZBC Acceptable Solutions 'E2/AS1'. The Light Reflectance Value (LRV) for coatings to be used with Axon™ Panel Smooth cladding must be minimum 40% or higher. Proprietary flashing systems supplied by the texture coating supplier/applicator are

acceptable when installed as per their technical specifications.

7.2.5 Axon™ Panel Brushed Concrete Finishing Requirements

Exterior acrylic flat paint. A nap roller of 12mm or greater is recommended for optimal finish. For best results, use low-sheen or matt finish exterior paints in natural colours.

7.3 Flexible Sealant

All sealants used must comply with the relevant requirements of the NZBC. Their application and usage must be in accordance with manufacturer's instructions. Check with sealant manufacturer prior to coating over sealants. Some sealant manufacturers do not recommend coating over their products.

8 Care and Maintenance

The extent and nature of maintenance will depend on the geographical location and exposure of the building. As a guide, it is recommended that basic normal maintenance tasks shall include but not be limited to:

- Washing down exterior surfaces every 6-12 months using low pressure water and a brush, and every 3-4 months in extreme coastal conditions or sea spray zones. Refer to your paint manufacturer for wash down requirements and do not use a water blaster to wash down the cladding.
- Re-applying of exterior protective finishes if necessary. Always refer to your paint manufacturer for re-coating requirements.
- Maintaining the exterior envelope and connections including joints, penetrations, flashings and sealants that may provide a means of moisture entry beyond the exterior cladding.
- Cleaning out gutters, blocked pipes and overflows as required
- Pruning back vegetation that is close to or touching the building
- The clearance between the bottom edge of Axon™ Panel and the finished ground must always be maintained.

9 Details Section Index

The following generic details have been provided in this document for both direct fixed and cavity construction methods.

Table 7

| Description | Page |
|---|------|
| Figure 1: Framing setout | 27 |
| Figure 2: Batten fixing setout | 28 |
| Figure 3: Sheet fixing setout | 29 |
| Figure 4: Insulated Foundation detail | 30 |
| Figure 5: Enclosed deck | 31 |
| Figure 6: Axon™ Panel grooved shiplap joint | 32 |
| Figure 7: Axon™ Panel textured shiplap joint | 33 |
| Figure 8: Intermediate stud fixing | 34 |
| Figure 9: Hardie™ 9mm Aluminium internal corner | 35 |
| Figure 10: External Corner - Box | 36 |
| Figure 11: External Corner - Invert | 36 |
| Figure 12: Hardie™ Axent™ Trim at joint | 37 |
| Figure 13: Hardie™ Axent™ Trim 70 and 89mm at intermediate stud | 38 |
| Figure 14: Hardie™ Axent™ Trim 45mm at intermediate stud | 39 |
| Figure 15: Hardie™ Axent™ Trim fixing | 40 |
| Figure 16: Hardie™ Axent™ Trim at internal corner | 41 |
| Figure 17: Hardie™ Axent™ Trim at external Corner | 42 |
| Figure 18: Jointing of Hardie™ CLD™ Structural Cavity Batten | 43 |
| Figure 19: Vertical sealant joint | 44 |
| Figure 20: Soffit detail | 45 |
| Figure 21: Nil soffit detail | 46 |
| Figure 22: Window head | 47 |
| Figure 23: Window sill | 48 |
| Figure 24: Window jamb | 49 |
| Figure 25: Window jamb with scribe | 50 |
| Figure 26: Window head with facing | 51 |
| Figure 27: Window sill with planted sill | 52 |
| Figure 28: Window and door jamb with facing | 53 |
| Figure 29: Horizontal joint at floor joist | 54 |
| Figure 30: Horizontal joint in tall wall | 55 |
| Figure 31: Aluminium 'h' mould joiner | 56 |
| Figure 32: External corner at 'h' mould joint detail | 57 |
| Figure 33: Internal corner at 'h' mould joint detail | 58 |
| Figure 34: Angle 'T' socket joint at floor joist | 59 |
| Figure 35: Horizontal joint in tall wall | 60 |
| Figure 36: Angle 'T' horizontal joiner | 61 |
| Figure 37: Angle 'T' external corner at 'T' mould joint | 62 |
| Figure 38: Internal corner at angle 'T' socket joint detail | 63 |
| Figure 39: Joining moulding | 64 |
| Figure 40: Cavity pipe penetration | 65 |
| Figure 41: 'h' mould joint at window head | 66 |

| | |
|--|----|
| Figure 42: Angle 'T' socket at window head | 67 |
| Figure 43: Horizontal flashing at window head | 68 |
| Figure 44: Angle 'T' socket butting window jamb | 69 |
| Figure 45: Drained flashing joint at floor joist | 70 |
| Figure 46: One piece apron flashing joint | 71 |
| Figure 47: Enclosed deck balustrade to wall junction - Aluminium internal corner | 72 |
| Figure 48: Enclosed deck ballustrade to wall junction | 73 |
| Figure 49: Parapet flashing | 74 |
| Figure 50: Garage door jamb | 75 |
| Figure 51: Garage door head | 76 |
| Figure 52: Junction between panel and fascia board | 77 |
| Figure 53: Enclosed roof to wall intersection | 78 |
| Figure 54: Cavity batten layout for heights over 10m | 79 |
| Figure 55: Cavity fire barrier for heights over 10m | 80 |

Figure 1: Framing setout

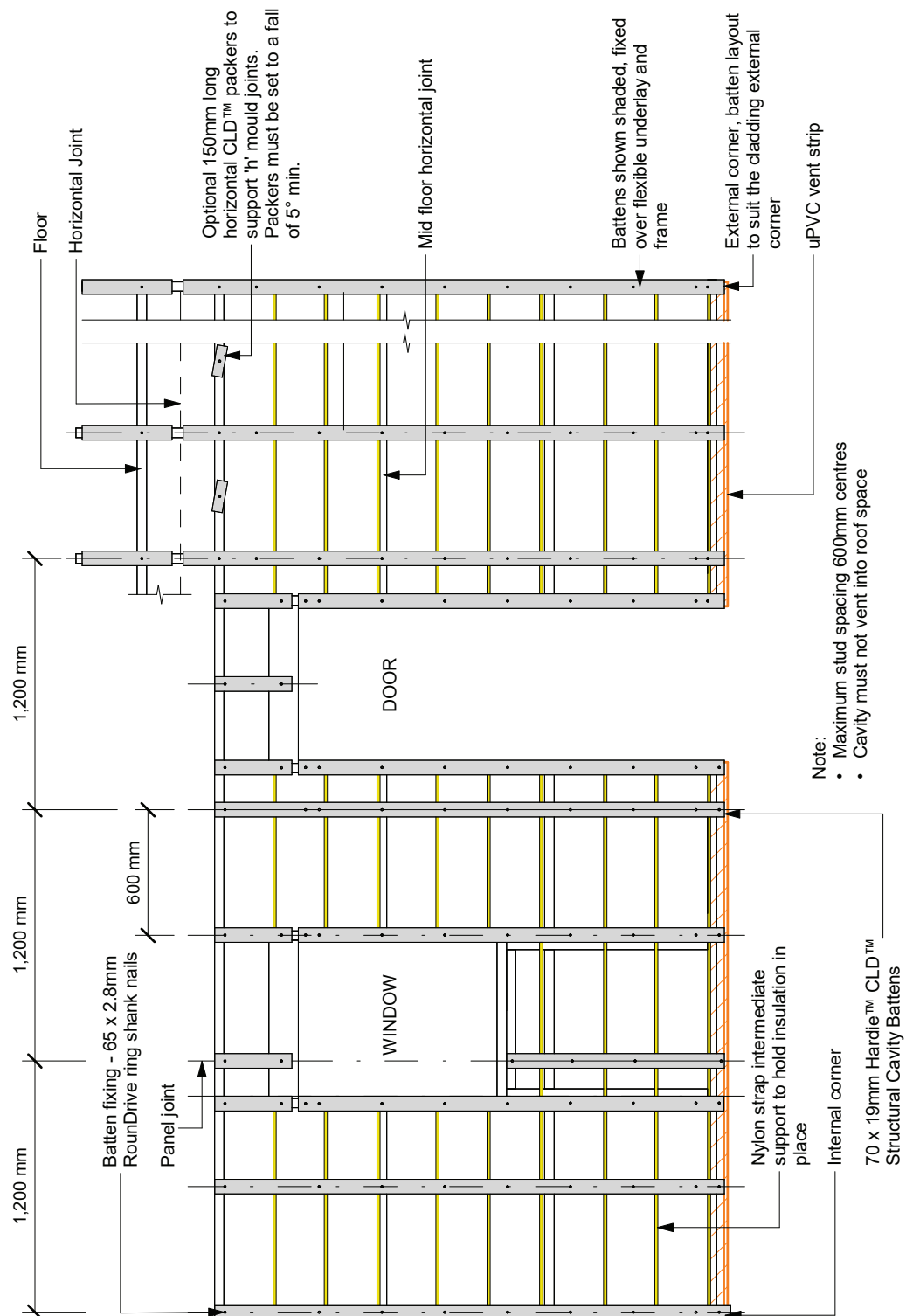
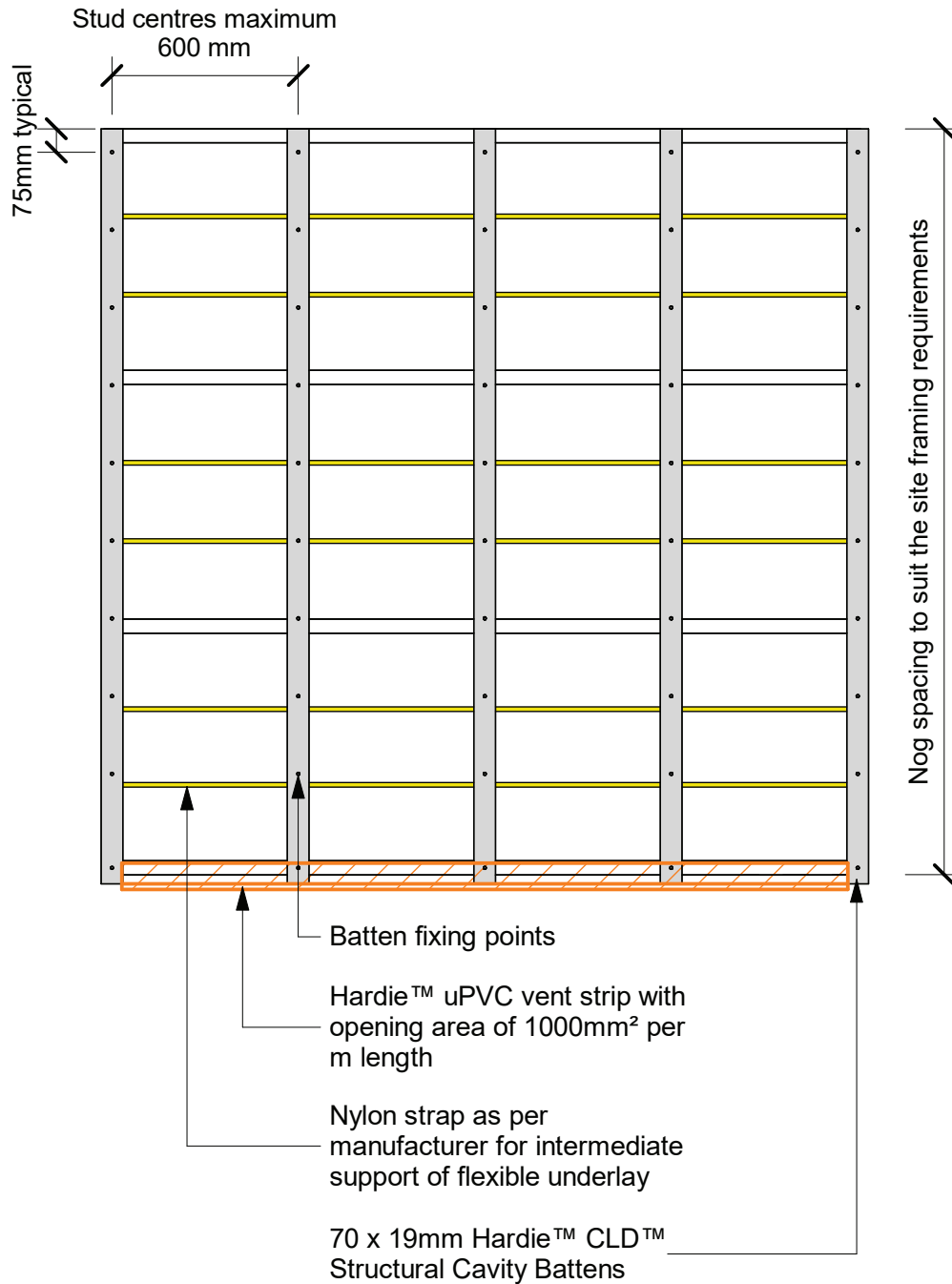


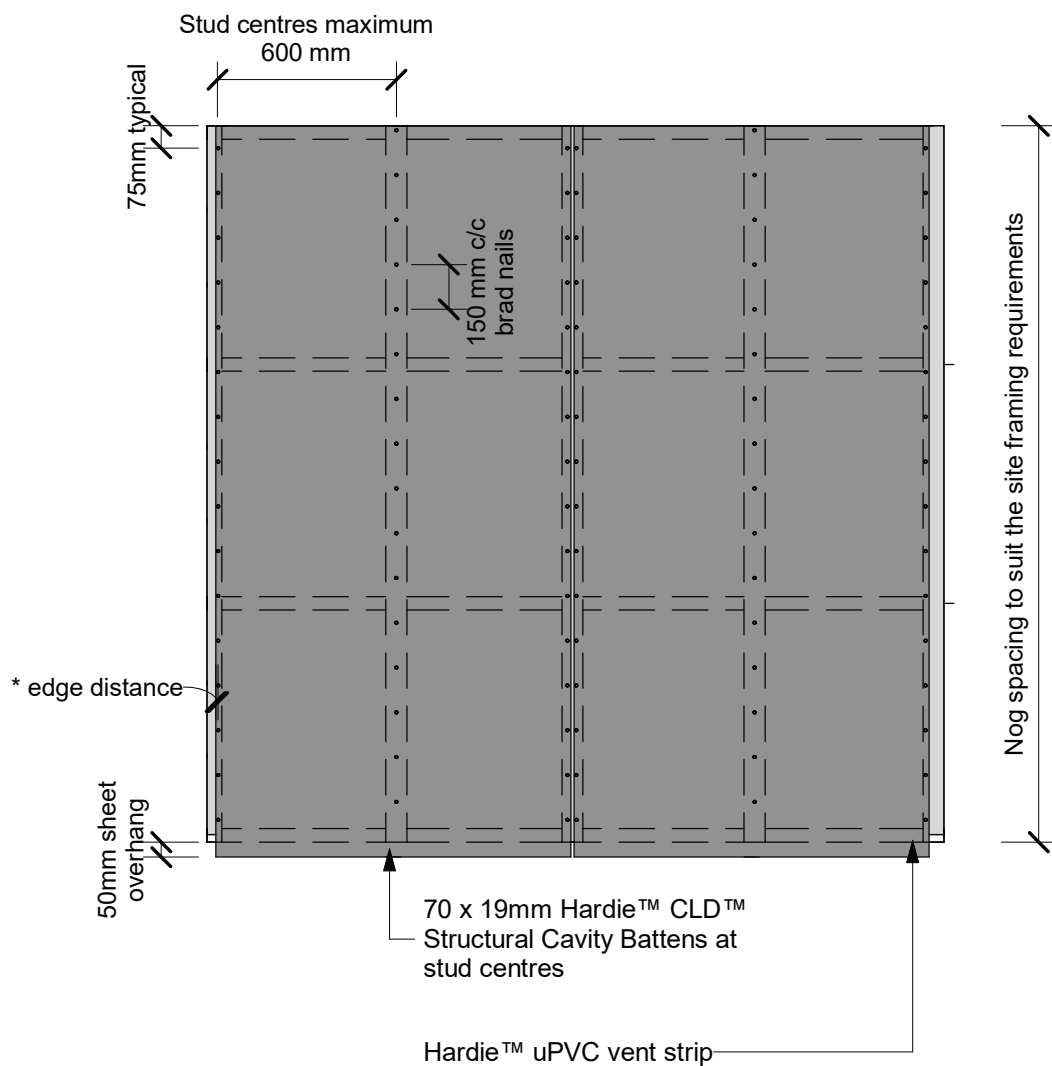
Figure 2: Batten fixing setout



Note

- For fire rated wall systems by James Hardie RAB Board must be used and nog spacing must be 800mm centres maximum

Figure 3: Sheet fixing setout

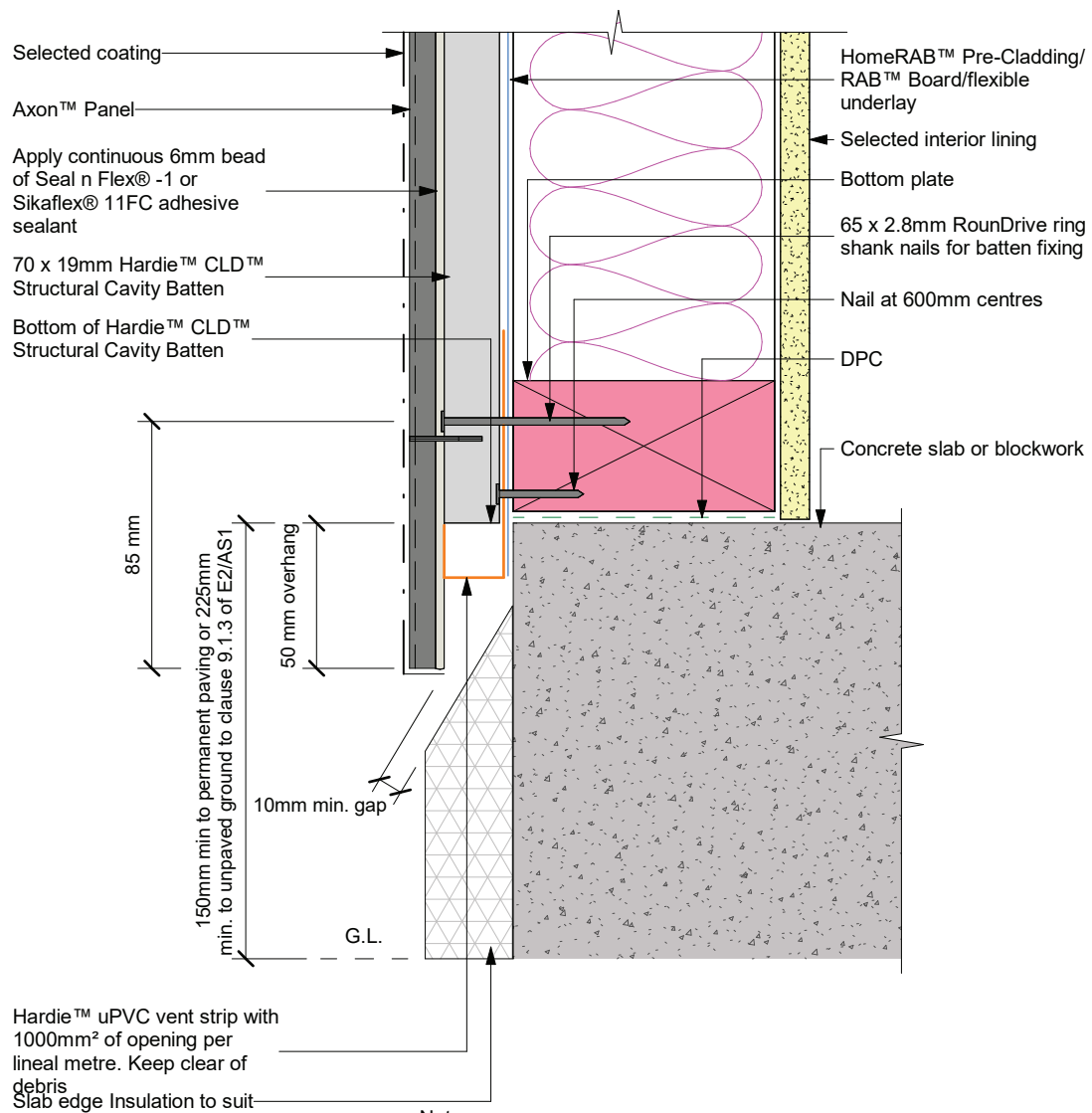


* Follow edge distance as per figure 6 and 7

Note:

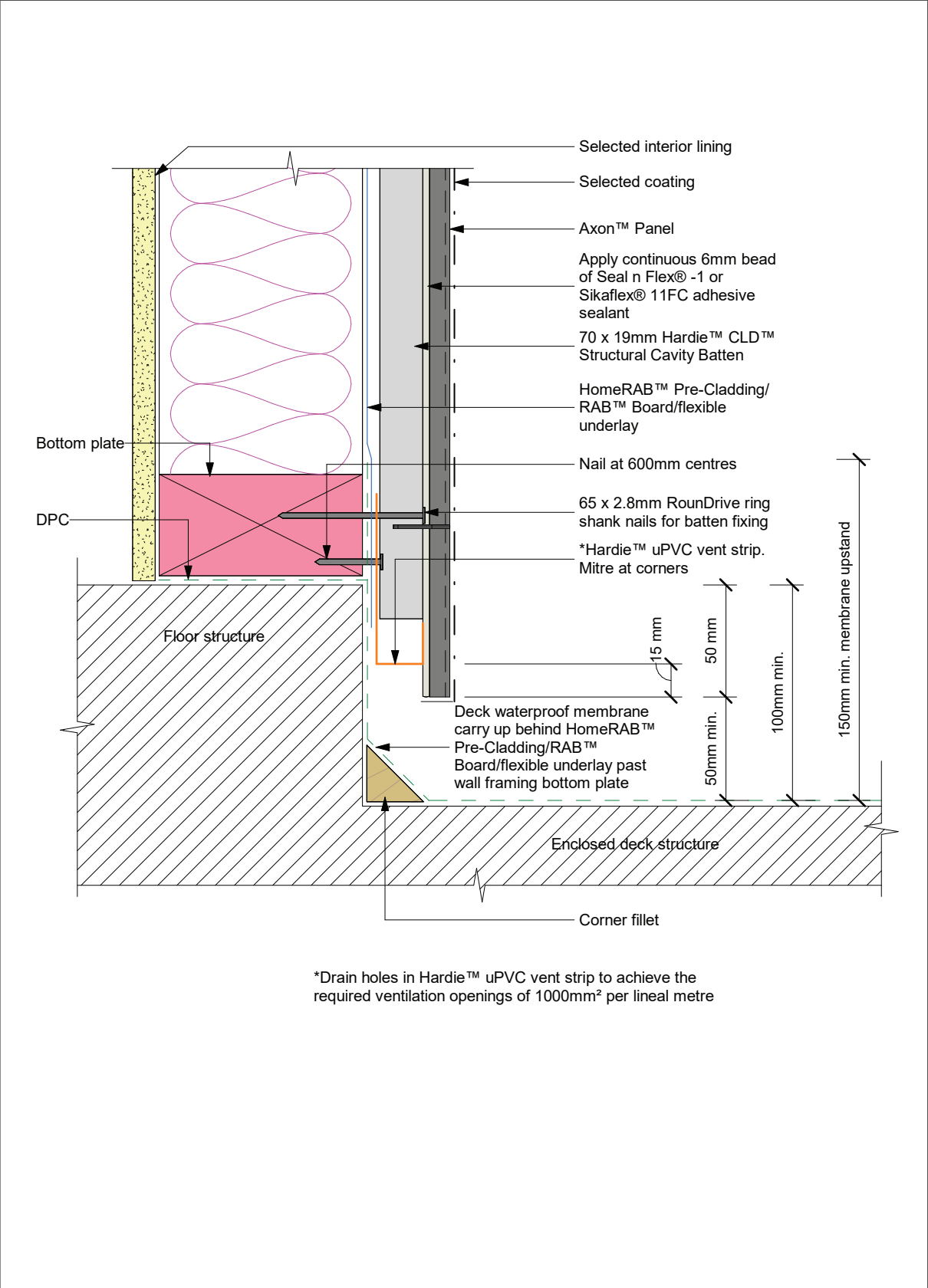
- When studs spaced at 400mm centres using Axon™ Panel Grooved 400, the nail fixings to intermediate studs to be offset 5mm from the groove in Panel.
- For fire rated wall systems by James Hardie RAB Board must be used and nog spacing must be 800mm centres maximum

Figure 4: Insulated Foundation detail



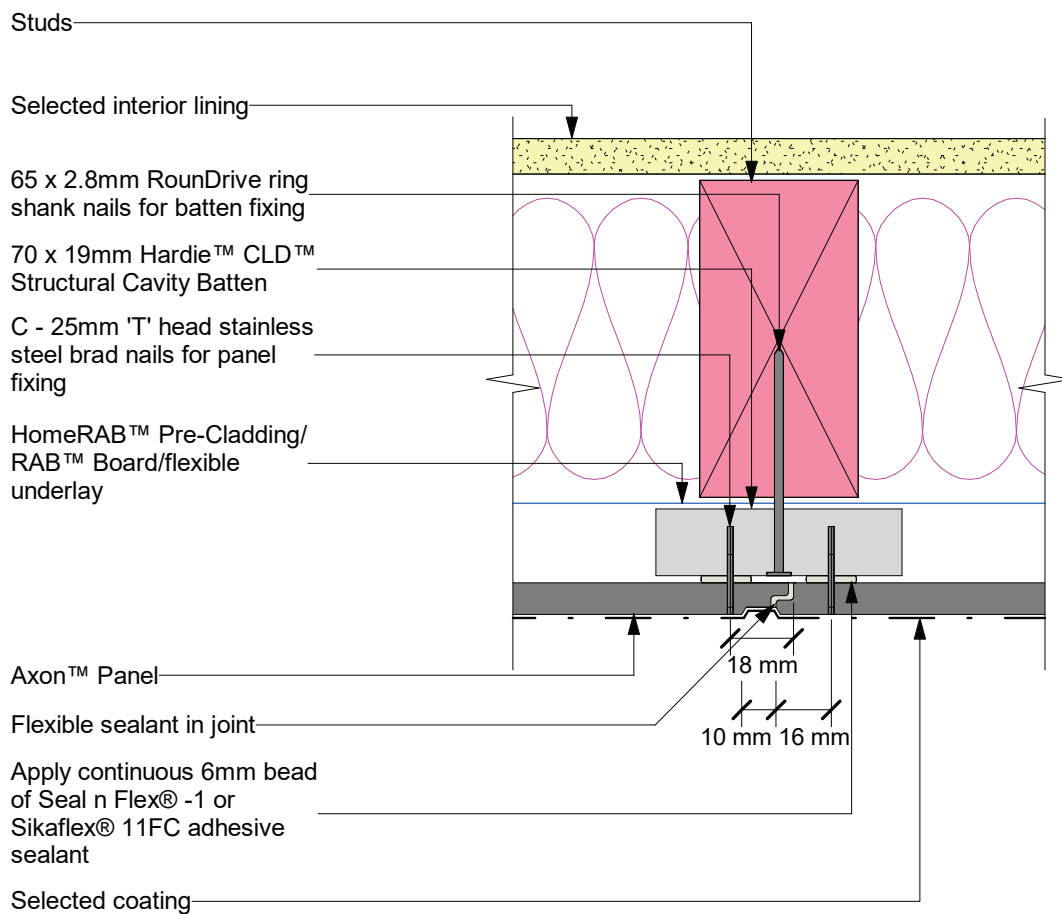
- Note:
- Site cut edges to be primed
 - For uninsulated slab refer to jameshardie.co.nz

Figure 5: Enclosed deck



*Drain holes in Hardie™ uPVC vent strip to achieve the required ventilation openings of 1000mm² per lineal metre

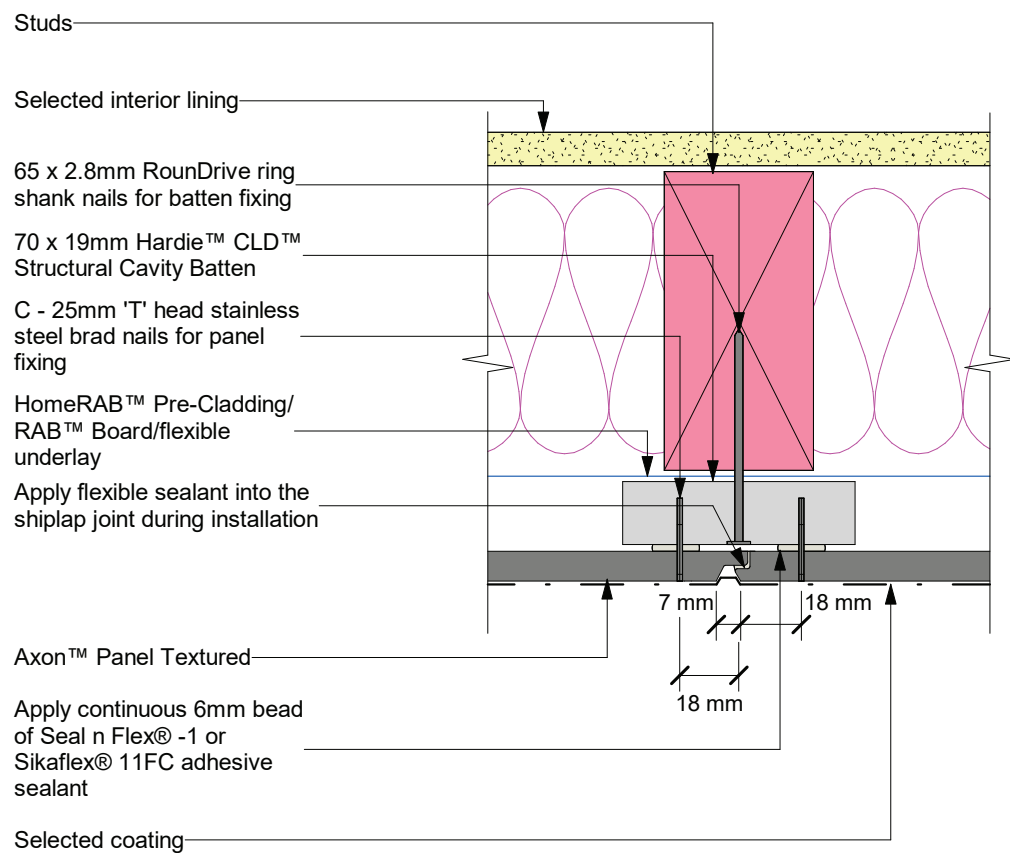
Figure 6: Axon™ Panel grooved shiplap joint



Note:

- * Ensure that a continuous 6mm bead of adhesive sealant is applied between Hardie™ CLD™ Structural Cavity Batten and Axon™ Panel.
- * Ensure that the required edge distance is maintained when fixing.
- * Seal cut edges with a primer compatible with final coatings.

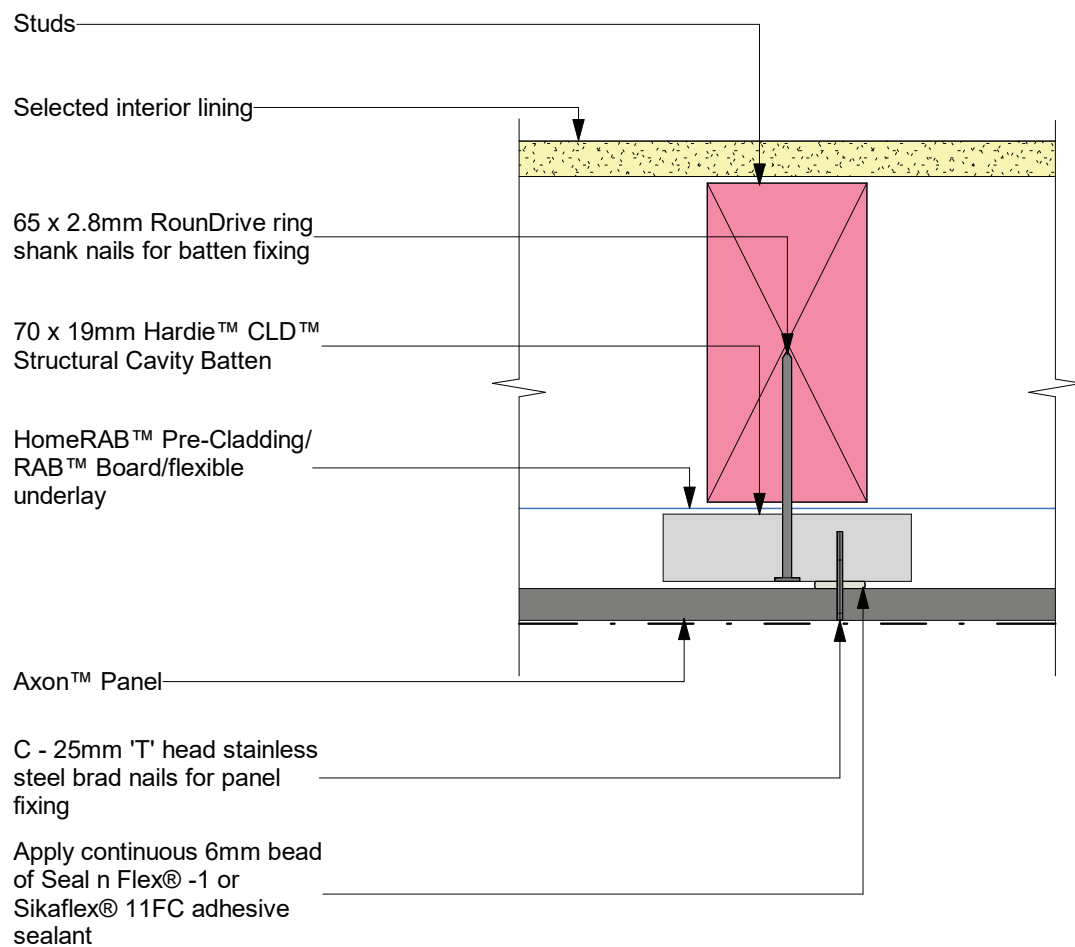
Figure 7: Axon™ Panel textured shiplap joint



Note: Notes:

- * Ensure that a continuous 6mm bead of adhesive sealant is applied between Hardie™ CLD™ Structural Cavity Batten and Axon™ Panel.
- * Ensure that the required edge distance is maintained when fixing.
- * Seal cut edges with a primer compatible with final coatings.

Figure 8: Intermediate stud fixing



Note:

* Fix panel from the middle of the panel outwards.

Figure 9: Hardie™ 9mm Aluminium internal corner

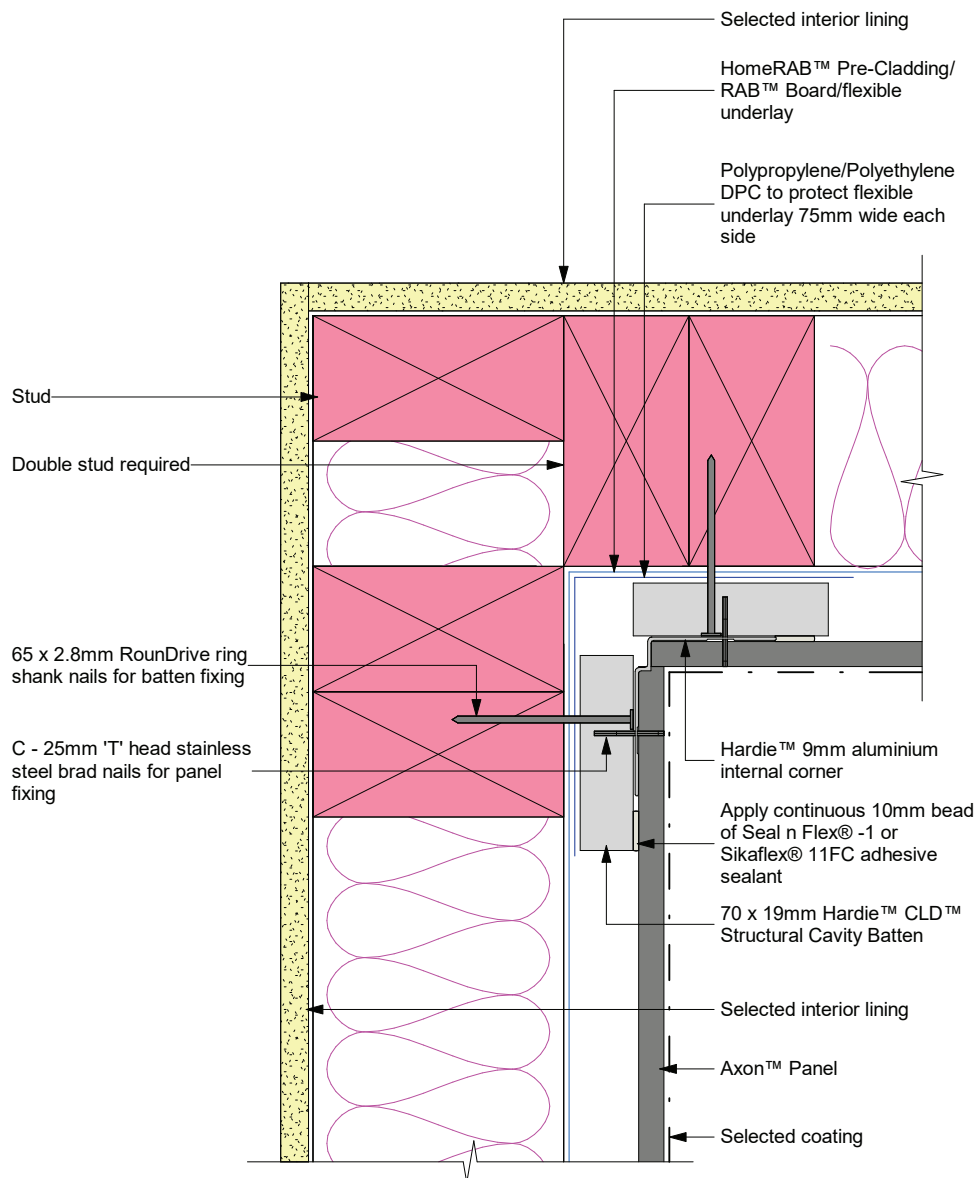


Figure 10: External Corner - Radius

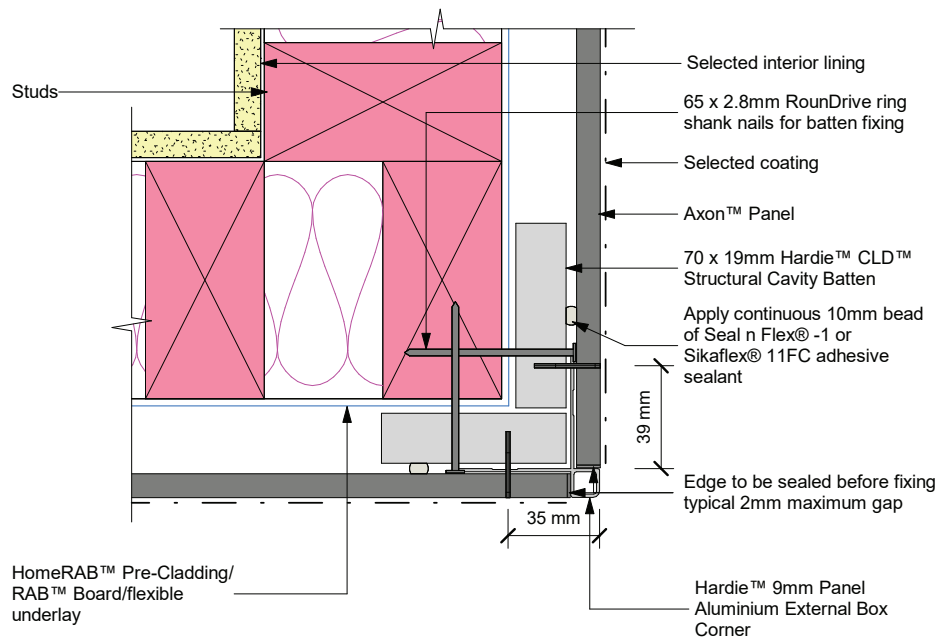


Figure 11: External Corner - Invert

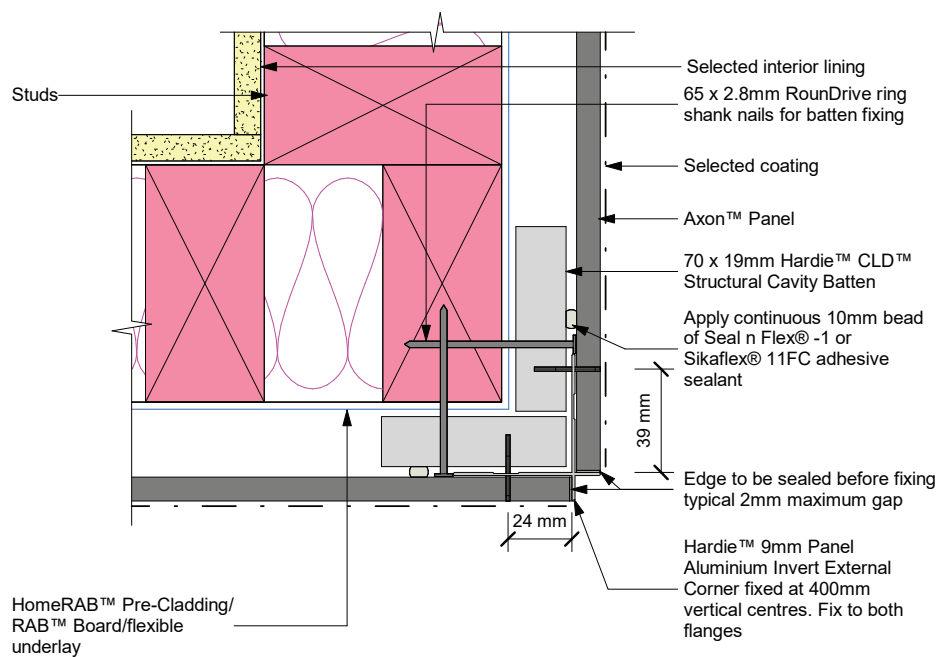
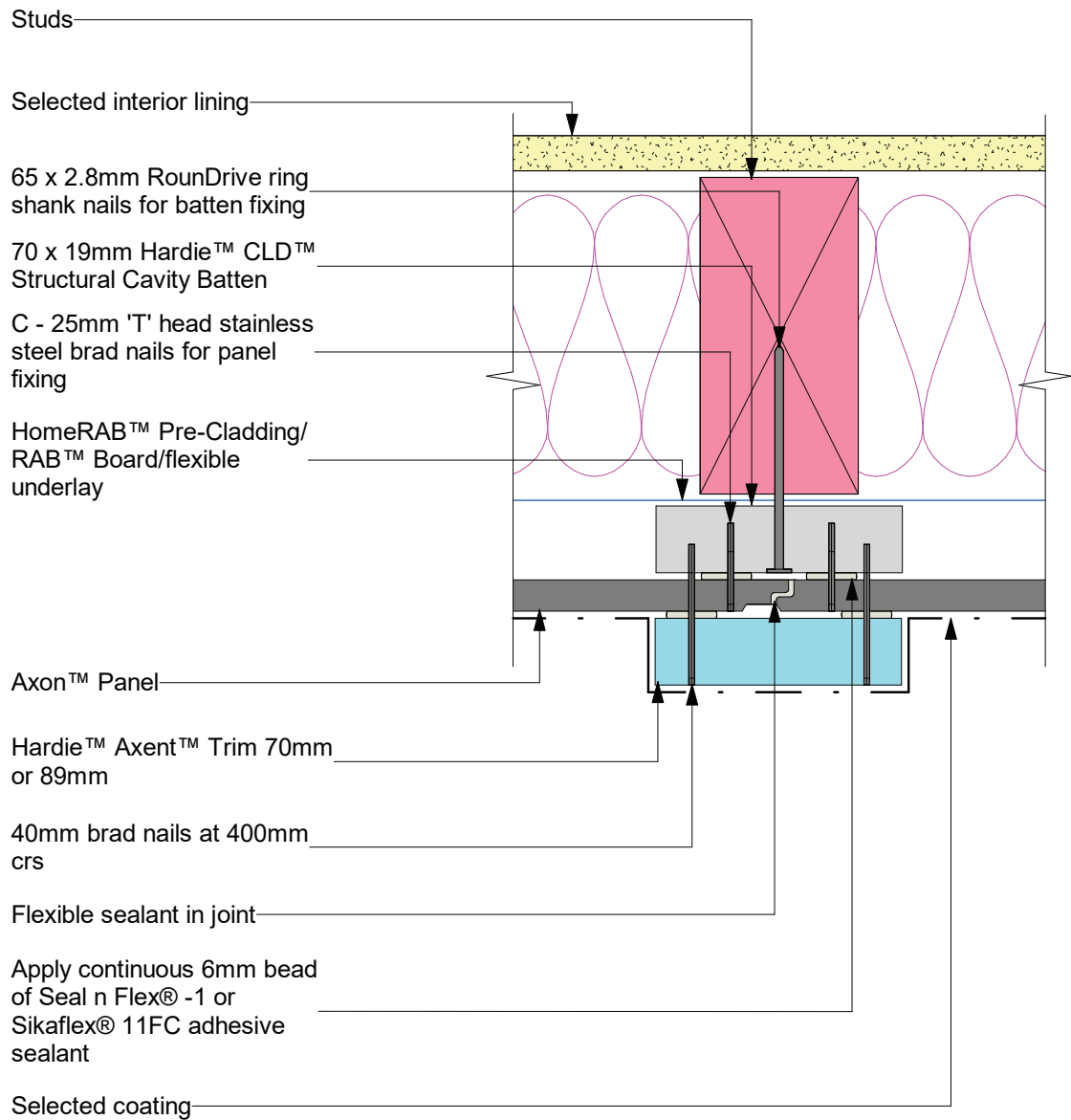


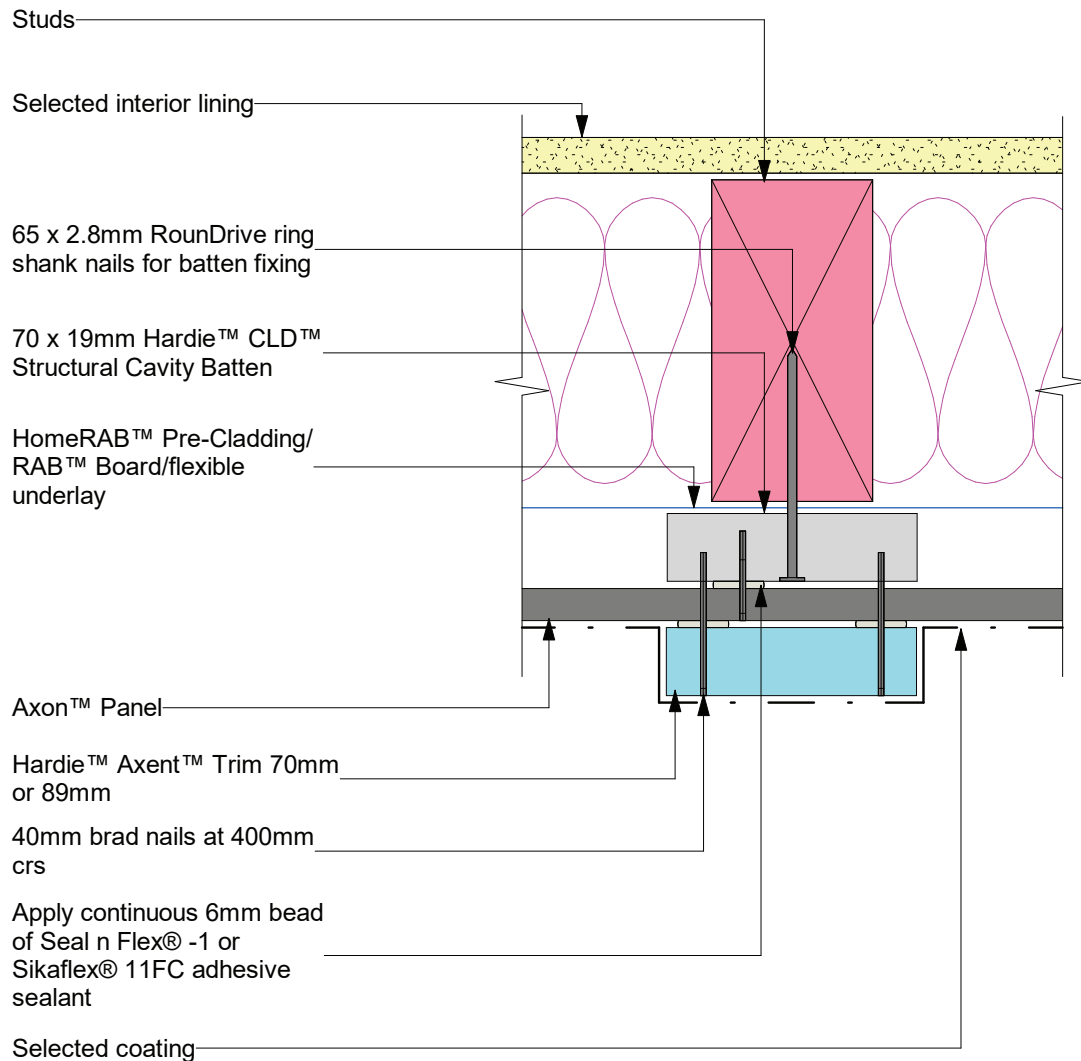
Figure 12: Hardie™ Axent™ Trim at joint



Note:

- * Ensure that a continuous 6mm bead of adhesive sealant is applied between Hardie™ CLD™ Structural Cavity Batten and Axon™ Panel.
- * Ensure that the required edge distance is maintained when fixing.
- * Seal cut edges with a primer compatible with final coatings.

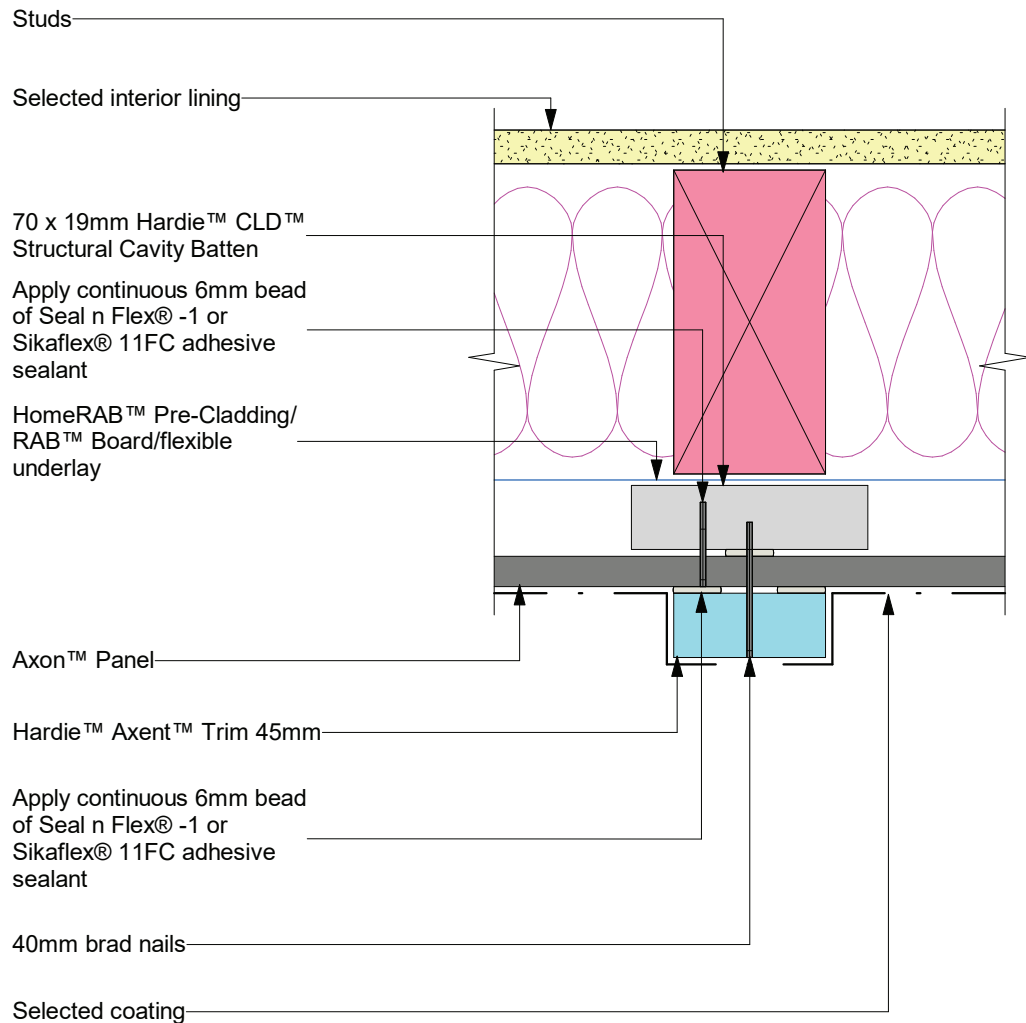
Figure 13: Hardie™ Axent™ Trim 70 and 89mm at intermediate stud



Note:

- * Ensure that a continuous 6mm bead of adhesive sealant is applied between CLD™ Structural Cavity Batten and Axon™ Panel.
- * Ensure that the required edge distance is maintained when fixing.
- * Seal cut edges with a primer compatible with final coatings.

Figure 14: Hardie™ Axent™ Trim 45mm at intermediate stud



Note:

- * Ensure that the required edge distance is maintained when fixing.
- * Seal cut edges with a primer compatible with final coatings.

Figure 15: Hardie™ Axent™ Trim fixing

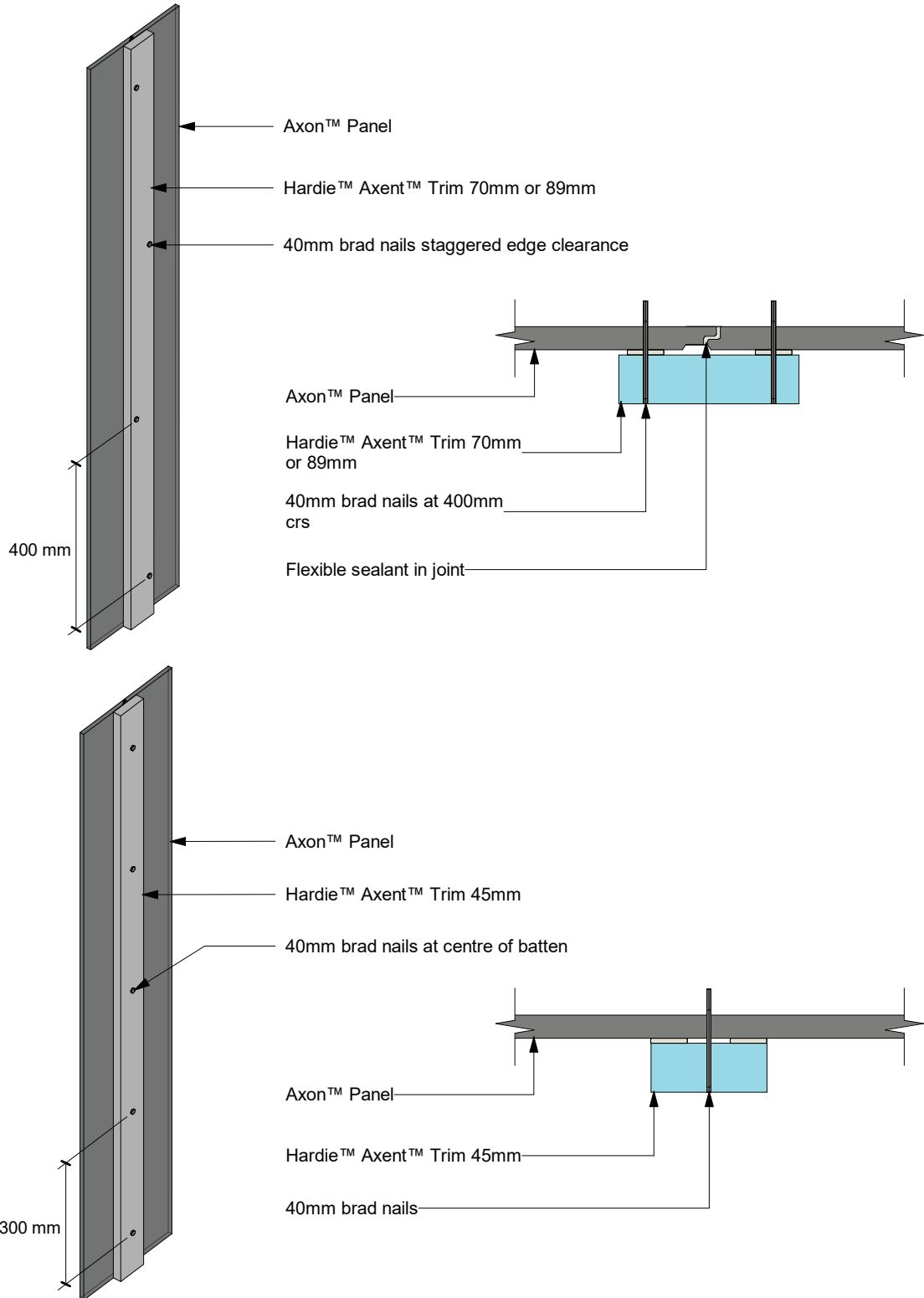


Figure 16: Hardie™ Axent™ Trim at internal corner

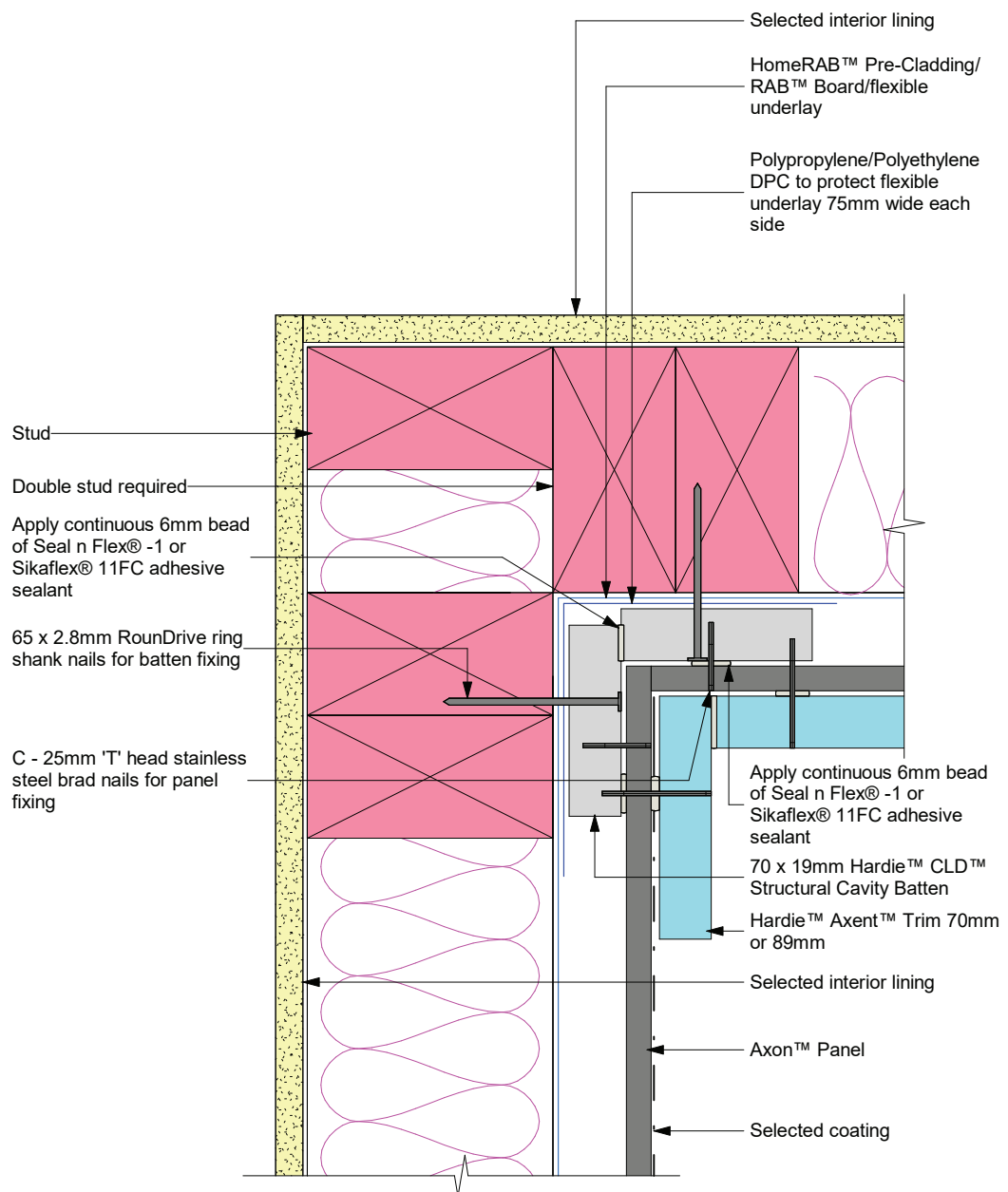


Figure 17: Hardie™ Axent™ Trim at external Corner

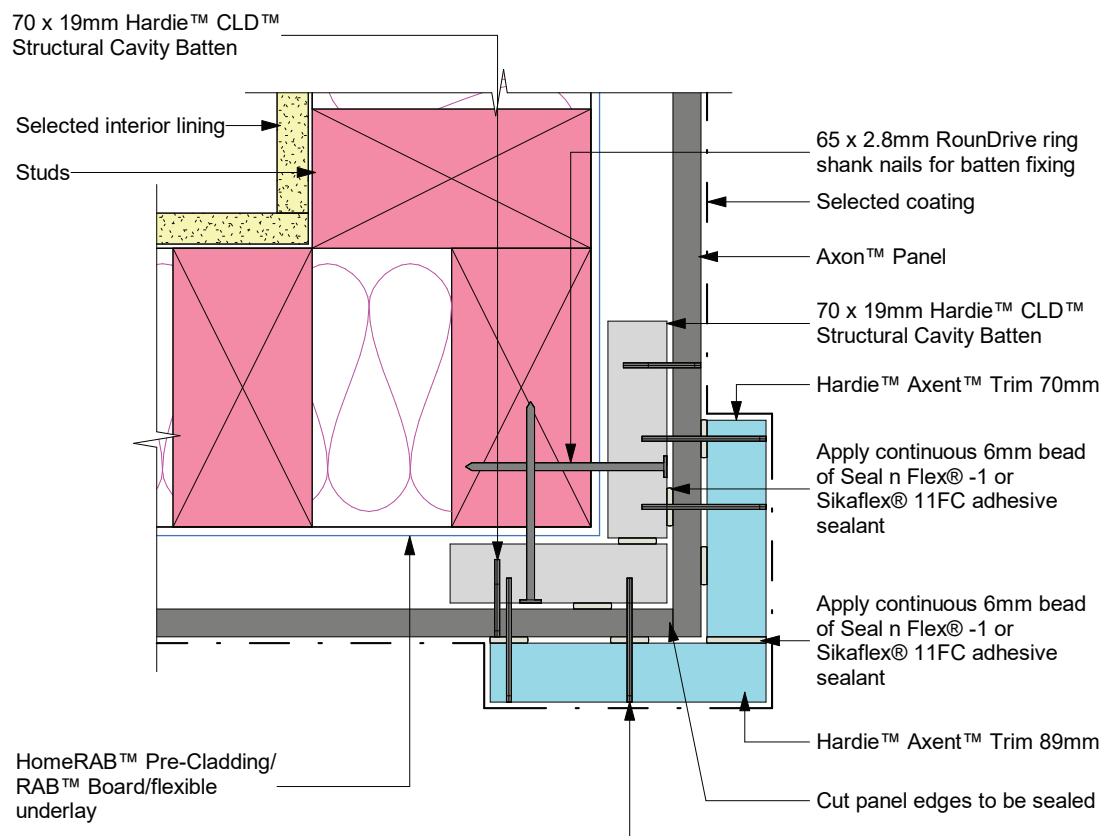


Figure 18: Jointing of Hardie™ CLD™ Structural Cavity Batten

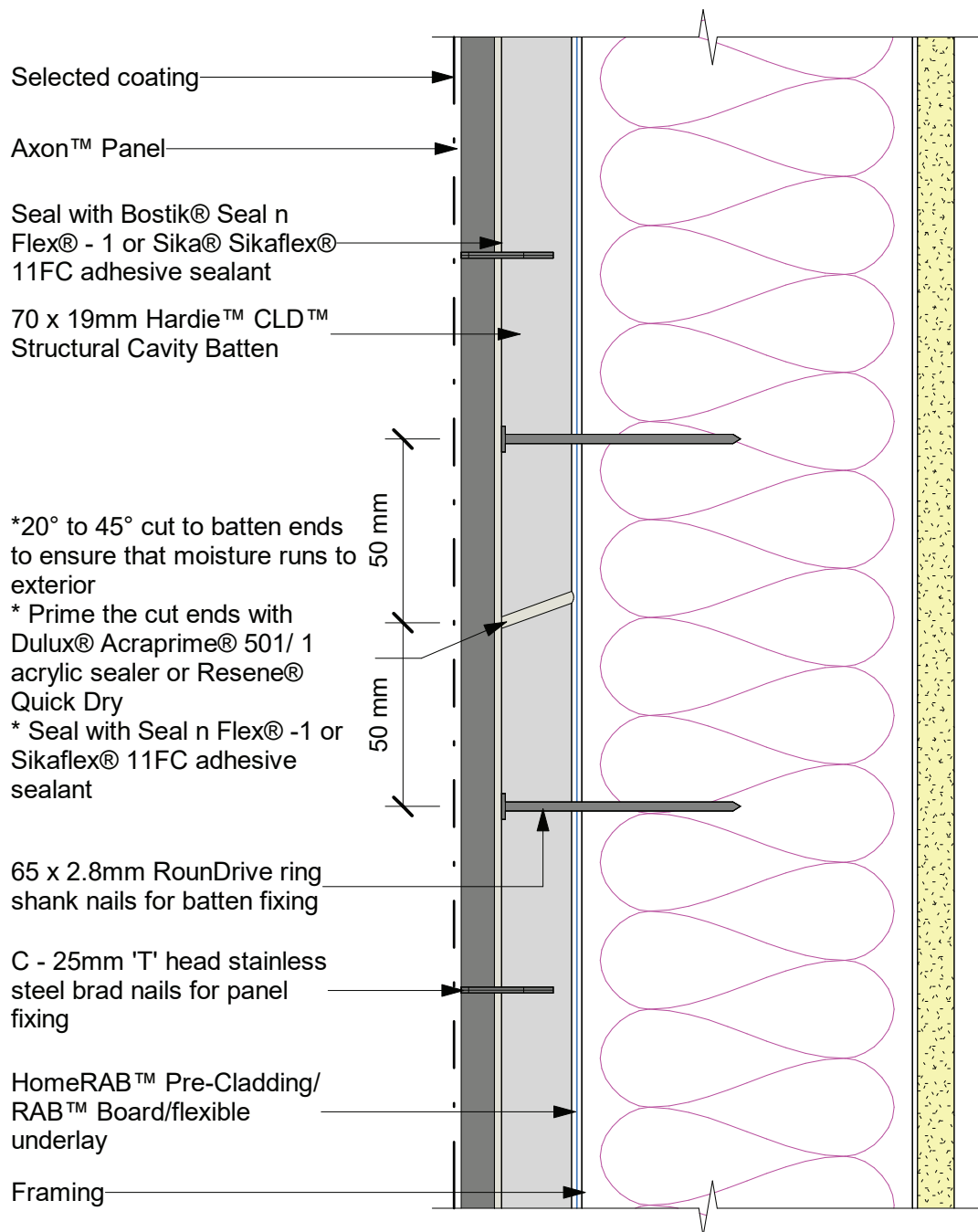
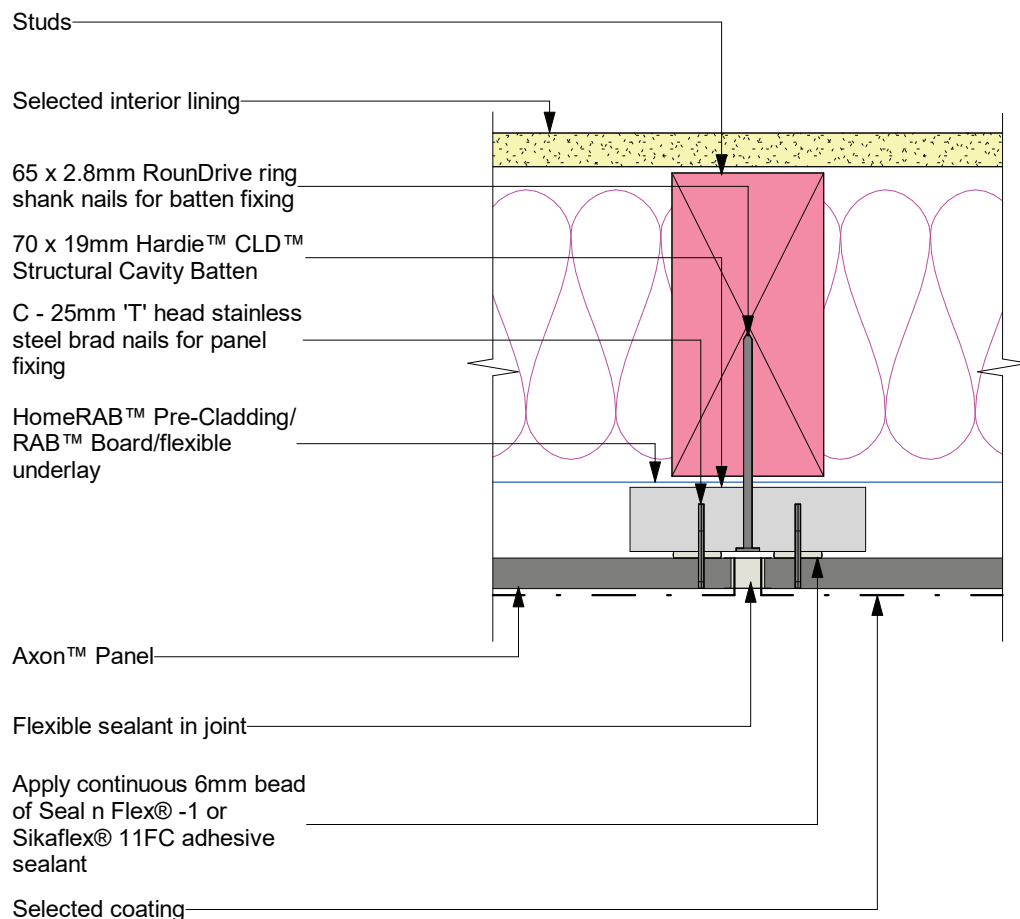


Figure 19: Vertical sealant joint

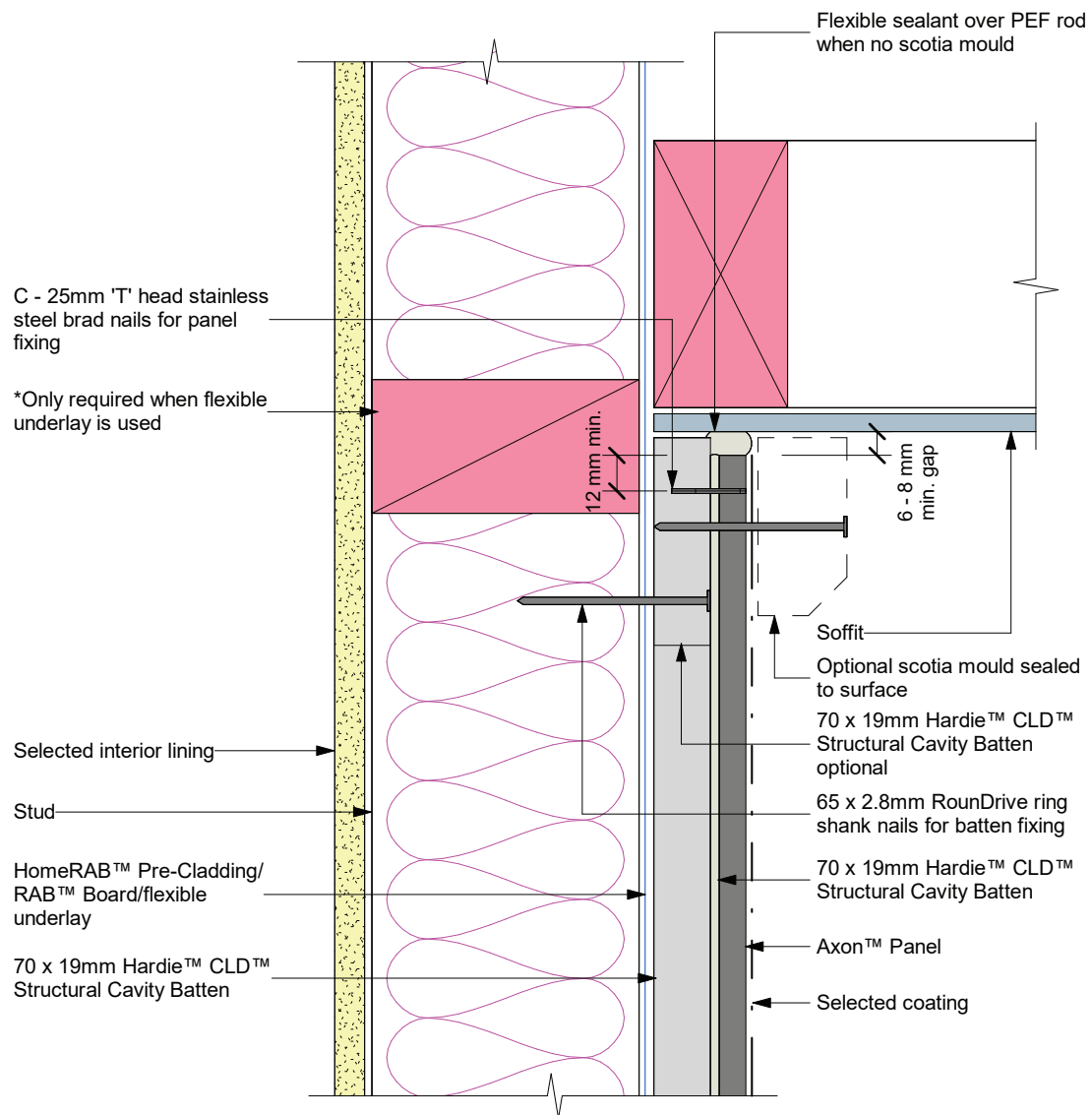


Note:

- * Ensure that a continuous 6mm bead of adhesive sealant is applied between Hardie™ CLD™ Structural Cavity Batten and Axon™ Panel.
- * Ensure that the required edge distance is maintained when fixing.
- * Seal cut edges with a primer compatible with final coatings.
- * Push panel hard against Hardie™ CLD™ Structural Cavity Batten.

For use ONLY where manufactured edge jointing not possible for build ie small window in full sheet

Figure 20: Soffit detail



Note: Site cut edges to be primed.
Ensure cavity does not vent into roof space. Refer to E2/AS1 clause 9.1.8.2.

Figure 21: Nil soffit detail

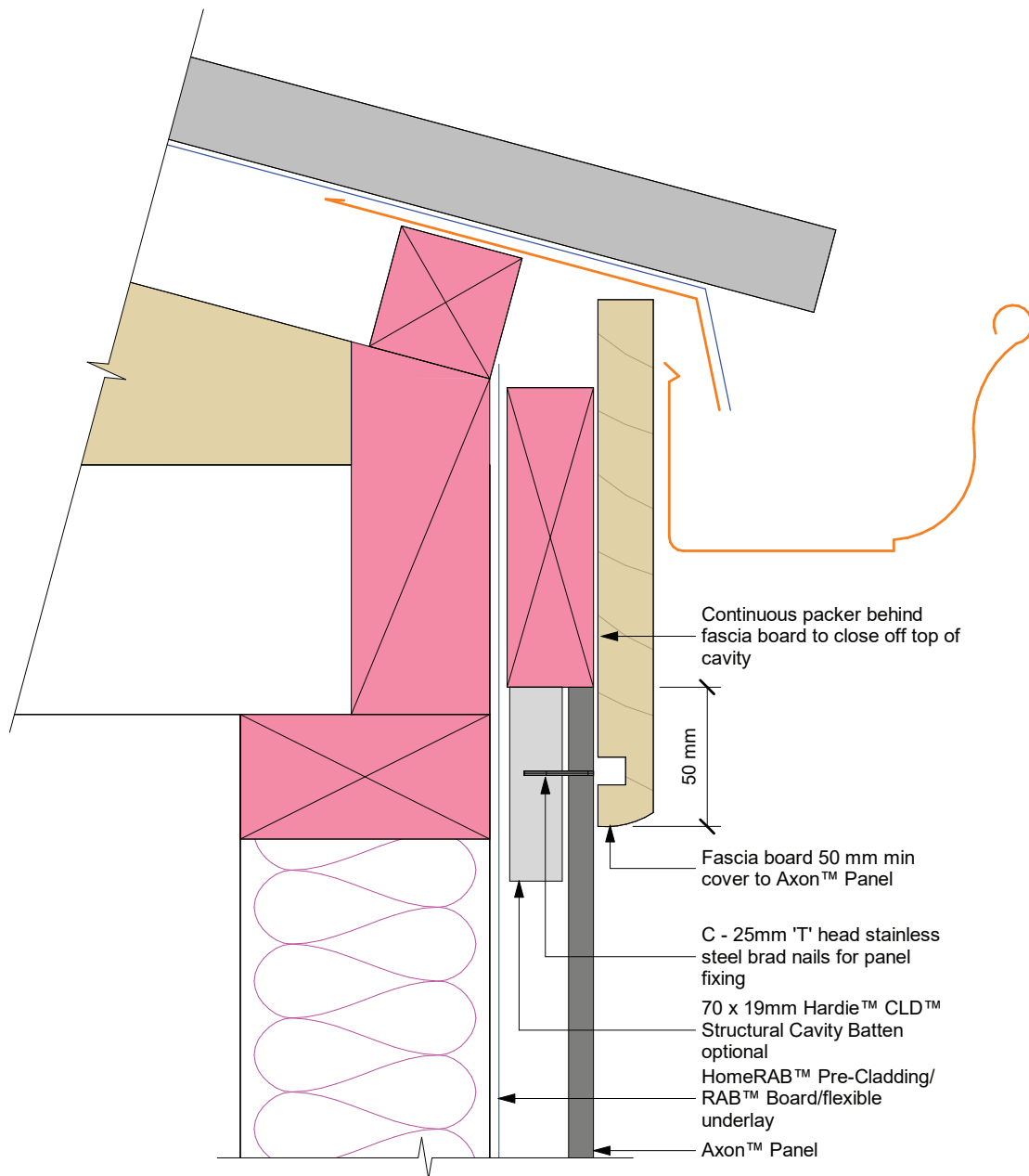


Figure 22: Window head

interactive assembly
instructions available

<http://wksp.nz/jh-axn-win>



Get WORKINGSPEC from
Apple App Store/Google Play

Apply continuous 6mm bead
of Seal n Flex® -1 or
Sikaflex® 11FC adhesive
sealant

70 x 19mm Hardie™ CLD™
Structural Cavity Batten

Selected coating

Axon™ Panel

Proprietary tape or
alternatively additional layer of
flexible underlay over head
flashing

65 x 2.8mm RoundDrive ring
shank nails for batten fixing

One piece head flashing

C - 25mm 'T' head stainless
steel brad nails for panel
fixing

Hardie™ uPVC vent strip

Stop end to head flashing
behind the cladding or butt
the ends against CLD™
Structural Cavity Batten
and seal the joint

Window frame (refer to
window manufacturer for
method of support and fixing)

Flashing tape over flexible
underlay required in corners
only

HomeRAB™ Pre-Cladding/
RAB™ Board/flexible
underlay

Selected interior lining

5 mm
10mm min.

15 mm
*25 mm

8 mm gap nominal to allow
for head deflection and airseal

Window liner

Watertight airseal as per
E2/AS1 section 9.1.6

Temporary packers if required
are to be removed after fixing

Note:

- * When HomeRAB™ Pre-Cladding/RAB™ Board is used flashing tape to be applied to the entire window opening.
- * Also refer to Figure 116 NZBC clause E2/AS1 for head and jamb details
- * Sealant must be applied between head flashing and window flange VH and EH wind zones and SED wind pressures

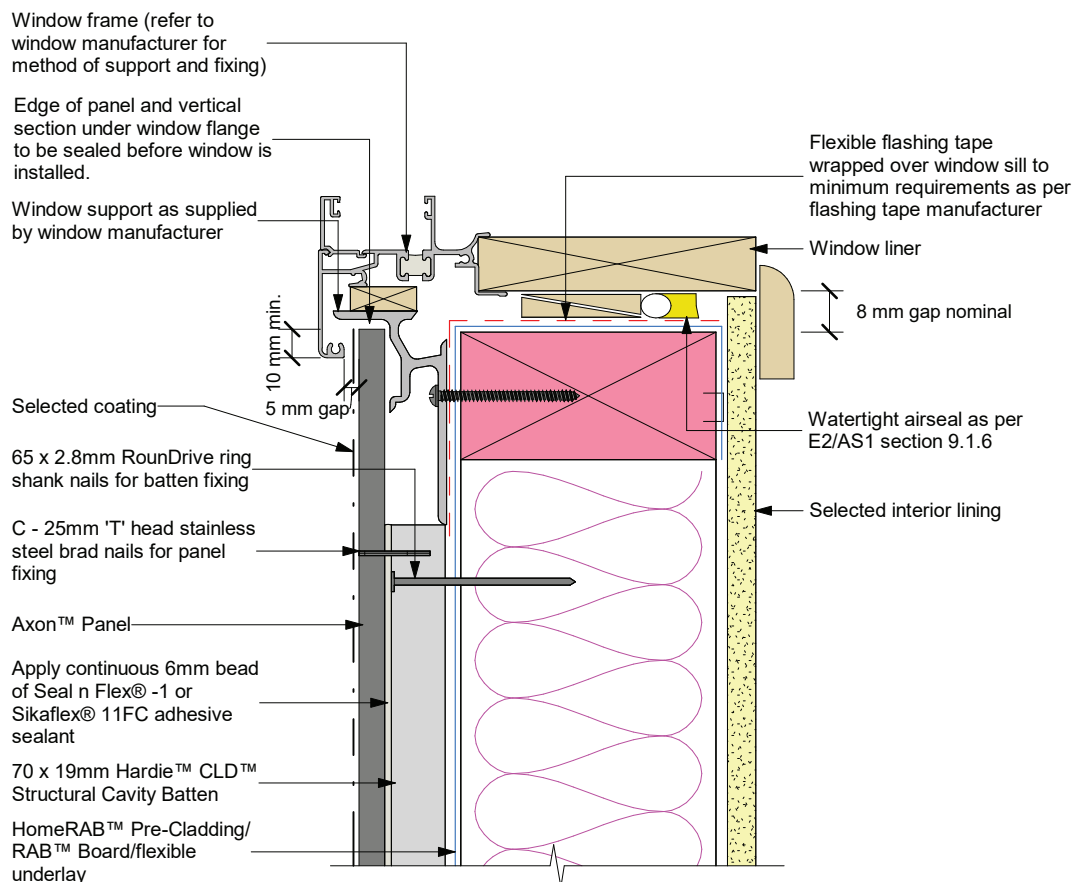
Figure 23: Window sill

interactive assembly
instructions available

<http://wksp.nz/jh-axn-win>



Get **WORKINGSPEC** from
Apple App Store/Google Play



General notes for materials selection

- * Flexible underlay must comply with acceptable solution E2/AS1.
- * Flashing tape must have proven compatibility with the selected flexible underlay and other materials with which it comes into contact.

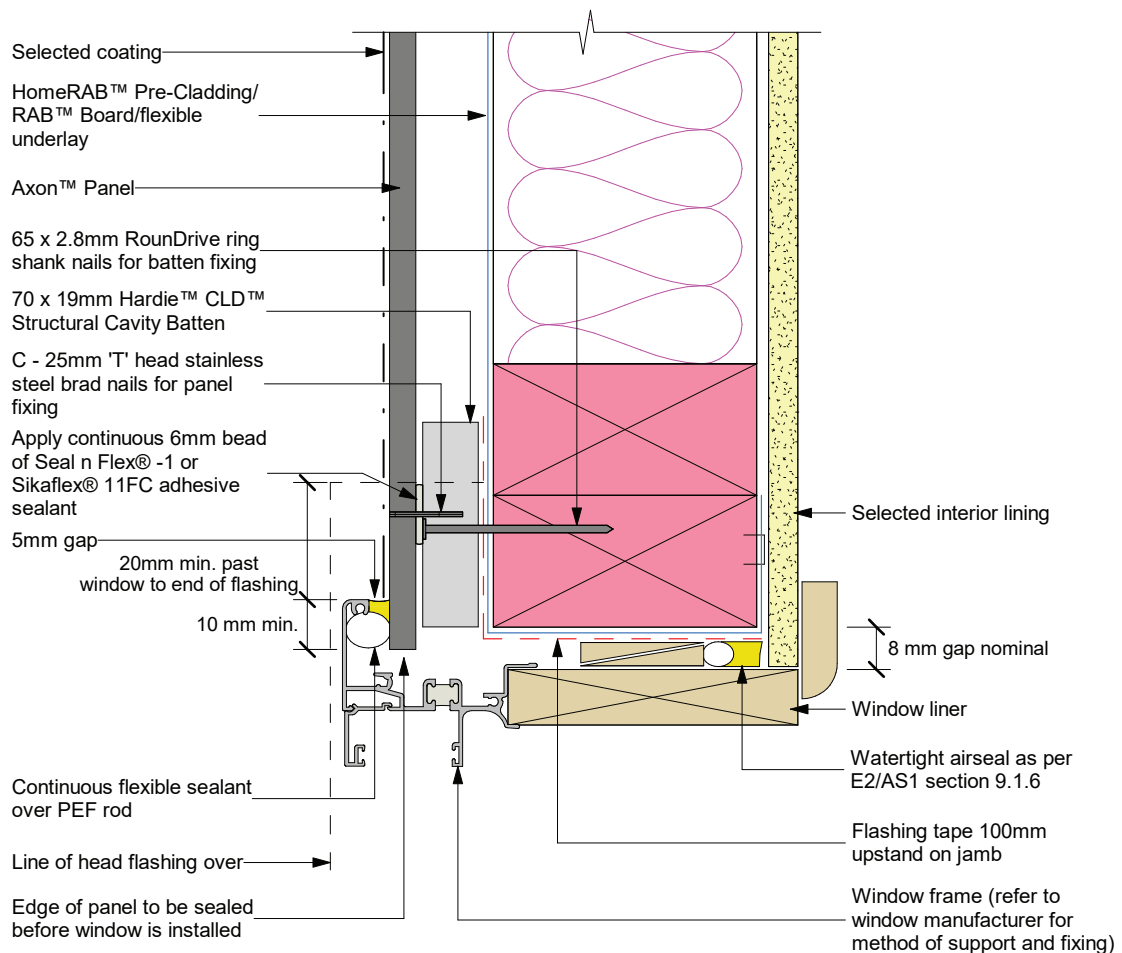
Refer to the manufacturer or supplier for technical information for these materials.

Figure 24: Window jamb

interactive assembly
instructions available
<http://wksp.nz/jh-axn-win>

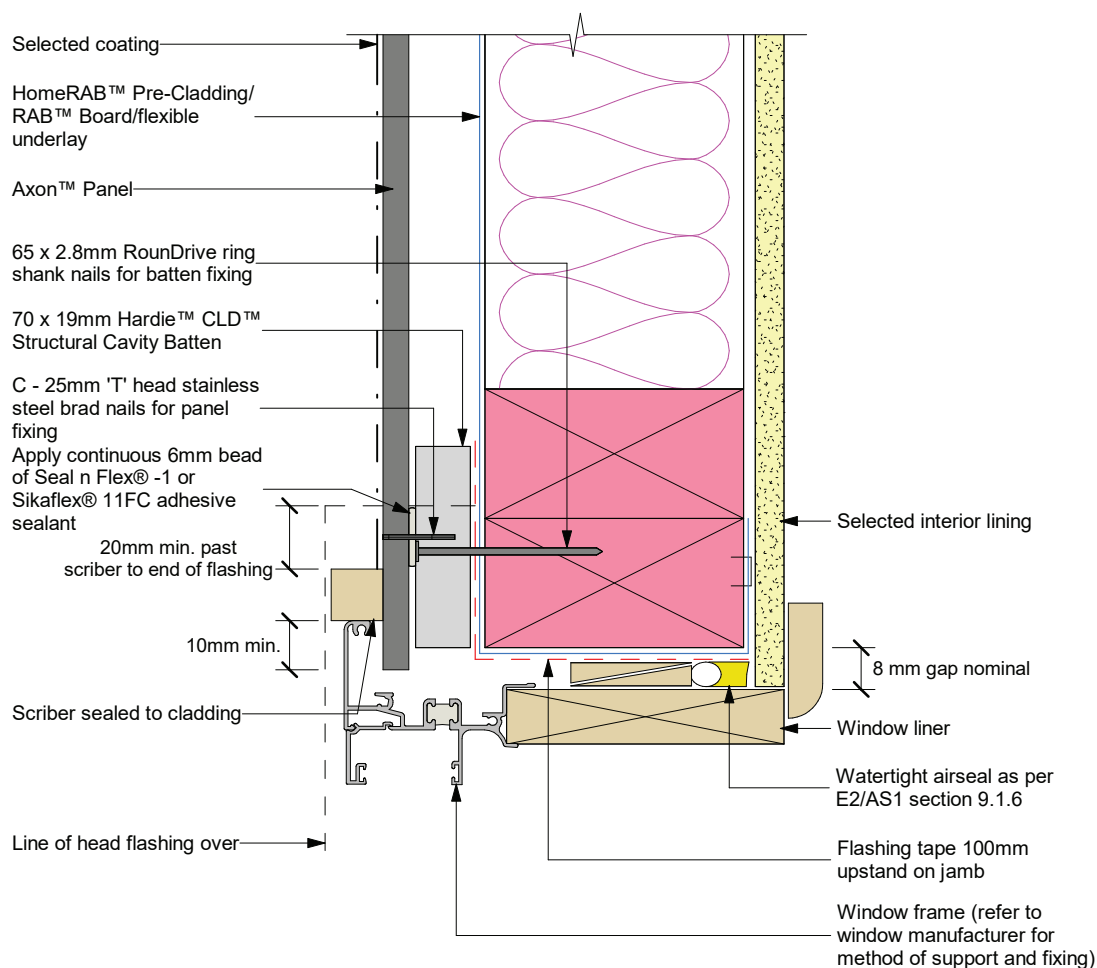


Get WORKINGSPEC from
Apple App Store/Google Play



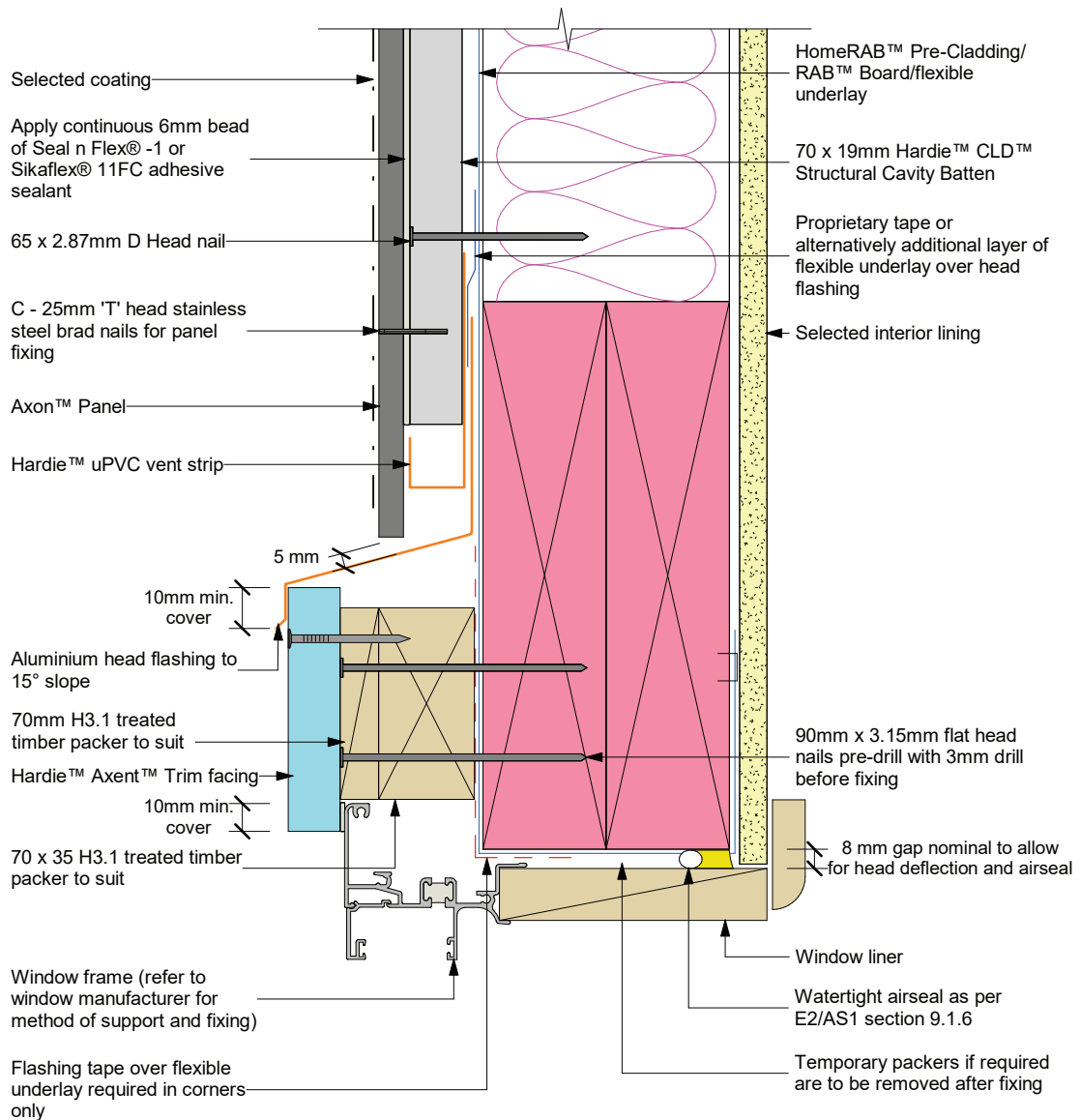
Note: When HomeRAB™ Pre-Cladding/RAB™ Board is used
flashing tape to be applied to the entire window opening.

Figure 25: Window jamb with scribe



Note: When HomeRAB™ Pre-Cladding/RAB™ Board is used
flashing tape to be applied to the entire window opening.

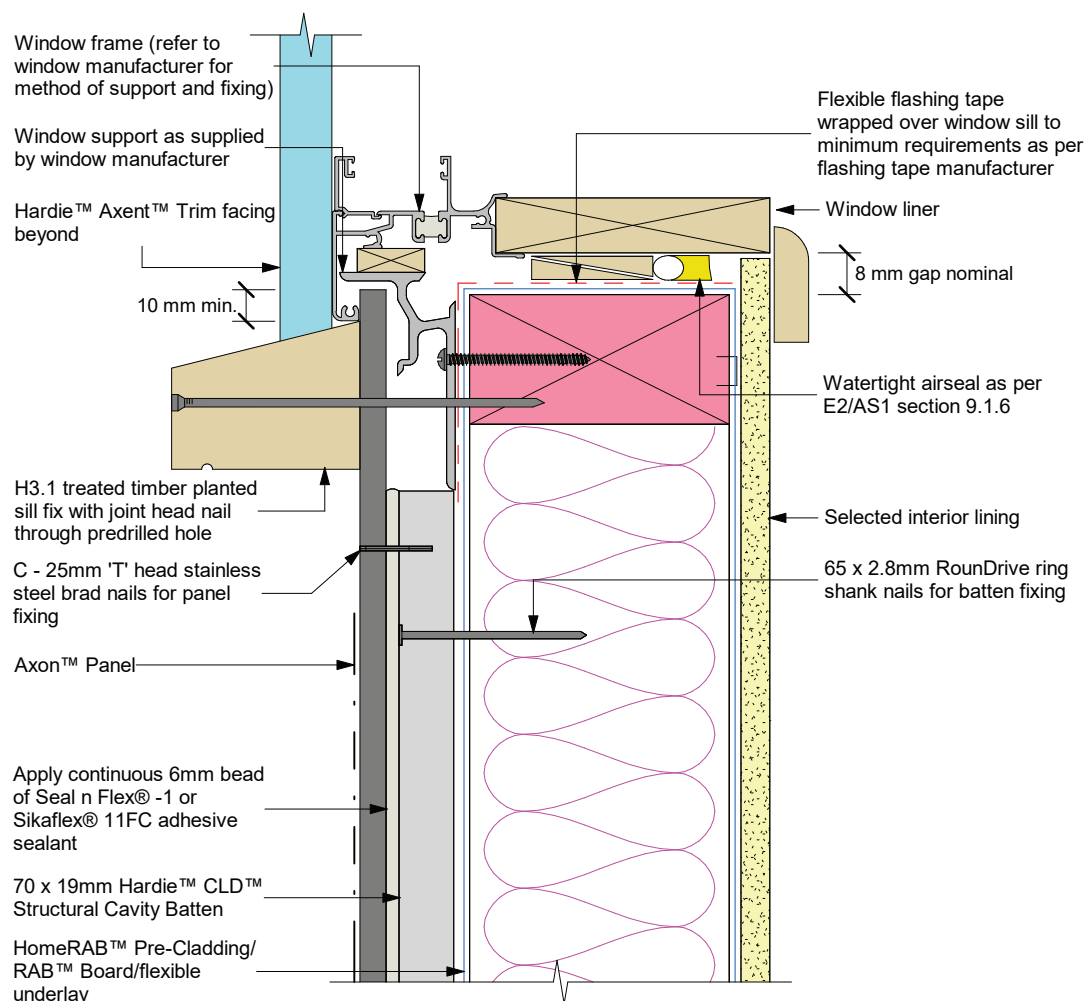
Figure 26: Window head with facing



Note:

- Sealant must be installed between Hardie™ Axent™ Trim and window flange in VH wind zones
- Sealant must be applied between the head flashing and Axent Trim in VH and EH wind zone.

Figure 27: Window sill with planted sill

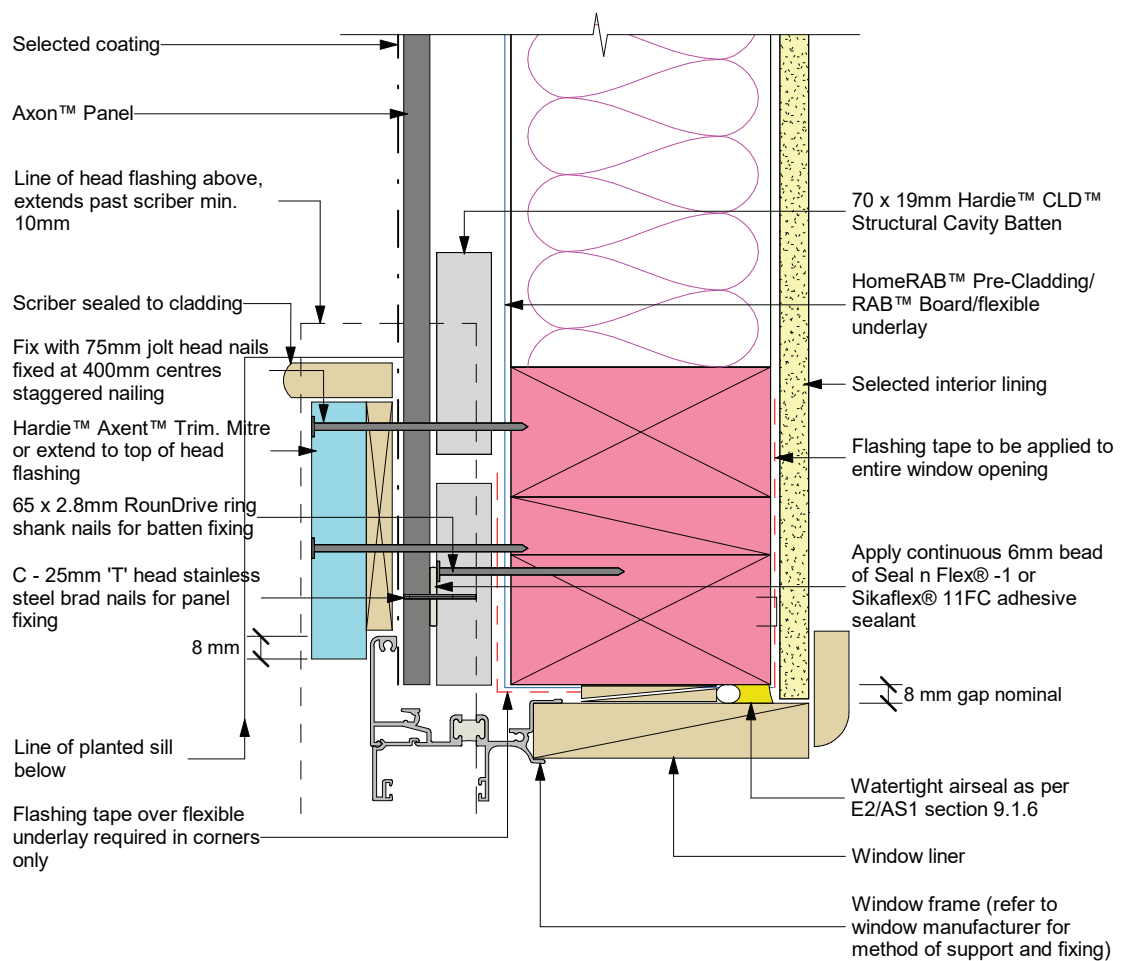


General notes for materials selection

- * Flexible underlay must comply with acceptable solution E2/AS1.
- * Flashing tape must have proven compatibility with the selected flexible underlay and other materials with which it comes into contact.
- * When HomeRAB™ Pre-Cladding/RAB™ Board are used flashing tape to be applied to the entire opening.

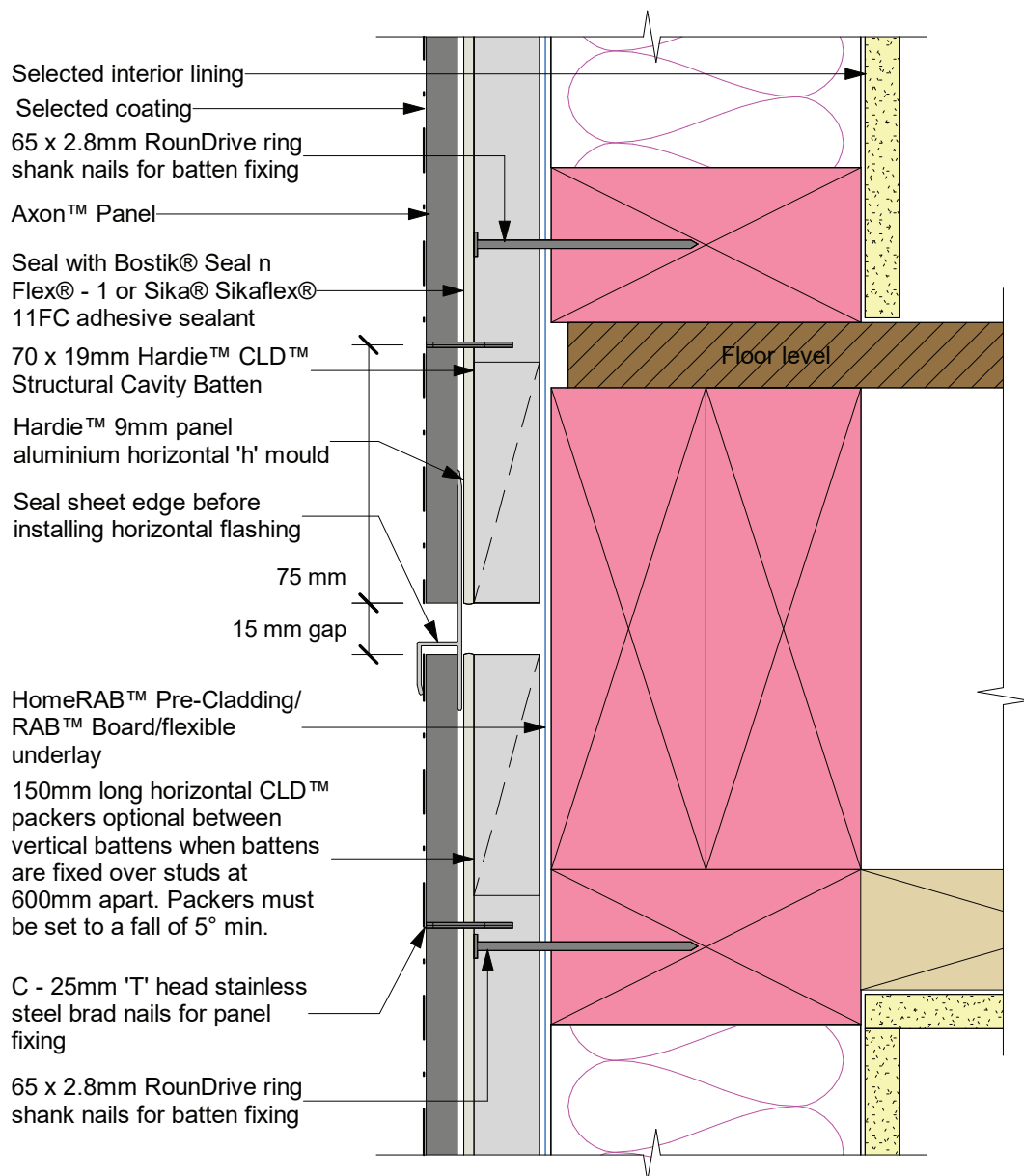
Refer to the manufacturer or supplier for technical information for these materials.

Figure 28: Window and door jamb with facing



Note: When HomeRAB™ Pre-Cladding/RAB™ Board is used flashing tape to be applied to the entire window opening.

Figure 29: Horizontal joint at floor joist



Note: When 50 year durability is required refer Table 20 of NZBC E2/AS1 document.

Figure 30: Horizontal joint in tall wall

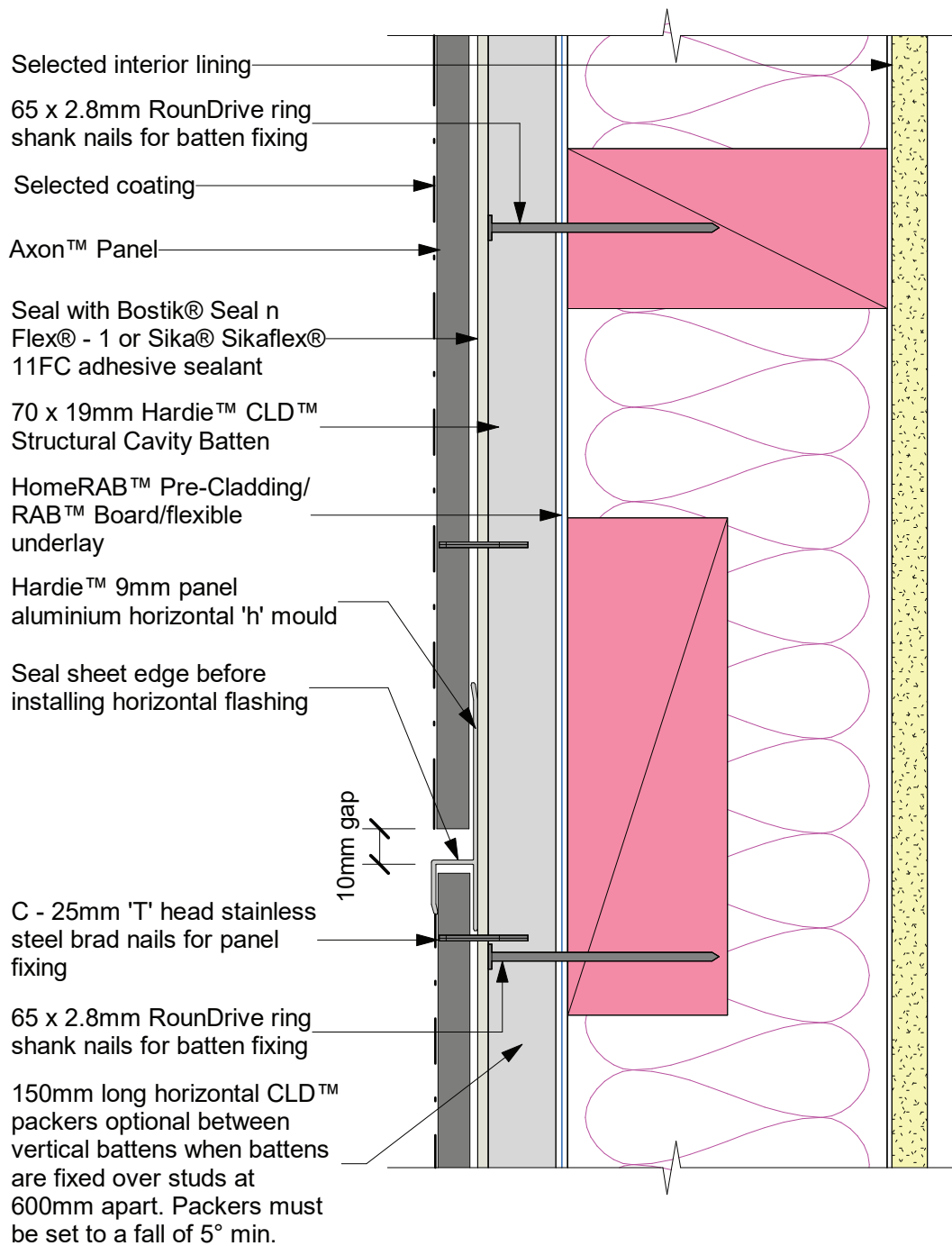


Figure 31: Aluminium 'h' mould joiner

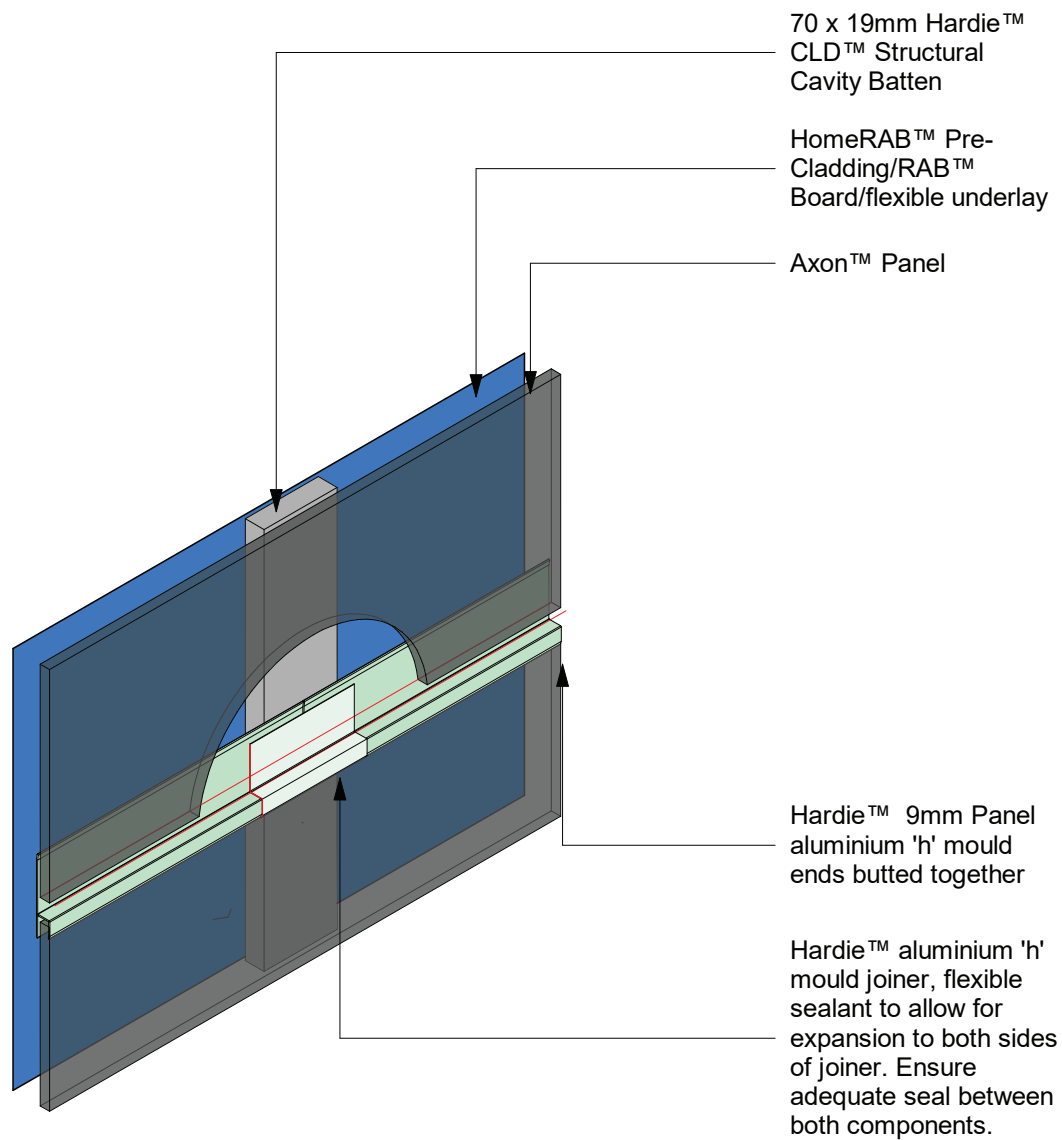


Figure 32: External corner at 'h' mould joint detail



70 x 19mm Hardie™ CLD™
Structural Cavity Batten

HomeRAB™ Pre-
Cladding/RAB™
Board/flexible
underlay

Framing

15 mm gap

Axon™ Panel

Hardie™ 9mm panel
aluminium horizontal
'h' mould mitre at
corner

Hardie™ 9mm 'h' mould
external corner jointer

Hardie™ 9mm panel
aluminium external box
corner flanges to be
removed locally under
aluminium 'h' mould

Note: Site cut edges to be primed

Figure 33: Internal corner at 'h' mould joint detail

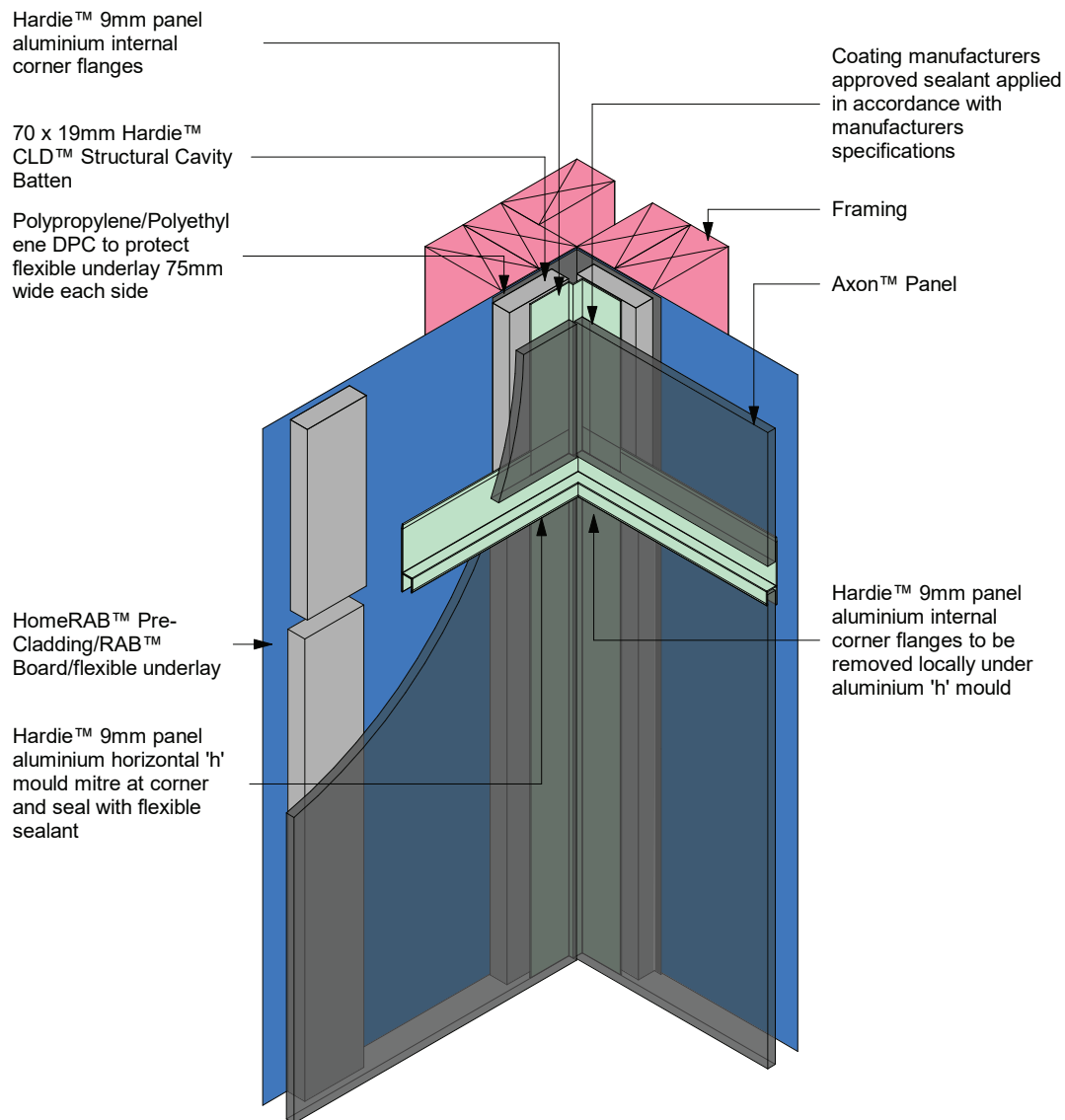
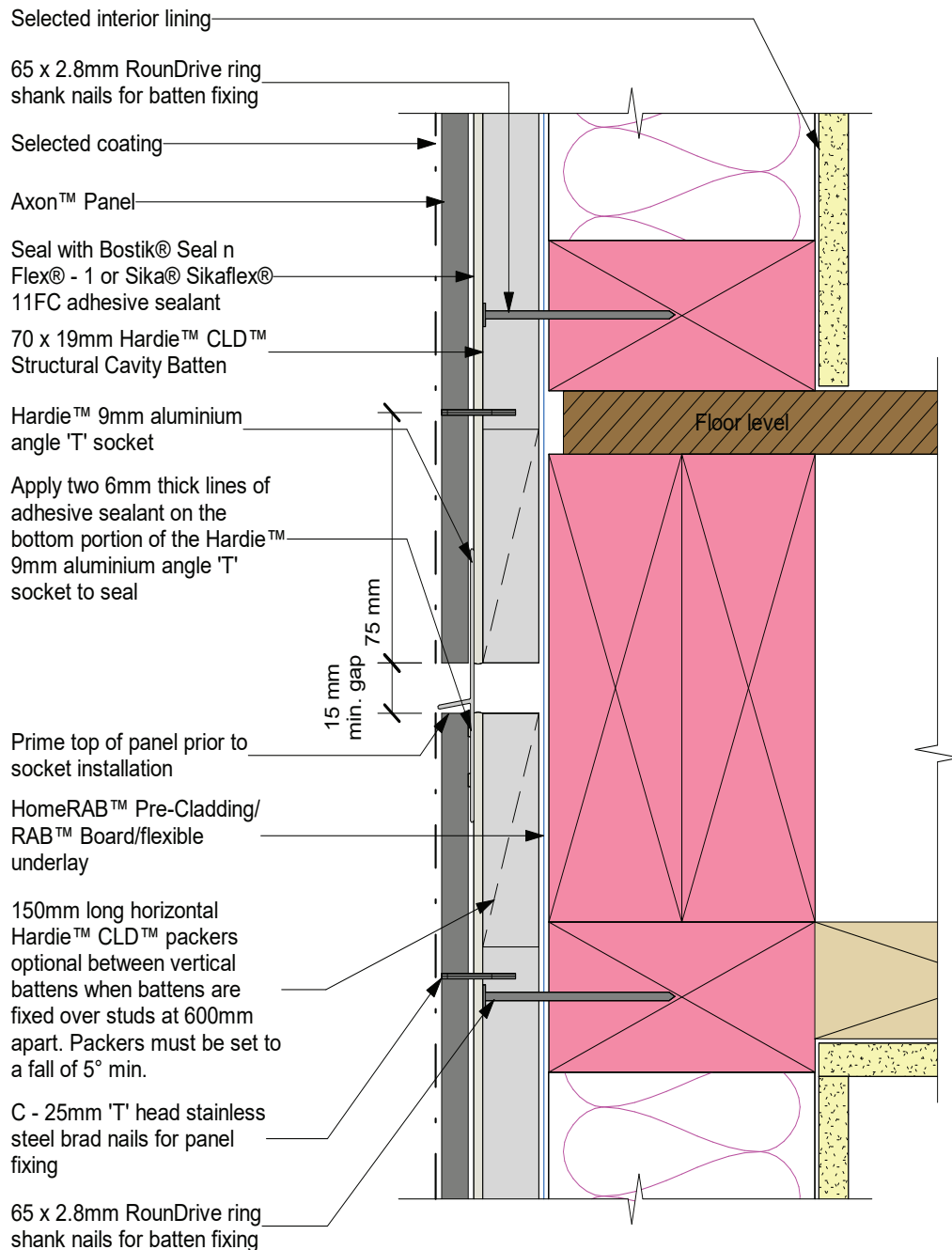


Figure 34: Angle 'T' socket joint at floor joist



Note: When 50 year durability is required refer Table 20 of NZBC E2/AS1 document.

Figure 35: Horizontal joint in tall wall

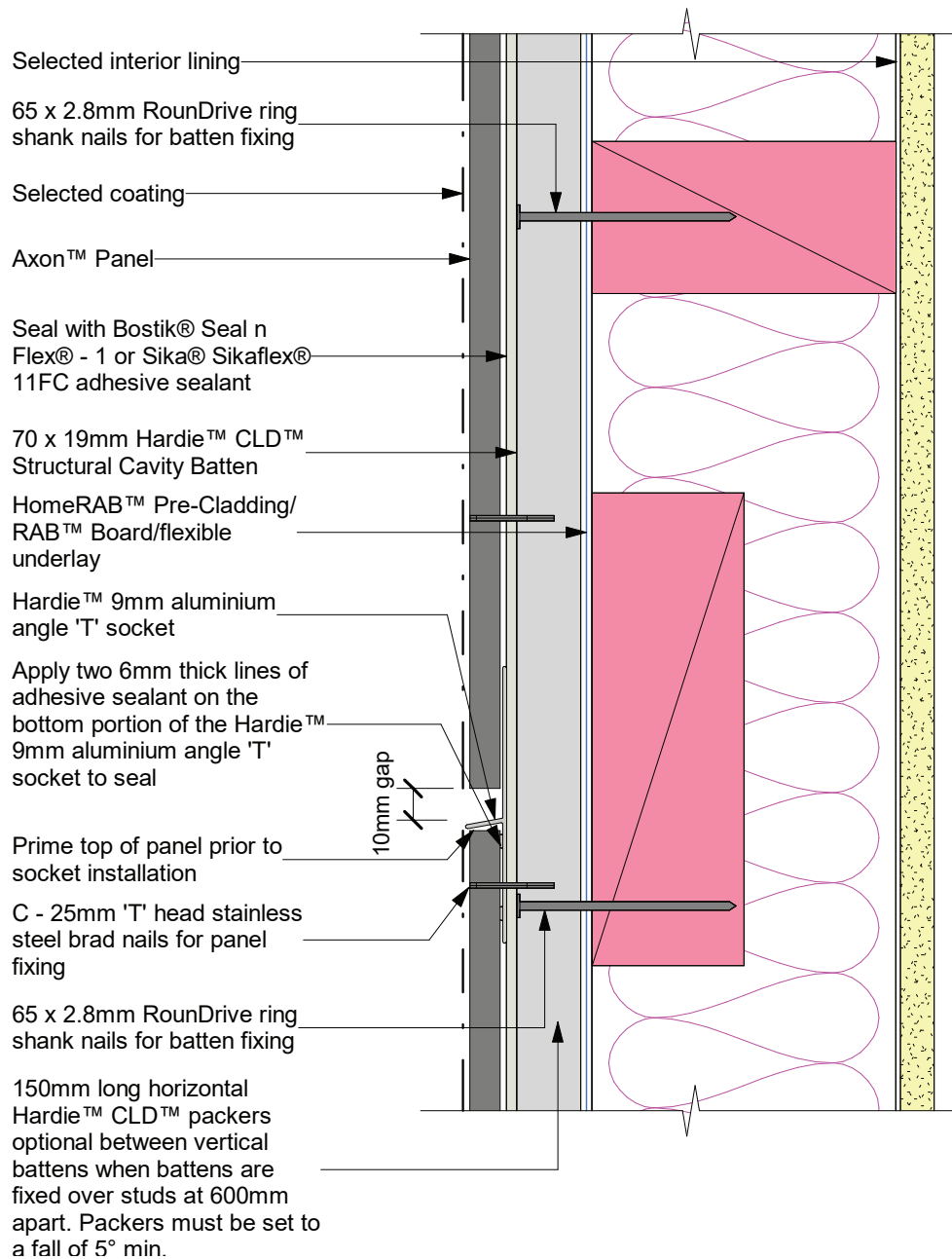


Figure 36: Angle 'T' horizontal jointer

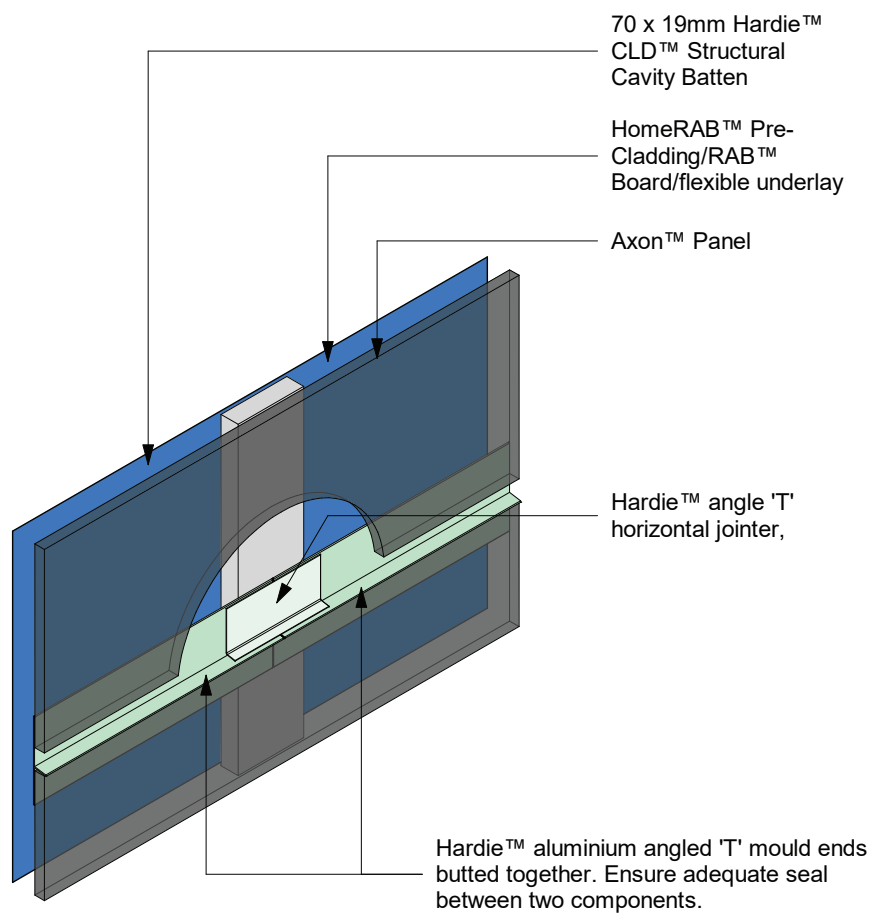
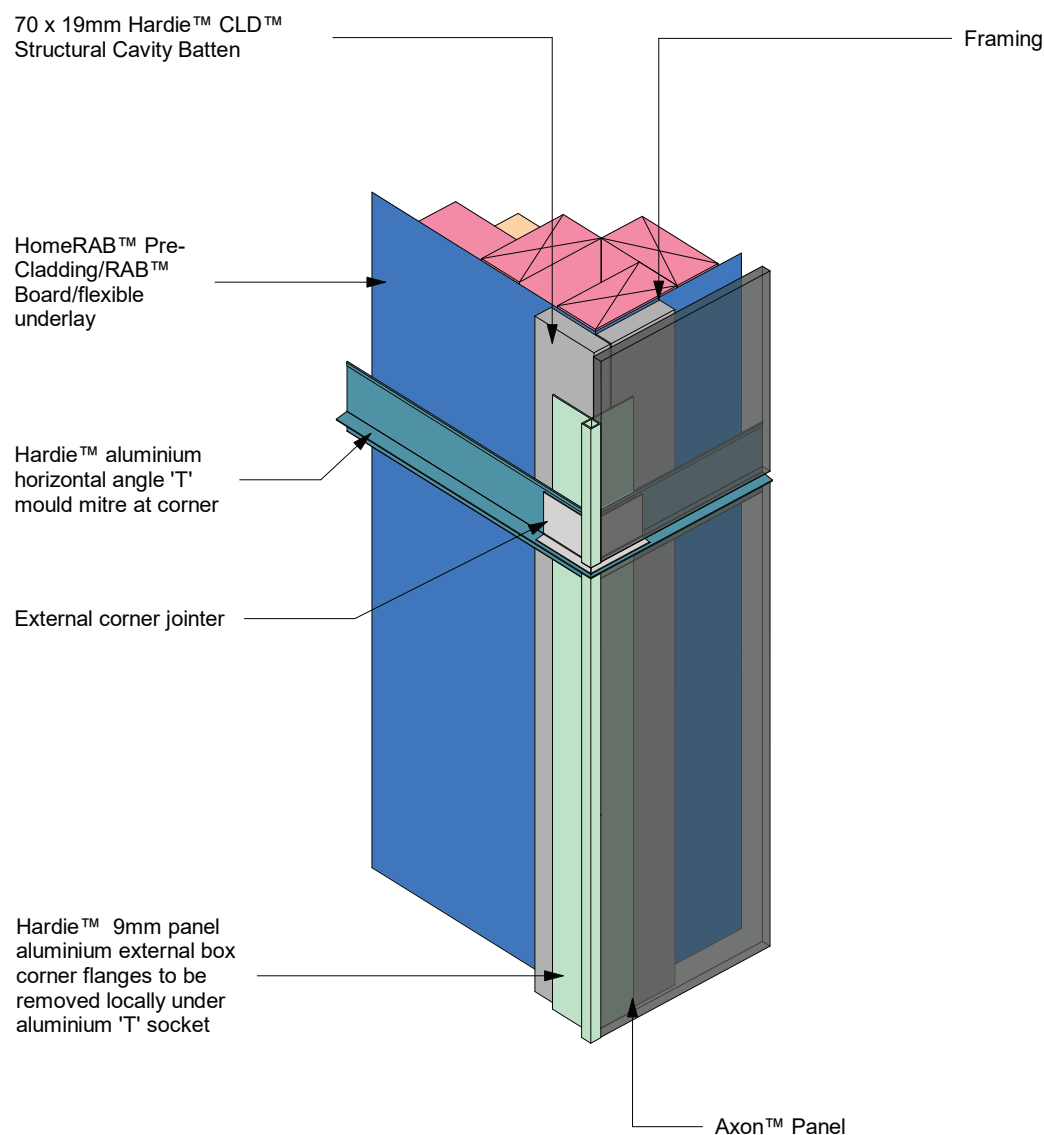


Figure 37: Angle 'T' external corner at 'T' mould joint



Note: Site cut edges to be primed

Figure 38: Internal corner at angle 'T' socket joint detail

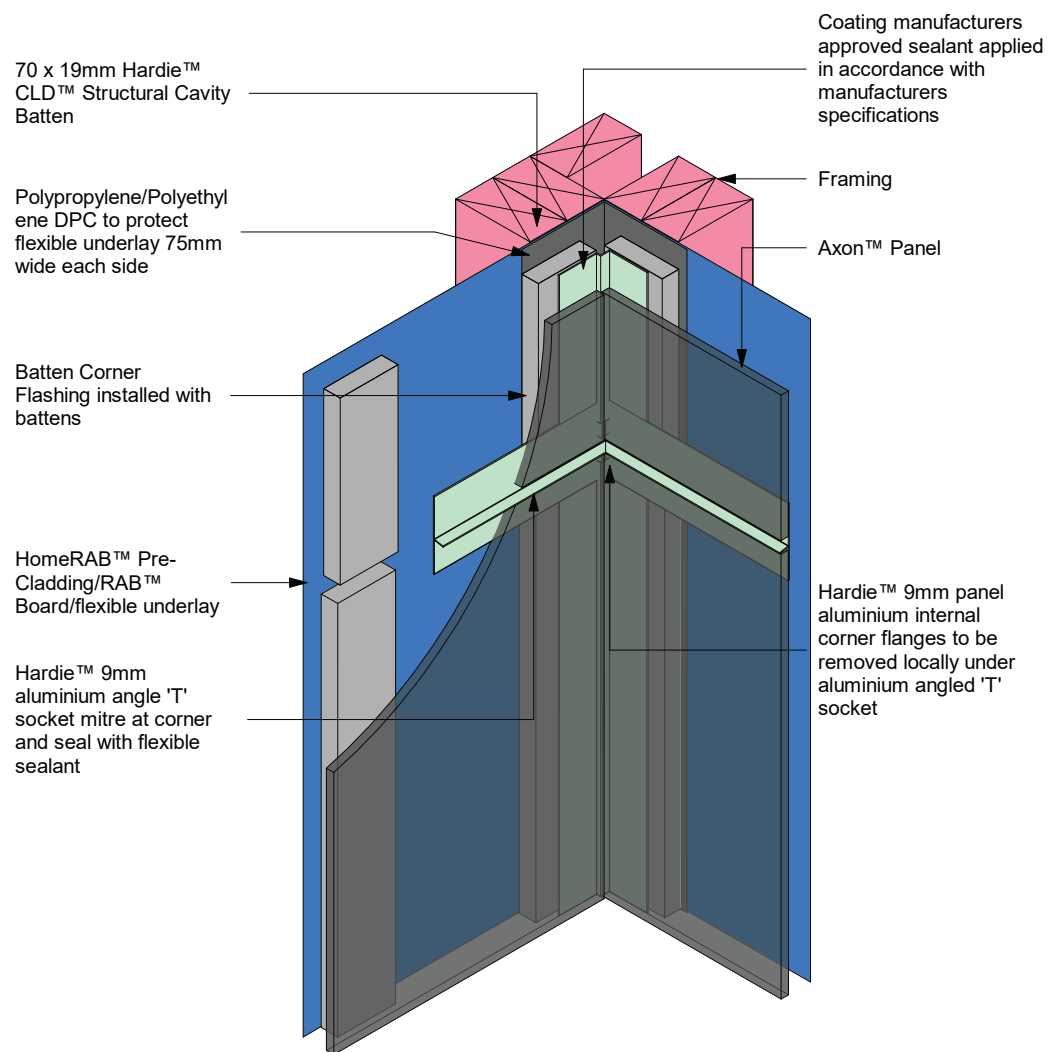


Figure 39: Joining moulding

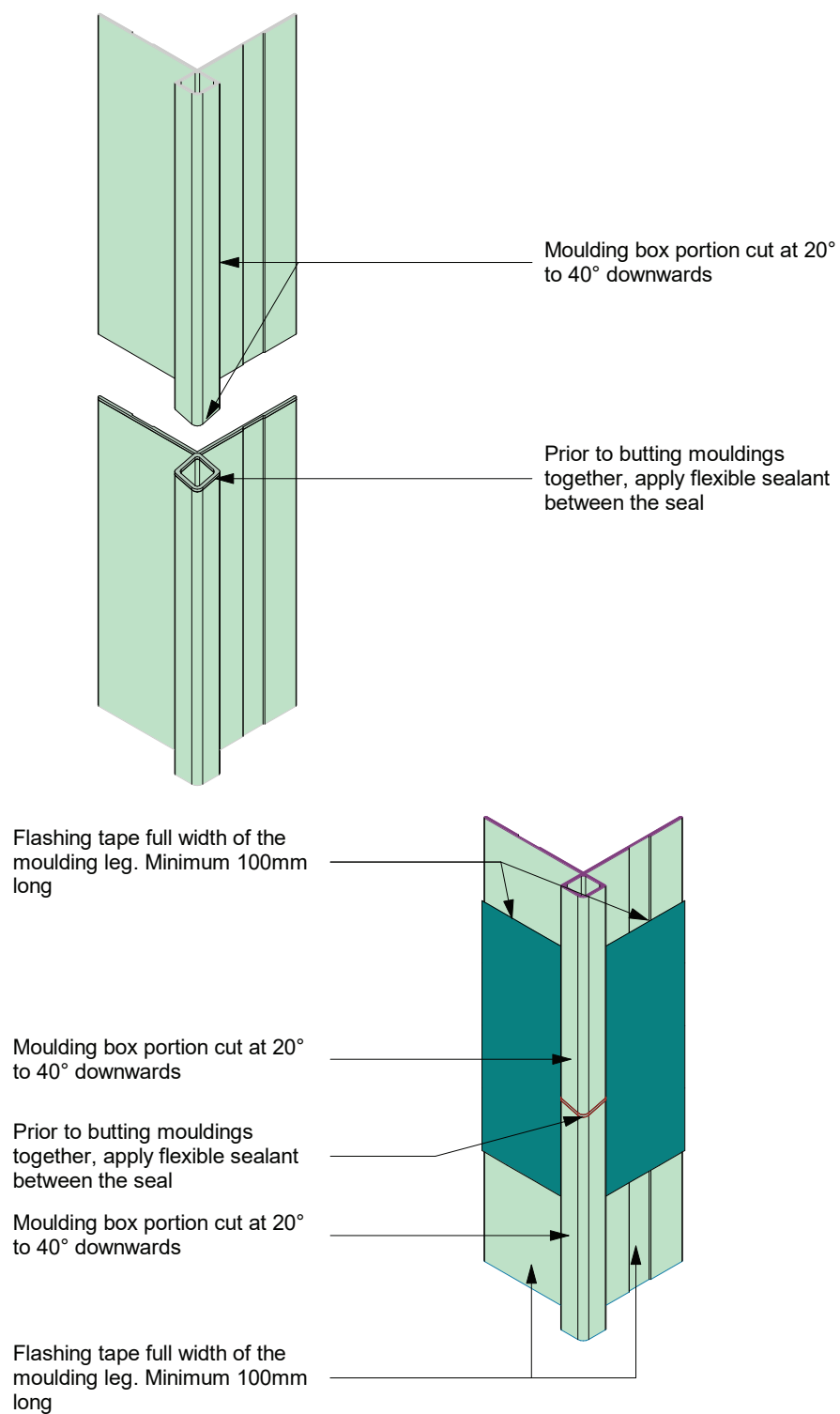
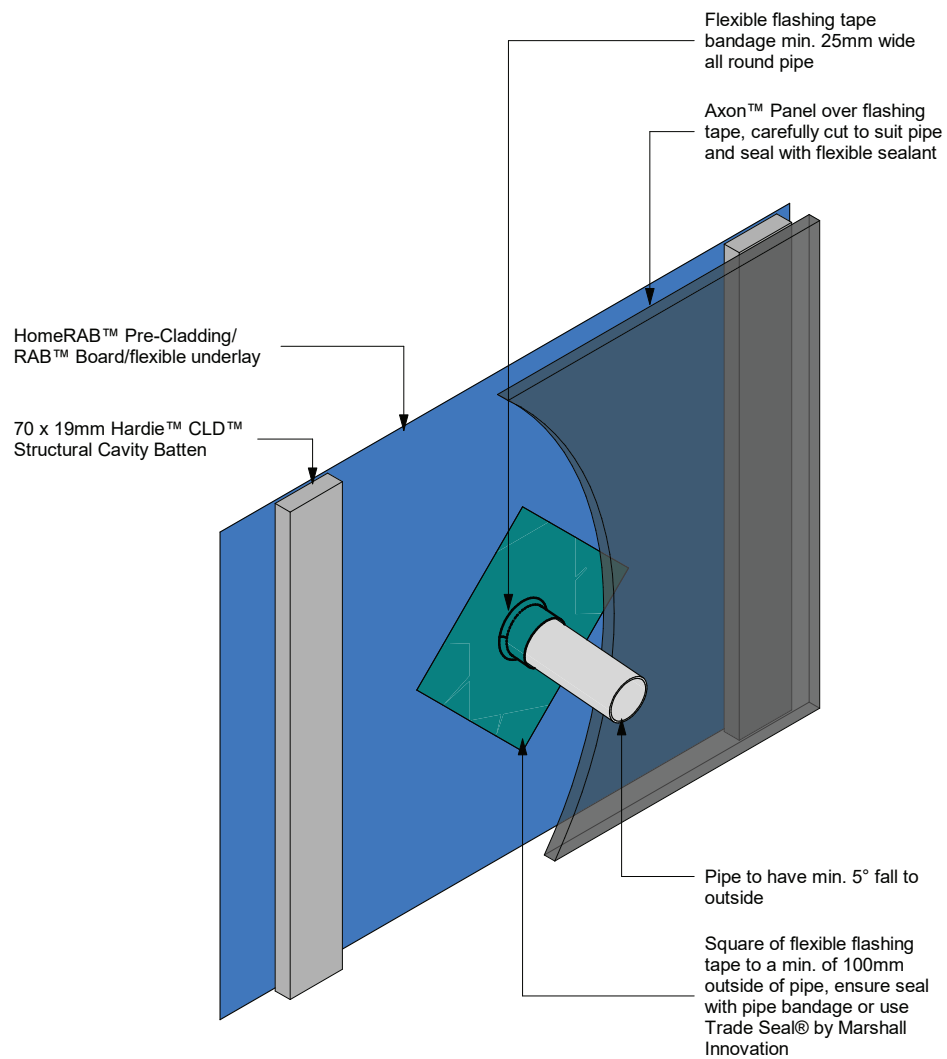


Figure 40: Cavity pipe penetration



Note: Site cut edges to be primed

Figure 41: 'h' mould joint at window head

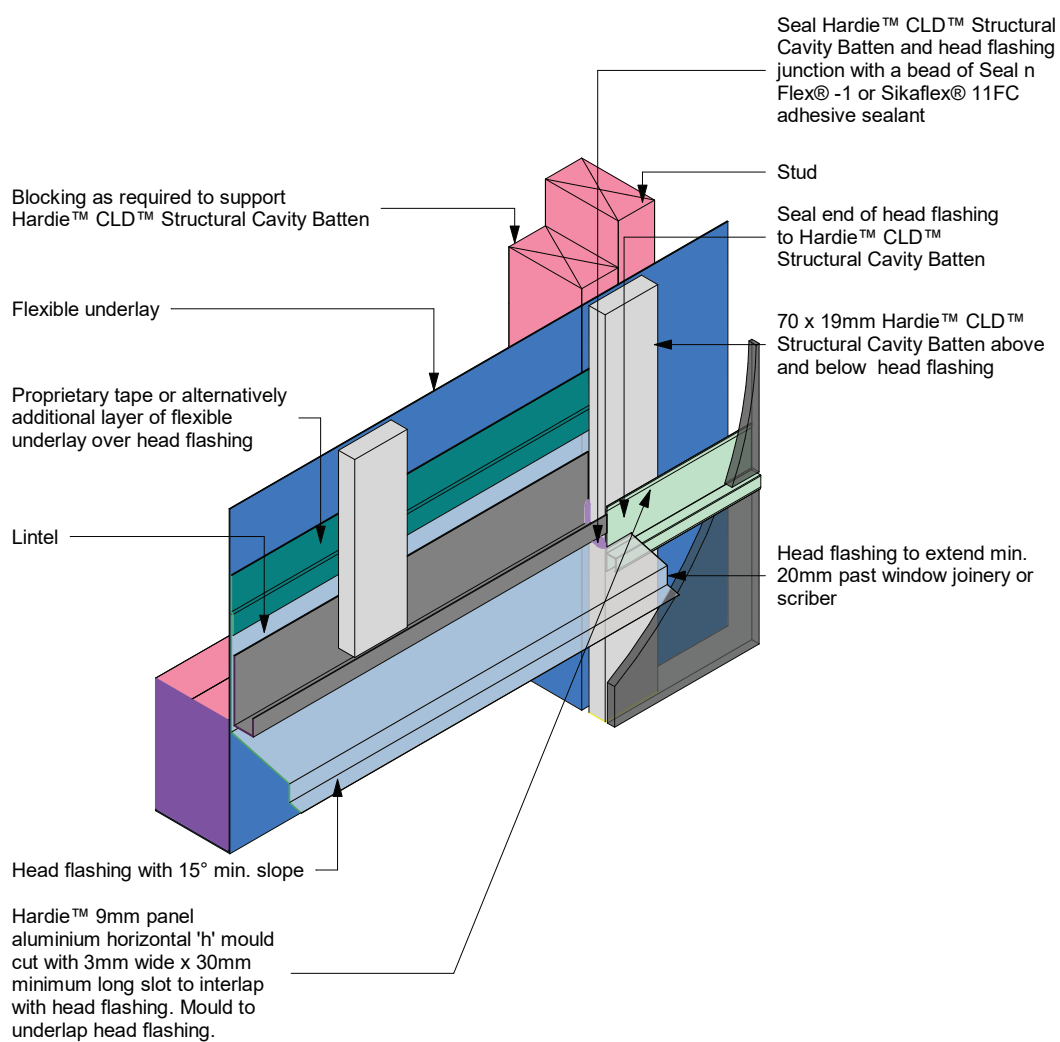


Figure 42: Angle 'T' socket at window head

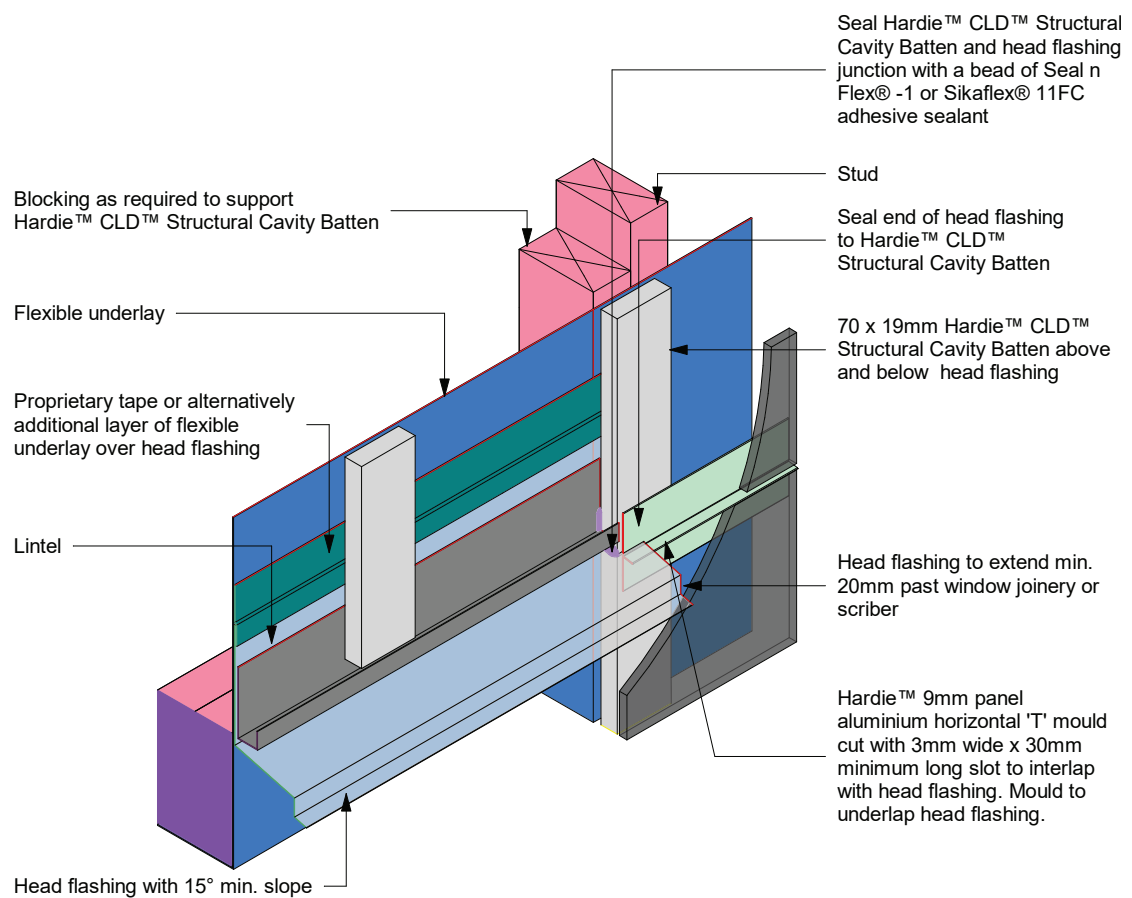


Figure 43: Horizontal flashing at window head

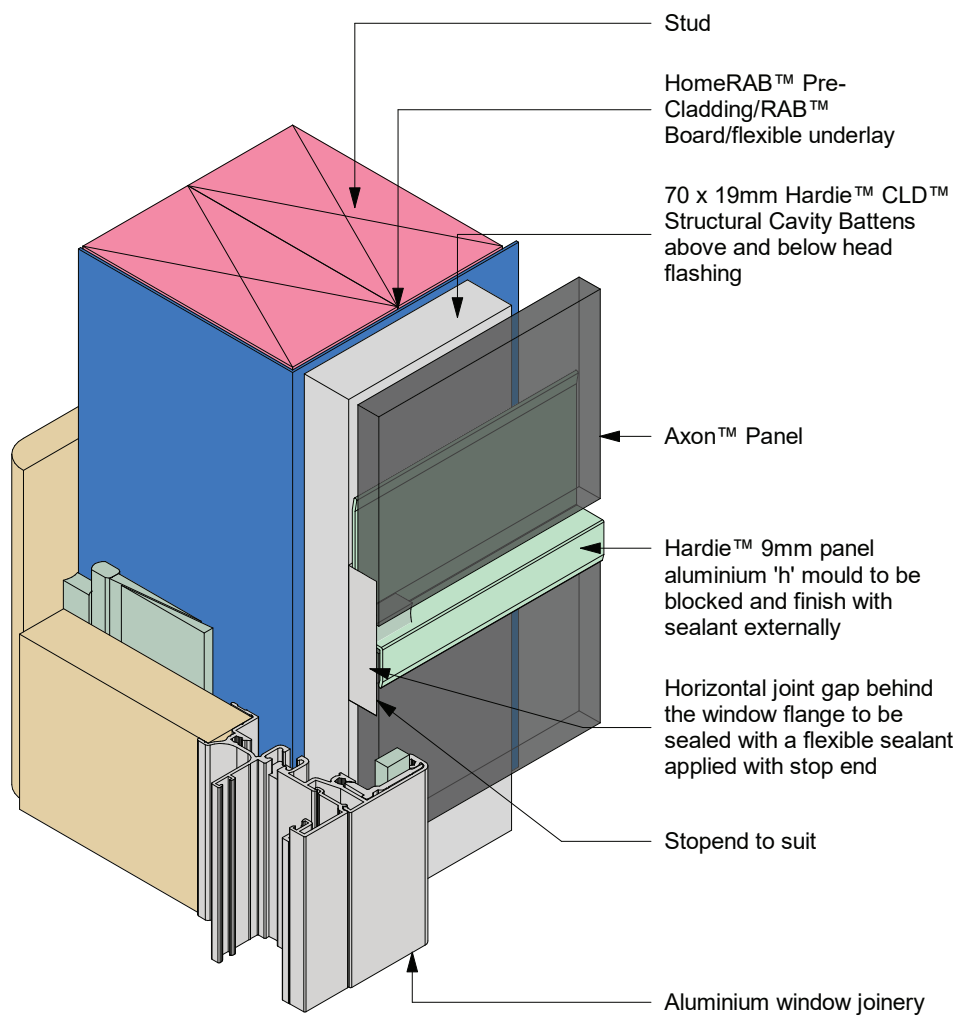


Figure 44: Angle 'T' socket butting window jamb

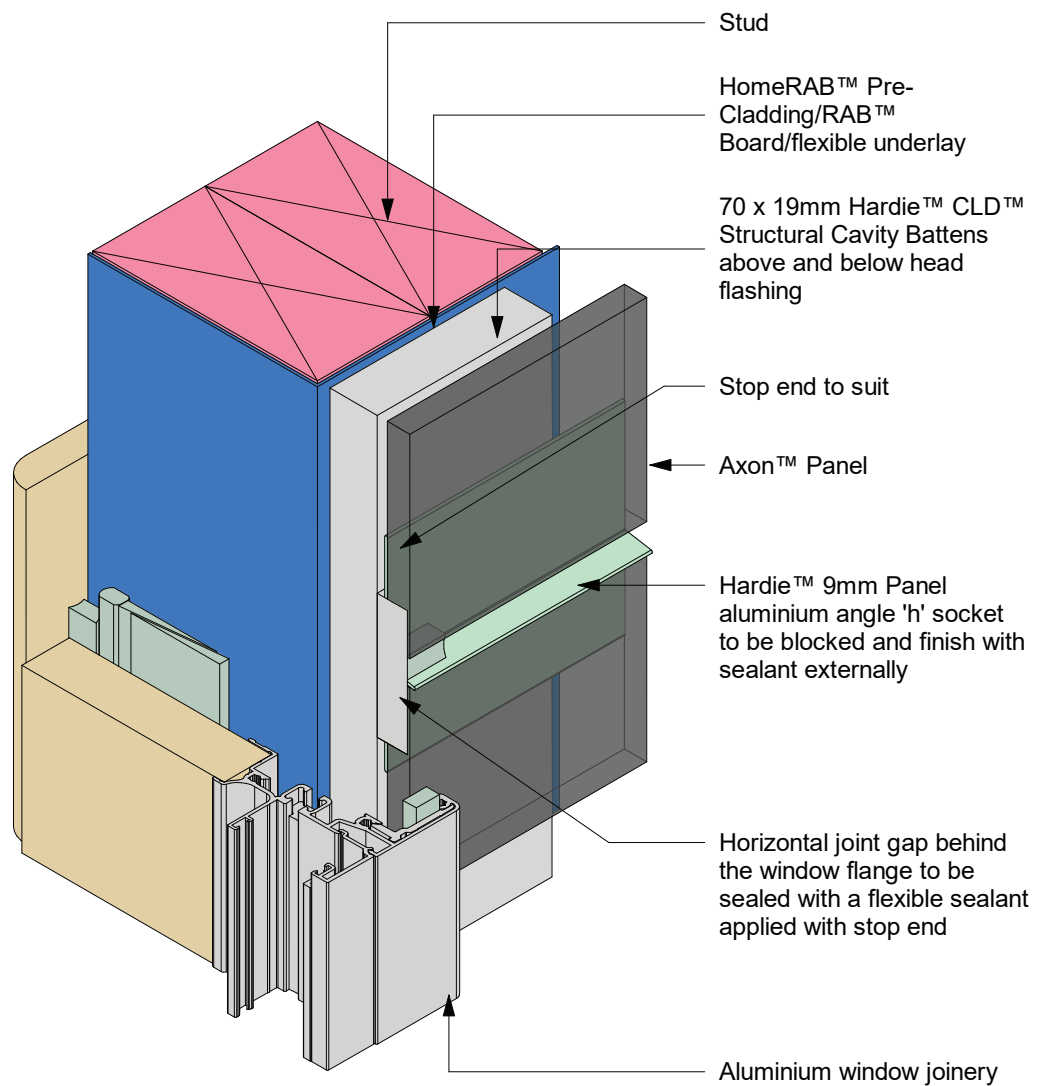
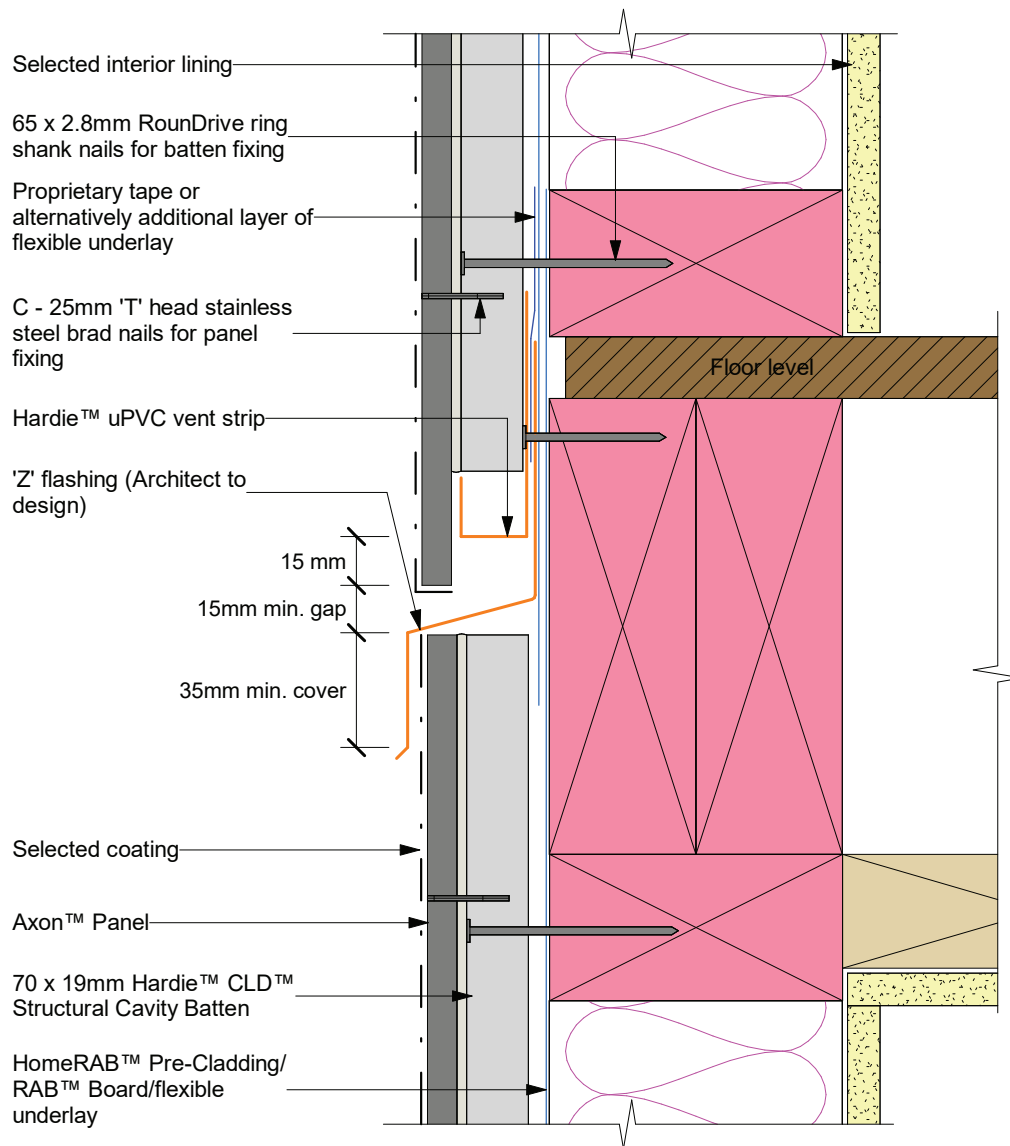


Figure 45: Drained flashing joint at floor joist



Note:

- Check architect's plans for the type of flashing to be used.
- Cut edges need to be primed with sealer.
- When 50 year durability is required refer Table 20 E2/AS1.
- The flashing to be placed in the centre of the floor joists. Do not fix Hardie™ CLD™ Structural Cavity Battens or panels into floor joists.
- The joint can be placed anywhere within the floor joist area.

Figure 46: One piece apron flashing joint

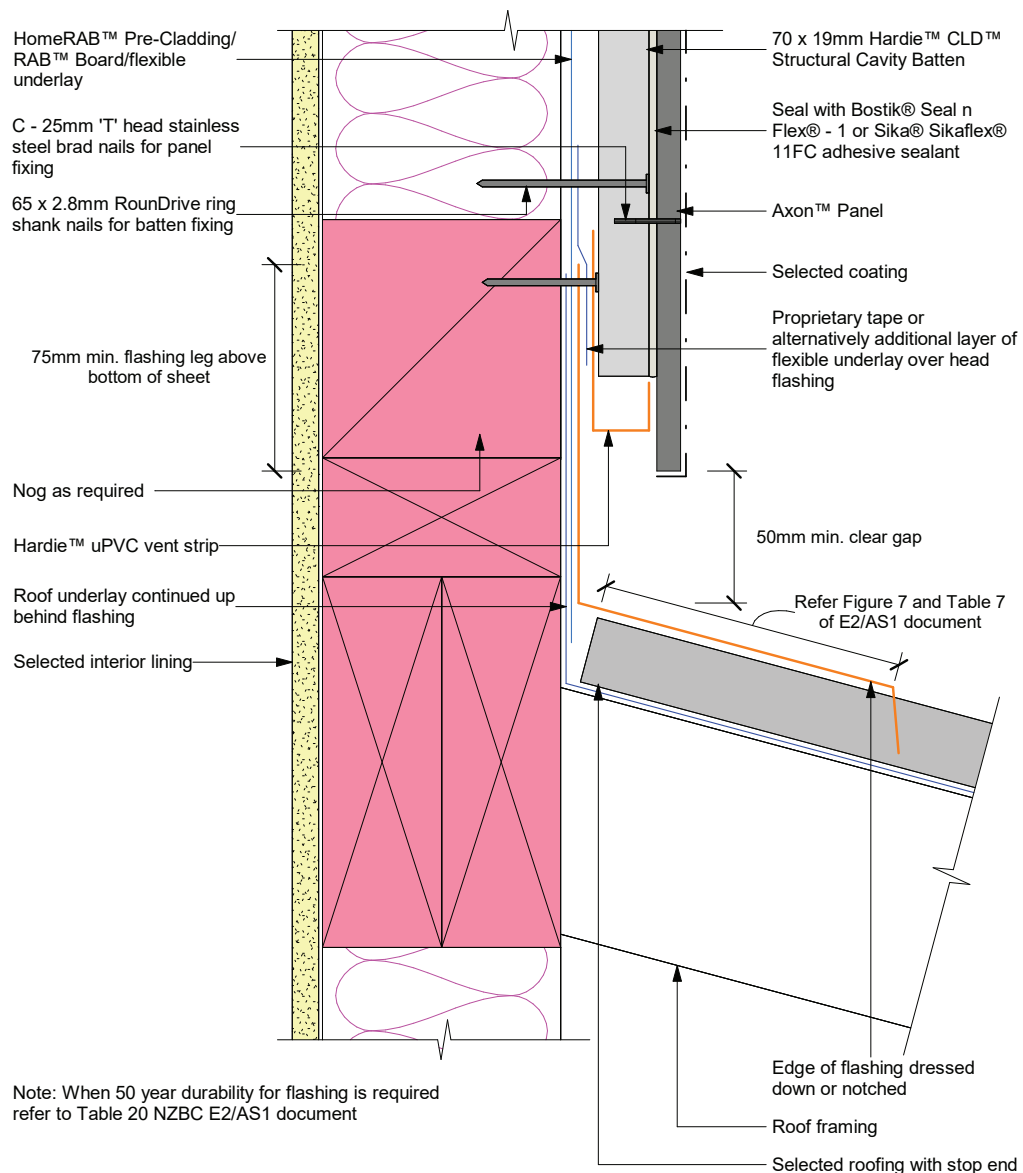


Figure 47: Enclosed deck balustrade to wall junction - Aluminium internal corner

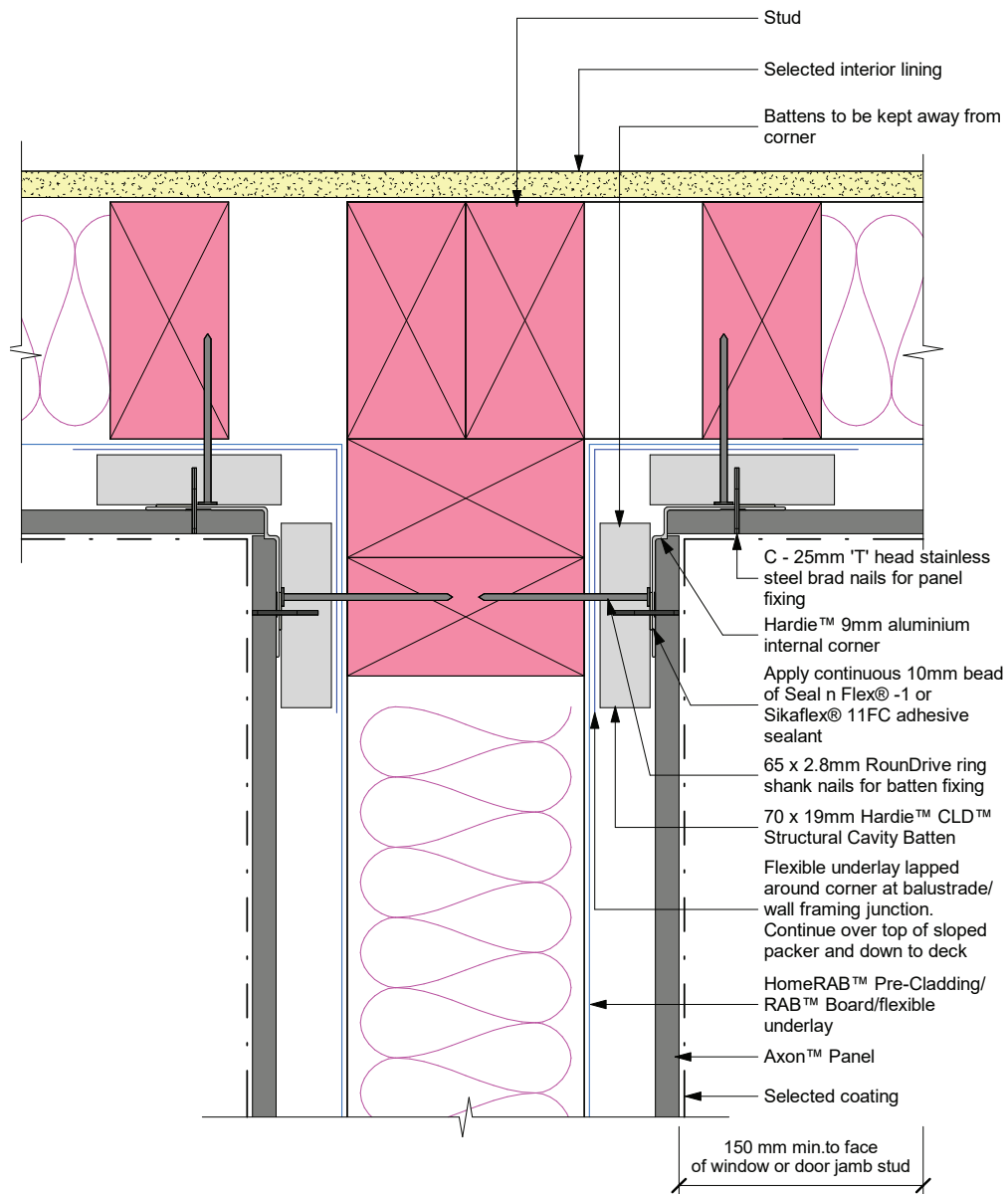
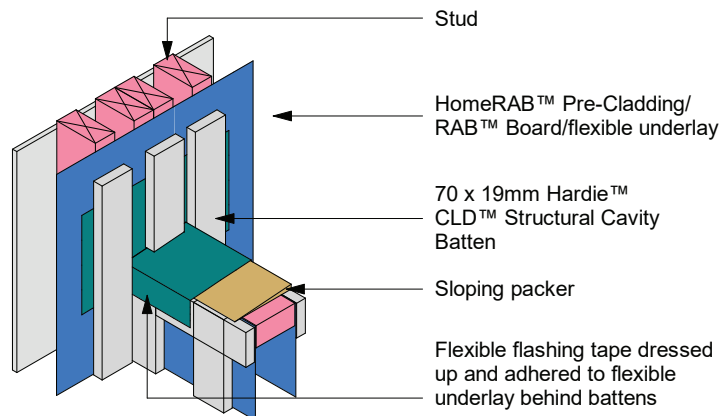
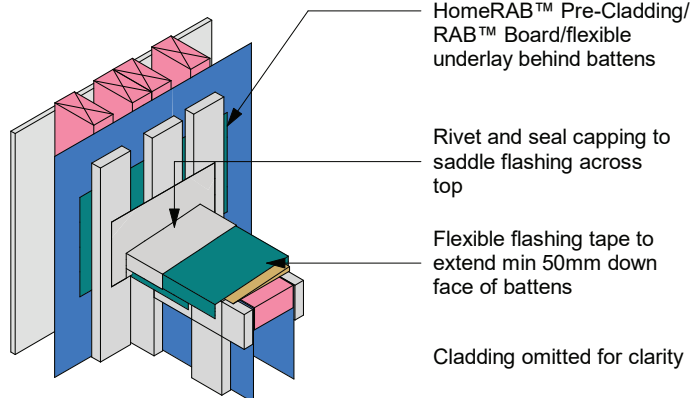


Figure 48: Enclosed deck ballustrade to wall junction



**Batten and Flashing Tape Application
Prior to Metal Flashing Fixing**



**Saddle Flashing Application Prior to
Cladding and Cap Flashing Fixing**

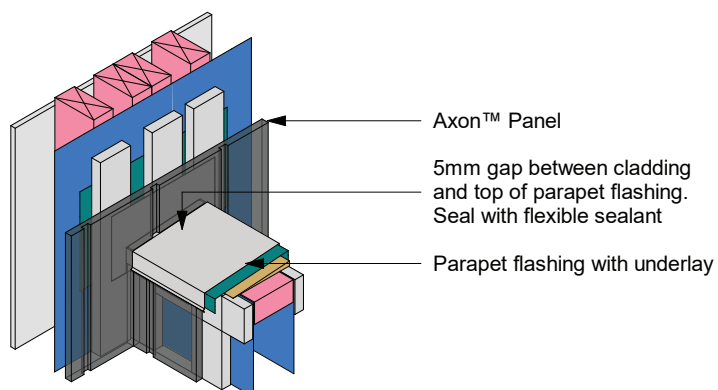


Figure 49: Parapet flashing

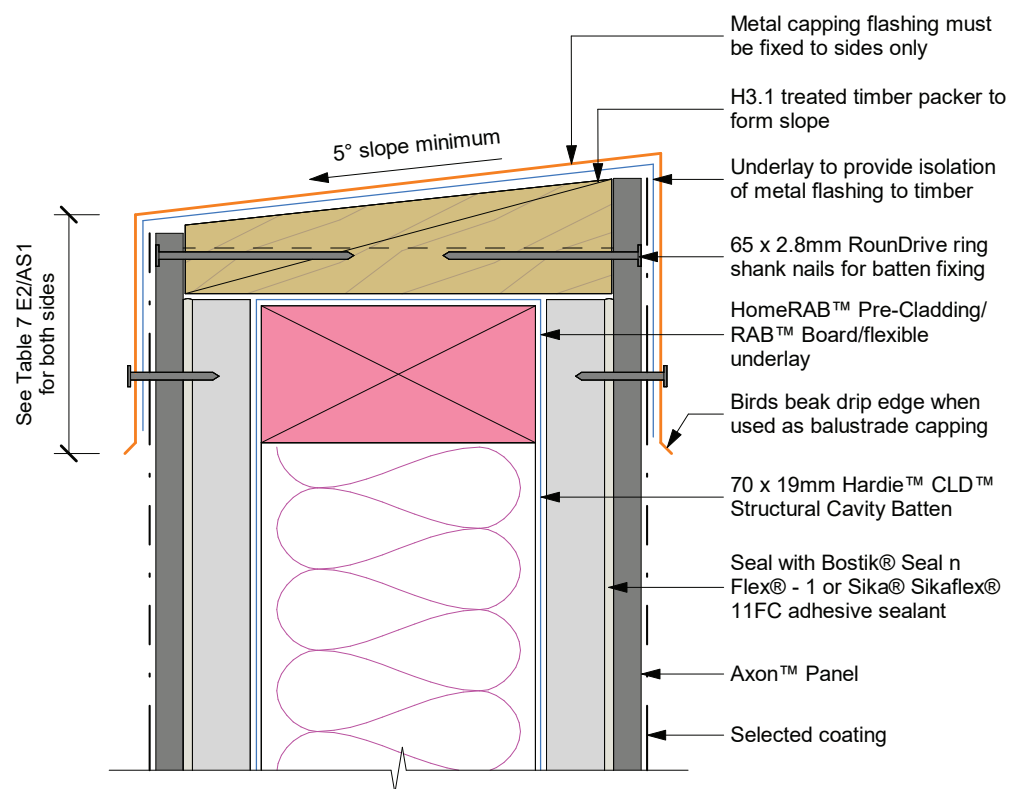


Figure 50: Garage door jamb

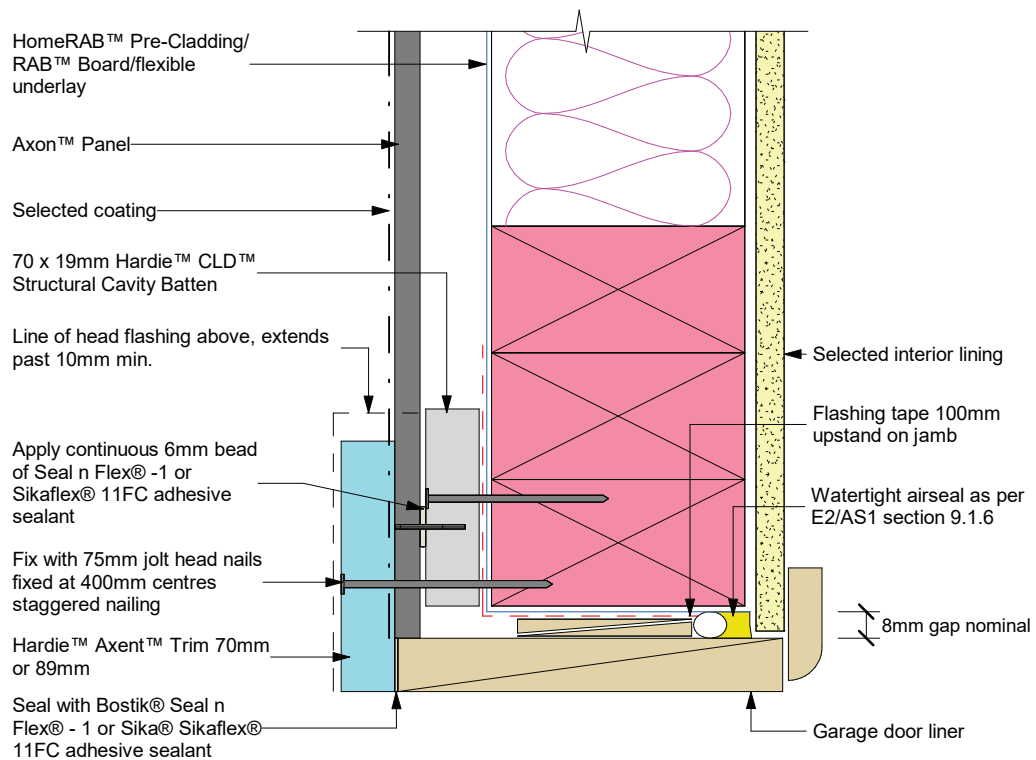
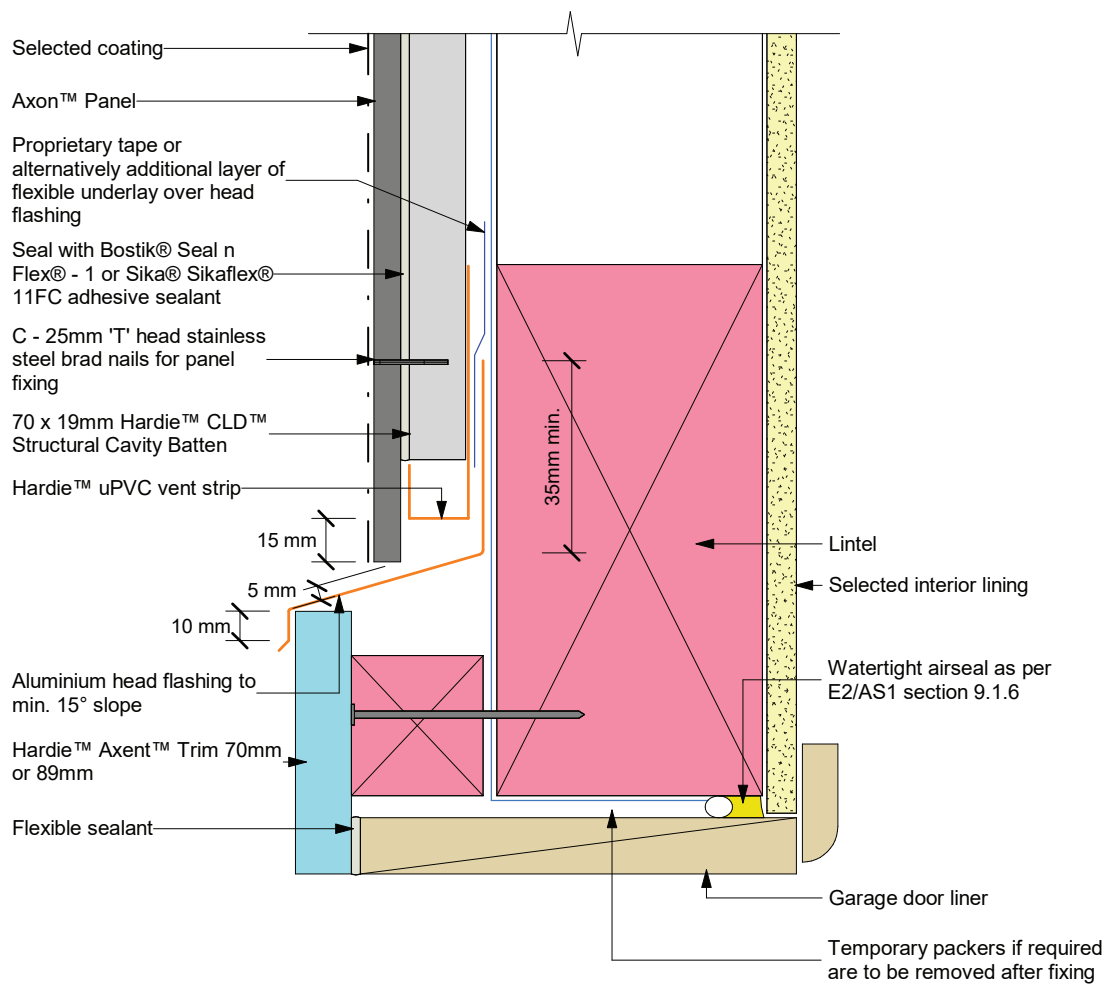
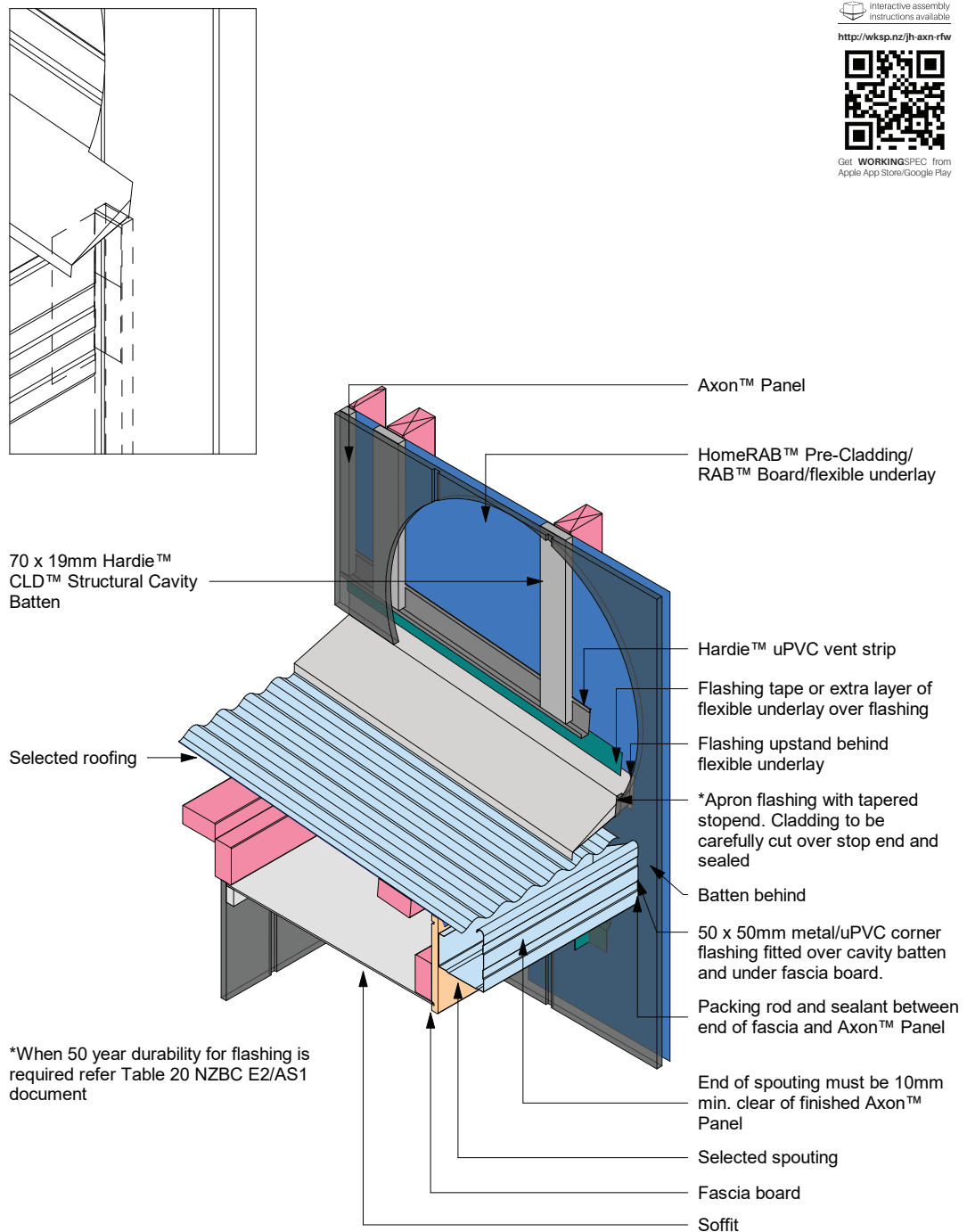


Figure 51: Garage door head



- Sealant must be applied between head flashing and Hardie™ Axent™ Trim in VH and EH wind zones
- Site cut edges to be primed

Figure 52: Junction between panel and fascia board



Note: Site cut edges to be primed



Figure 53: Enclosed roof to wall intersection

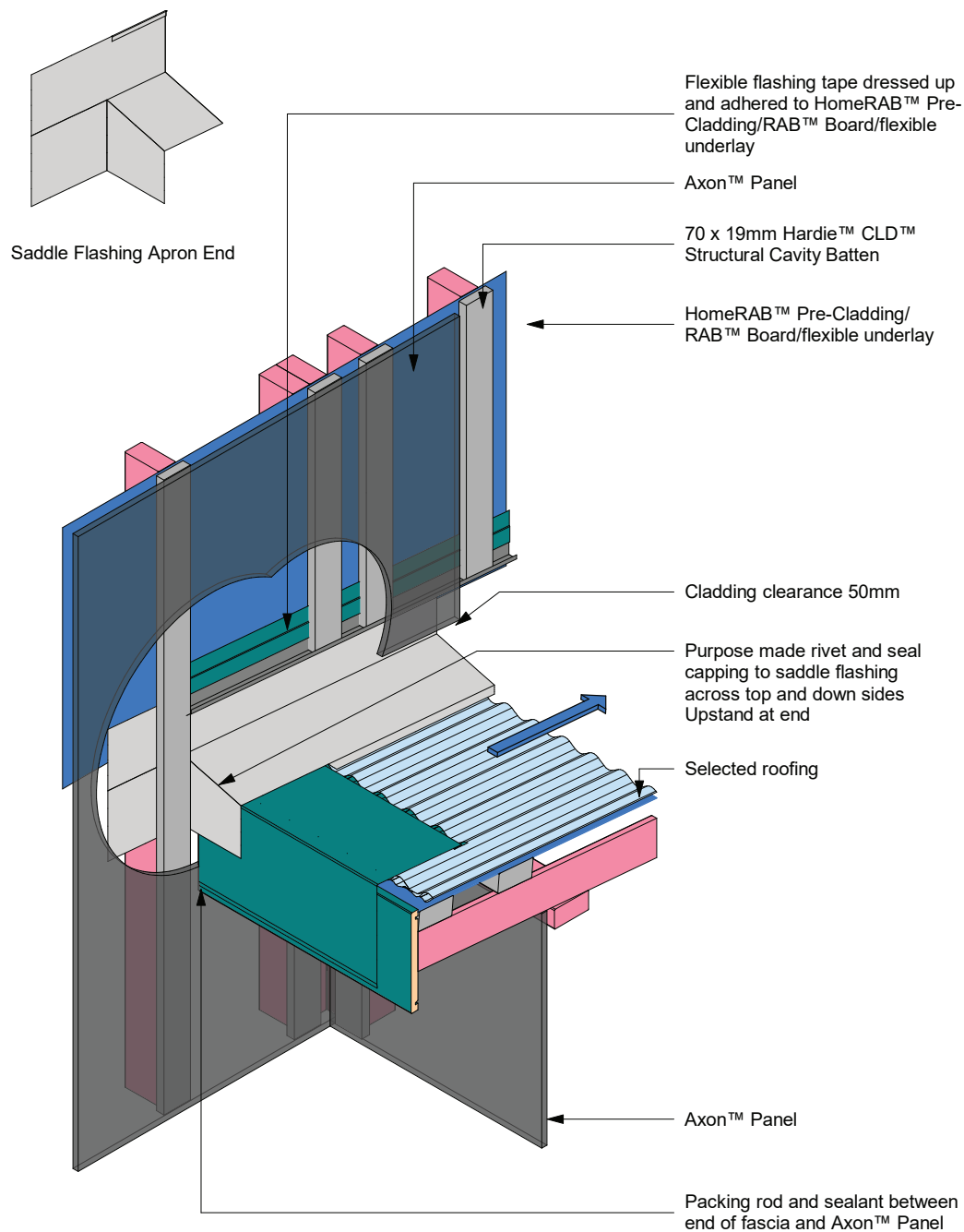


Figure 54: Cavity batten layout for heights over 10m

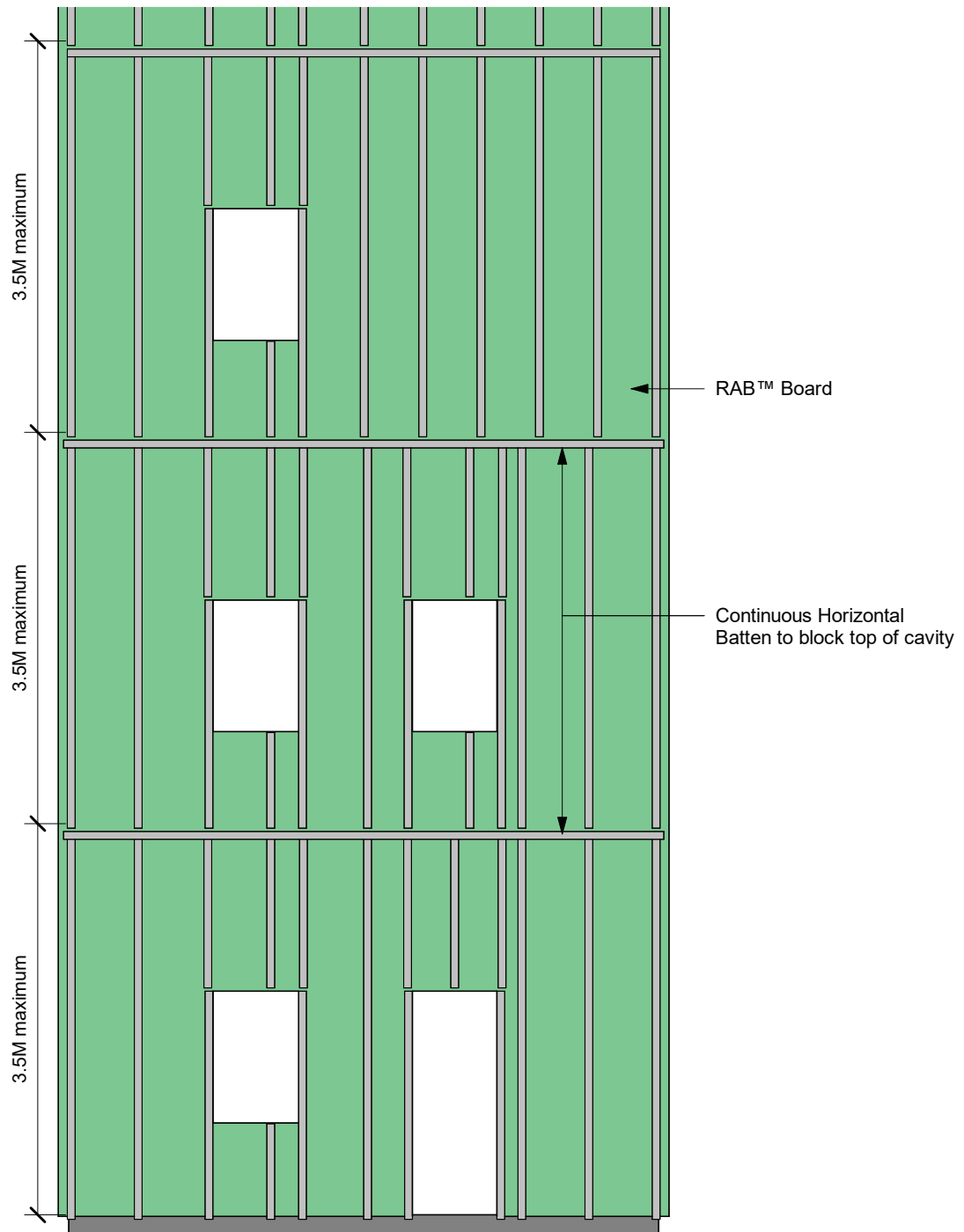
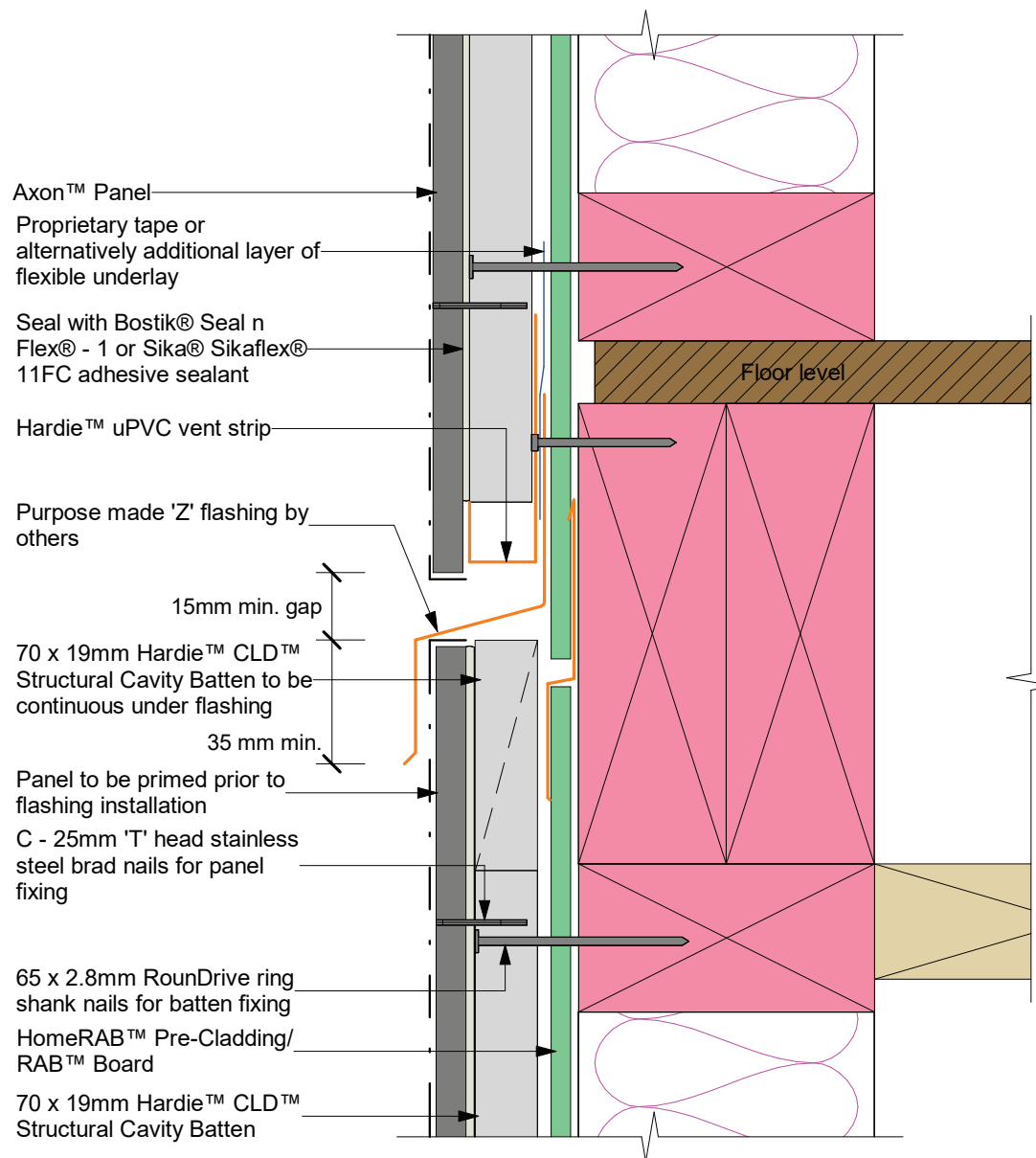


Figure 55: Cavity fire barrier for heights over 10m



Notes

- Check architect's plans for the type of flashing to be used.
- Cut edges need to be primed.
- The flashing to be ideally placed in the centre of the floor joists.
- For further information about cavity barriers, refer to paragraph 5.8.5 of C/AS2 of the NZBC.

Notes

Notes

Product Warranty

James Hardie New Zealand Limited (“James Hardie”) warrants for a period of 15 years from the date of purchase that the Axon™ Panel (the “Product”), will be free from defects due to defective factory workmanship or materials and, subject to compliance with the conditions below, will be resistant to cracking, rotting, fire and damage from termite attacks to the extent set out in James Hardie’s relevant published literature current at the time of installation. James Hardie warrants for a period of 15 years from the date of purchase that the accessories supplied by James Hardie will be free from defects due to defective factory workmanship or materials.

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

CONDITIONS OF WARRANTY:

The warranty is strictly subject to the following conditions:

- a) James Hardie will not be liable for breach of warranty unless the claimant provides proof of purchase and makes a written claim either within 30 days after the defect would have become reasonably apparent or, if the defect was reasonably apparent prior to installation, then the claim must be made prior to installation.
- b) This warranty is not transferable.
- c) The Product must be installed and maintained strictly in accordance with the relevant James Hardie literature current at the time of installation and must be installed in conjunction with the components or products specified in the literature. Further, all other products, including coating and jointing systems, applied to or used in conjunction with the Product must be applied or installed and maintained strictly in accordance with the relevant manufacturer’s instructions and good trade practice.
- d) The project must be designed and constructed in strict compliance with all relevant provisions of the current New Zealand Building Code (“NZBC”), regulations and standards.
- e) The claimant’s sole remedy for breach of warranty is (at James Hardie’s option) that James Hardie will either supply replacement product, rectify the affected product or pay for the cost of the replacement or rectification of the affected product.
- f) James Hardie will not be liable for any losses or damages (whether direct or indirect) including property damage or personal injury, consequential loss, economic loss or loss of profits, arising in contract or negligence or howsoever arising. Without limiting the foregoing James Hardie will not be liable for any claims, damages or defects arising from or in any way attributable to poor workmanship, poor design or detailing, settlement or structural movement and/or movement of materials to which the Product is attached, incorrect design of the structure, acts of God including but not limited to earthquakes, cyclones, floods or other severe weather conditions or unusual climatic conditions, efflorescence or performance of paint/coatings applied to the Product, normal wear and tear, growth of mould, mildew, fungi, bacteria, or any organism on any Product surface or Product (whether on the exposed or unexposed surfaces).
- g) All warranties, conditions, liabilities and obligations other than those specified in this warranty are excluded to the fullest extent allowed by law.
- h) If meeting a claim under this warranty involves re-coating of Products, there may be slight colour differences between the original and replacement Products due to the effects of weathering and variations in materials over time.

Disclaimer: The recommendations in James Hardie’s literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to conditions (c), (d), (f) and (g) above. James Hardie has tested/assessed the performance of the Axon™ Panel when installed in accordance with the relevant Axon™ Panel technical specification, in accordance with the standards and verification methods required by the NZBC and those test results demonstrate the product complies with the performance criteria established by the NZBC. However, as the successful performance of the relevant system depends on numerous factors outside the control of James Hardie (e.g. quality of workmanship and design) James Hardie shall not be liable for the recommendations made in its literature and the performance of the relevant system, including its suitability for any purpose or ability to satisfy the relevant provisions of the NZBC, regulations and standards, as it is the responsibility of the building designer to ensure that the details and recommendations provided in the relevant James Hardie installation manual are suitable for the intended project and that specific design is conducted where appropriate.

© 2024. James Hardie New Zealand Limited. TM and ® denotes a Trademark or Registered Mark owned by James Hardie Technology Limited.

