

Timber Cavity Batten Technical Specification

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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

THIS TECHNICAL SPECIFICATION IS FOR AXON™ PANEL FIXED TO A TIMBER CAVITY BATTEN.

1 Application and scope

1.1 APPLICATION

Axon™ Panel is manufactured by James Hardie using advanced proprietary Scyon technology which is a composition of treated cellulose fibre, portland cement, finely ground sand and water. Axon Panel has vertical grooves along the length of panel. It is classified as light weight wall cladding suitable for residential and light commercial buildings using timber framed buildings.

- Axon Panel is ideal for achieving feature walls in areas such as gable ends and entrance ways.
- Axon Panel is primed on the face to take a suitable paint finish in any colour.
- Axon Panel 133 Smooth - the grooves on the face panel are nominal 10mm wide x 2.25mm deep and spaced at 133mm c/c.
- Axon Panel 133 Grained - the grooves on the face panel are nominal 10mm wide x 2.25mm deep and spaced at 133mm c/c. Between the grooves is a look of traditional wood-grain texture.
- Axon Panel 400 Smooth - the grooves on the face panel are nominal 10mm wide x 2.25mm deep and spaced at 400mm c/c.

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, and associated details and material selection provided by the designer. All 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 James Hardie 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.

1.2 SCOPE

The scope of this specification covers the use of Axon Panel fixed with timber cavity battens to buildings which fall within the scope limitations of 'Acceptable Solution E2/AS1 paragraph 1.1' of the New Zealand Building Code (NZBC) or the buildings covered by a specific engineering design (SED).

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

Note: Refer to Axon Panel CLD™ Structural Cavity Batten technical specification for direct fixed or when fixing to CLD Structural Cavity Battens.

1.3 DETAILS

Various Axon Panel fixed to timber cavity batten figures are provided at the rear of this document. All dimensions shown are in millimetres unless noted otherwise. This specification and details in CAD file are also available for download at www.jameshardie.co.nz.

1.4 SPECIFIC DESIGN

For use of Axon Panel outside the published scope, the architect, designer or engineer must undertake specific design. For advice on designs outside the scope of this specification, Ask James Hardie on 0800 808 868.

2 Design

2.1 COMPLIANCE

Axon Panel complies with E2 of the NZBC as an alternate solution.

Axon Panel cladding has been tested as per E2/VM1 of the NZBC and it meets the performance requirements of 'External Moisture - E2'. Axon Panel also complies with 'Structure - B1' and 'Durability - B2' requirements of the NZBC.

2.2 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 NZBC.

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.

2.3 SITE AND FOUNDATION

The site on which the building is situated must comply with the NZBC Acceptable Solution E1/AS1 'Surface Water'.

Foundations design must comply with the requirements of NZS 3604 'Timber Framed Buildings' or be as per specific engineering design.

The grade of adjacent finished ground must slope away from the building to avoid any possibility of water accumulation in accordance with the NZBC requirements.

2.4 SURFACE CLEARANCES

The clearance between the bottom edge of the 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 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. Refer Figure 4.

2.5 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, manufactures specifications and the NZBC.

2.6 STRUCTURE

2.6.1 Timber Framing

Timber framed buildings must be designed in accordance with NZS 3604 (Timber Framed Buildings). When the framing is provided as per the specific engineering design, the framing stiffness must be equivalent to, or more than, the stiffness requirements of NZS 3604.

For timber frame walls longer than 12m, it is best practice to allow for construction joints to accommodate movements generated due to timber shrinkage or deflections etc.

2.6.2 Wind Loading

Axon Panel is suitable for use in all wind zones in New Zealand up to and including EH as defined in NZS 3604.

A specific design is required for all situations where the buildings fall in a specific engineering design (SED) wind zone.

2.7 BRACING

Axon Panel can be used to achieve structural bracing when fixed with stainless steel HardieFlex nails. Refer to the James Hardie Bracing Design Manual for further information.

2.8 FIRE RATED WALLS

Axon Panel when fixed to timber cavity battens to external walls can achieve fire ratings up to 60/60/60 to comply with C/AS1 of the NZBC, when the walls are constructed in accordance with the current James Hardie Fire and Acoustic Design Manual.

Axon Panel is classified as a 'non-combustible' material suitable for use on walls close to a boundary.

2.9 ENERGY EFFICIENCY

External walls constructed as per this technical specification using Axon Panel, and bulk insulation, where the area of glazing is 30% or less of the total wall area and complies with the requirements for walls in the NZBC Acceptable Solution.

H1/AS1 (NZBC Clause H1 Energy Efficiency), Replacement Table 1. To meet the minimum thermal insulation requirements for the construction, the bulk insulation as specified in Table 1 must be used. This insulation may be substituted with insulation material having higher R-values. The thermal insulation of a wall is affected when the depth of the timber framing is increased or decreased or stud spacing is decreased. The calculation used in Table 1 is based on a timber framing size 90 x 45mm and an internal lining material such as Villaboard™ Lining or a 10mm plasterboard.

Table 1

Insulation capability		
Climate Zone	Construction R-Value Requirement	Minimum R-Value of Insulation Required
1 and 2	1.9 m ² °C/W	#R2.0
3	2.0 m ² °C/W	#R2.2

Total construction R-Value depends on the insulation material used and the framing ratio. The insulation material R-Values specified in this table are for studs spaced at 600mm c/c and nogs spaced at 800mm c/c.

To achieve higher construction R-Values the wall insulation material must be replaced with an insulation material having higher R-Values to suit the requirements.

For further guidance on insulation requirement refer to current edition of 'House Insulation Guide' published by BRANZ.

3 Framing

3.1 GENERAL

Axon Panels can be installed to timber-framed or steel-framed structures. Fixing to any other framing material is subject to a specific engineering design.

- Stud spacing must not exceed 600mm c/c.
- Nog/dwang spacing must not exceed 800mm c/c when studs are at 600mm c/c.

3.2 TIMBER FRAMING

3.2.1 Dimensions

A minimum 70mm wide stud is required at panel edges for cavity construction using HardieFlex nails.

3.2.2 Structural Grade

Minimum timber grade requirement is No. 1 framing grade or MSG6 as per NZS 3604. The grading of timber must comply with AS/NZS 1748 and NZS 3631 requirements.

3.2.3 Durability

The external framing must be treated to a minimum H1.2 treatment. Refer to NZBC Acceptable Solution B2/AS1 'Durability' for further information about the durability requirements.

For timber treatment and allowable moisture content information refer to 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 framing manufacturer's literature for further guidance on timber selection. Framing must be protected from moisture at site in accordance with the recommendation of framing manufacturer's.

Note: Refer to NZS 3602 for the allowable moisture contents in timber.

3.2.4 Frame Construction

The framing must fully support all panel edges. The framing must be rigid and not rely on the cladding panel for stability.

All timber framing sizes and set-out must comply with the NZS 3604 and as specified in this specification.

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.

3.3 STEEL FRAMING

3.3.1 Dimensions and Gauge

A 38mm minimum stud width is required. Framing members must be 0.55mm minimum to 1.6mm maximum BMT (Base Metal Thickness).

3.3.2 Durability

The steel framing must have the appropriate level of coating to prevent corrosion and to comply with the durability requirements of NZBC.

3.3.3 Frame Construction

Steel framing must comply with NASH handbook/guidelines. Stud and batten spacing must not be more than what has been specified in this specification. Refer to framing manufacturer's specifications or NASH for further guidance on steel frame installation.

3.4.CAVITY CONSTRUCTION METHOD

For cavity construction method the following framing is required:

- when studs are spaced at 600mm centres maximum, the nogs/dwangs must be provided at 800mm centres maximum.
- a minimum 70mm wide stud is required at vertical panel joint when fixing with HardieFlex 60 x 3.15mm nails.
- when studs are spaced at 400mm centres then the nogs/dwangs may be provided at 1200mm centres.

3.5 SPECIAL FRAMING REQUIREMENTS

The following are special framing requirements for both timber and steel framing:

- Double studs are required at internal corners, refer to Figure 7.

3.6 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 the NZS 3604. All framing shall be made flush.

4 Preparation

4.1 FLEXIBLE UNDERLAY OR HOMERAB PRE-CLADDING

Flexible underlay must be provided as per the requirements of the NZBC Acceptable Solution E2/AS1 'External Moisture' Table 23. The flexible underlay must be fixed in accordance with E2/AS1 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. HomeRAB Pre-Cladding is suitable for use in these applications. It must be installed in accordance with James Hardie Rigid Air Barriers installation manual.

4.2 RAB BOARD

For specific design projects where the wind pressure is higher than 1.5kPa, or when an EH windzone, RAB™ Board must be used instead of flexible underlay. RAB Board is suitable to withstand wind pressures up to 4.5kPa.

To achieve the temporary weathertightness using James Hardie rigid air barriers, windows/doors can be temporarily installed. Refer to James Hardie Rigid Air Barriers installation manual for information regarding its installation.

5 Panel Fixing

4.3 VENT STRIP

The James 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. James Hardie uPVC vent strip has an opening area of 1000mm²/m length.

4.4 CAVITY BATTENS

Buildings with a risk score of 7-20 calculated in accordance with Table 3 of Acceptable Solution E2/AS1 of the NZBC, require Axon Panel to be installed on a cavity. The battens provide airspace between the frame and the panel and are considered a "packer" only in this specification.

The timber cavity battens must be minimum H3.1 treated in accordance with NZS 3640 (Chemical preservation of rough and sawn timber) to comply with the durability requirements of B2/AS1.

Cavity battens must comply with E2/AS1 and:

- be minimum 18mm thick
- be as wide as the width of studs
- be provided at 300mm c/c where studs are fixed at 600mm c/c.
- be fixed by the cladding fixings to the main framing over the building underlay. Therefore until claddings are fixed the battens only need to be fixed to framing by 40 x 2.8mm nails at 800mm c/c.

4.5 INTERMEDIATE SUPPORT

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

- intermediate cavity batten between the studs; or
- 75mm galvanized mesh; or
- polypropylene tape at 300mm centres fixed horizontally and drawn taut

No intermediate supports/battens are required:

- when studs are spaced at 400mm centres; or
- when rigid air barriers instead of building underlays are used.

4.6 FLASHINGS

All wall openings, penetrations, intersections, connections, window sills, heads and jambs must be flashed prior to panel installation. Please refer to moisture management requirements in Clause 2.5.

The flexible underlays must be appropriately incorporated with penetration and junction flashings. Materials must be lapped in such a way that water tracks down to the exterior on the face of flexible underlay.

The selected flashing materials must comply with the durability requirements of the NZBC. For information refer to Table 20 of E2/AS1.

5.1 GENERAL

Axon Panel must be kept dry and under cover whilst in storage or prior to/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 shiplap jointing of panels is only suitable for vertical fixing of panels. Do not fix in the groove of Axon Panel.

This specifications covers the fixing of Axon Panel to timber cavity battens fixed over timber frame. When fixing to a steel frame, Ask James Hardie 0800 808 868.

5.2 FASTENER DURABILITY

Fasteners must meet the minimum durability requirements of the NZBC. Refer to Table 2 for fixing materials requirements to be used in relation to the exposure conditions.

Table 2

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

* Zone C areas where local knowledge dictates that increased durability is required, appropriate selection shall be made Microclimatic conditions as detailed in 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.

5.3 FASTENER – SIZE AND LAYOUT

Axon Panel must be fixed to framing using the fixings as specified in Table 3 below and follow the edge distance required for nails as shown in the details. Fixings must be finished flush with the panel surface. Refer to Figure 5.

Table 3

Panel fixing	
Cavity construction over flexible underlay	
60 x 3.15mm HardieFlex nails.	Fix at 200mm centres to all framing. Stud width 70mm min required at vertical joint.
Cavity construction over HomeRAB Pre-Cladding or RAB Board	
75 x 3.15mm HardieFlex nails.	Fix at 200mm centres to all framing. Stud width 70mm min required at vertical joint.

For other fixing options Ask James Hardie on 0800 808 868.

Note: Special fixing arrangements are required for bracing and fire-resistance rated wall systems. For more information Ask James Hardie on 0800 808 868.

- When fixing the panels using nail guns, refer to the nail gun manufacturer for information about nails and the type of nail gun to be used.

Note: Do not use 'D' head nails.

5.4 PANEL LAYOUT

All panel edges must be supported by the framing. The shiplap joint must be formed vertically. The framing centres must be checked before the panel installation. Refer to Figure 3.

6 Jointing

6.1 GENERAL

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

6.2 VERTICAL JOINT

Axon Panels are shiplap jointed keeping a gap of 1-2mm between the panels. A 50mm wide 3259 Inseal sealing tape is used under the joint. A flexible sealant must be applied to the full length of the joint before the panels are jointed. The edge distance for a HardieFlex nail must be 18mm min. Refer to Figure 5.

6.3 HORIZONTAL JOINT

At floor joist levels a horizontal joint must be provided to accommodate the movement resulting from timber joist shrinkage and settlement. A James Hardie aluminium horizontal 'h' mould is used to form a horizontal joint. Use the aluminium 'h' mould jointer to cover over the butt joint of flashings. A purpose

made metal 'Z' flashing or a James Hardie uPVC flashing could also be used to flash the horizontal joint. Refer to Figure 12.

6.4 EXTERNAL CORNER

An aluminium box corner flashing is used to form the external box corner. The site cut sheet edges are sealed before butting them into the box corner.

Do not run the box corner flashing continuously over the floor joist. On a two storey construction the aluminium box corner is finished under the aluminium 'h' mould. A uPVC corner under flashing must be used under the box corner when in this situation. Refer to Figures 8 and 26.

6.5 INTERNAL CORNER

The internal corner is formed using the uPVC corner under flashing or an 80mm wide Inseal sealing strip behind the panel edges. The joint is filled with the flexible sealant. Refer to Figure 7.

6.6 FLASHING MATERIAL DURABILITY

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

7 Finishing

7.1 PREPARATION

Painting of Axon Panel is required to meet the durability requirements of the NZBC and James Hardie product warranties.

Axon Panel must be dry and free from dirt before painting.

When using uPVC flashings, dark colours should be avoided as it will affect the durability of uPVC flashing. The LRV of paint must be above 40% when using uPVC flashings.

Dark paints can be used when using the aluminium flashings.

7.2 SEALANTS

All sealants used must comply with the relevant requirements of the NZBC. The 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 product.

7.3 COATING

Axon Panels 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. Note that certain special paints require an undercoat before applying the finish coat. Refer to the paint manufacturer for preparation required before commencing the coating work. Axon Panel can be painted with dark colour paints. When using uPVC flashings, the LRV of colour should be 40% or higher.

9 Product information

7.4 STAINING

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 11 for stain manufacturer details.

8 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*
- Re-applying of exterior protective finishes if necessary**
- 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.

**Do not use a water blaster to wash down the cladding.*

***In extreme coastal conditions or sea spray zones, wash every 3-4 months.*

***Refer to your paint manufacturer for washing down and recoating requirements related to paint performance.*

9.1 MANUFACTURING AND CLASSIFICATION

Axon Panel is a cellulose fibre reinforced cement building product. The basic composition is portland cement, ground sand, cellulose fibre and water. The panels are easily identified by the name 'Axon Panel' printed at regular intervals on the back face of panel.

Axon Panel is manufactured 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 certified manufacturer.

Axon Panel is classified Type A, Category 2 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.

9.2 PRODUCT MASS

Axon Panel is manufactured in 9.0 mm thickness and has a mass of 12.1kg/m² at EMC.

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

9.3 DURABILITY

Axon Panel installed as per this technical specification will meet the durability requirements for claddings as required under clause 'B2-Durability' of the NZBC.

9.3.1 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).

9.3.2 Control of External Fire Spread

Axon Panel is suitable for use in external wall cladding applications where 'Non-Combustible Materials' are specified and complies with the requirements of Section 5.4 of C/AS1 and 5.4.1 of C/AS2 of the NZBC.

Refer to James Hardie Fire and Acoustic Design Manual for construction details.

9.3.3 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.

10 Safe working practices

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

James Hardie 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
- 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 HardieBlade™ logo 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.

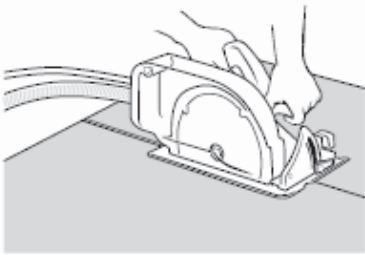
When cutting Axon Panel:

- ✓ 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 HardieBlade 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
 - When others are close by, ask them to do the same
- ✓ 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

HardieBlade™ Saw Blade

The HardieBlade Saw Blade used with a dust-reducing saw is ideal for fast, clean cutting of James 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

10.1 STORAGE AND DELIVERY

Keeping products and people safe

Off loading

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

Storage

James Hardie 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

James Hardie products must not be stored:

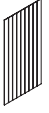


- ✗ Directly on the ground
- ✗ In the open air exposed to the elements

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






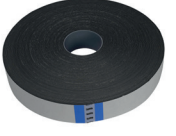



10.2 TIPS FOR SAFE AND EASY HANDLING OF AXON PANEL

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

11 Accessories

Axon Panel information					
Product	Description	Thickness (mm)	Size		Product Code
			Length (mm)	Width (mm)	
	Axon Panel 133 Smooth 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	2450	1200	403780
			2750	1200	403781
			3000	1200	403782
	Axon Panel 133 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/m ²	9	2450	1200	404510
			2750	1200	404511
			3000	1200	404512
	Axon Panel 400 Smooth 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/m ²	9	2450	1200	404414
			2750	1200	404415
			3000	1200	404416

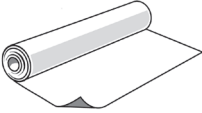
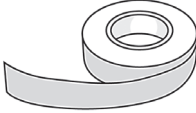

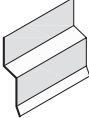
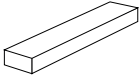

Note: The actual width of the panel is 1203mm. All dimensions and masses provided are approximate only and are subject to manufacturing tolerances.

Accessories/tools supplied by James Hardie			
Accessories	Description and Material Code	Quantity/Size (approx)	Product Code
	Aluminium External Box Corner A box corner mould to form the external joints. 9mm etch prime.	2450mm long 2750mm long 3000mm long 4000mm long	304509 304510 305150 305808
	JH 9mm Panel Aluminium Horizontal 'h' Mould A horizontal flashing to flash the horizontal joints. 9mm etch prime.	3000mm long	304508
	Aluminium 'h' Mould Jointer A jointer to cover the butt joint of 'h' mould.	100mm long	304512
	uPVC Corner Under Flashing A 50 x 50mm corner under flashing for internal and external joints	3000mm long	303745
	uPVC Vent Strip Used to provide protection from vermin entering cavity space.	3000mm long	302490
	INSEAL® 3259 Tape Black 48mm tape to be used under the vertical shiplap joint. Black 80mm tape to be used at corners.	50m roll 80m roll	300767 300769
Tools			
	HardieBlade™ Saw Blade Diamond tip 184mm diameter fibre cement circular saw blade. Spacers not included.	Each	300660
	HardieFlex™ Stainless Steel 316 Nails For fixing panels through cavity battens. 60 x 3.15mm	Jar	302782
	HardieFlex™ Hot Dip Galv. Nails For fixing panels through cavity battens. 60 x 3.15mm	Jar	302784

Note: upvc 'h' mould and jointer accessories are also available from James Hardie.

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
	<p>Flexible underlay To comply with Table 23 of E2/AS1.</p>
	<p>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. Tyvek®, Protecto or Thermakraft or similar.</p>
	<p>Joint sealant Paintable flexible sealants are recommended for filling the joints. Refer to Section 7.2 for information.</p>
	<p>Head flashing Required over window heads to be supplied by window installer. Material must comply with Table 20 and 21 of E2/AS1.</p>
	<p>Timber cavity batten H3.1 minimum treated</p>
	<p>Stain Timbakote Tel: 0800 846 225</p>

12 Details

The following generic details have been provided in this document for cavity construction methods.

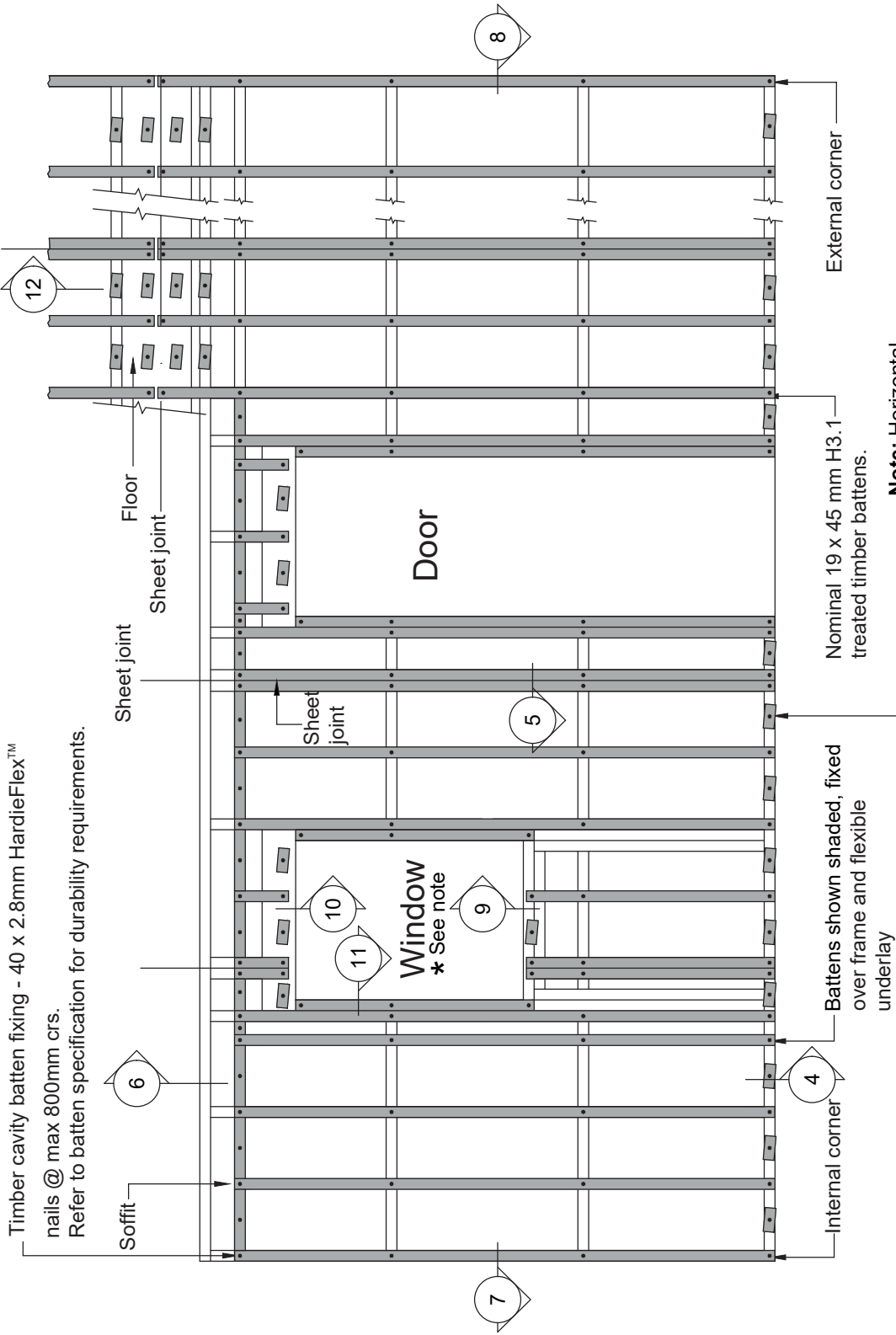
Table 4

Panel fixing		
Description	Cavity Construction	
	Figure No.	Page No.
Typical Framing Setout	Figure 1	14
Batten Fixing	Figure 2	15
Typical Panel Fixing Setout	Figure 3	16
Foundation Detail	Figure 4	17
Shiplap Joint	Figure 5	17
Soffit Detail	Figure 6	18
Internal Corner Detail	Figure 7	18
External Corner Detail	Figure 8	19
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Section at Sill	Figure 10	20
Window Jamb	Figure 11	20
Horizontal Joint Detail	Figure 12	21
Parapet Flashing	Figure 13	22
Enclosed Deck Balustrade to Wall Junction	Figure 14	22
Enclosed Balustrade to Wall	Figure 15	23
Enclosed Deck	Figure 16	24
Deck Junction	Figure 17	24
Cavity One Piece Apron Flashing Joint	Figure 18	25
Pipe Penetration	Figure 19	26
Meter Box at Head	Figure 20	26
Meter Box at Sill	Figure 21	27
Meter Box at Jamb	Figure 22	27
Cavity Interstorey Drainage	Figure 23	28
Alternative Head Flashing Termination Against Batten	Figure 24	29
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Corner at 'h' Mould Joint Detail	Figure 26	31
Roof to Wall Junction Detail	Figure 27	32
Enclosed roof to wall intersection	Figure 28	33

Figure 1: Cavity fixed typical framing setout

* **Note:** Horizontal packers are not to be installed on the sill trimmer within 100mm of the window opening edge.

Timber cavity batten fixing - 40 x 2.8mm HardieFlex™ nails @ max 800mm crs.
Refer to batten specification for durability requirements.

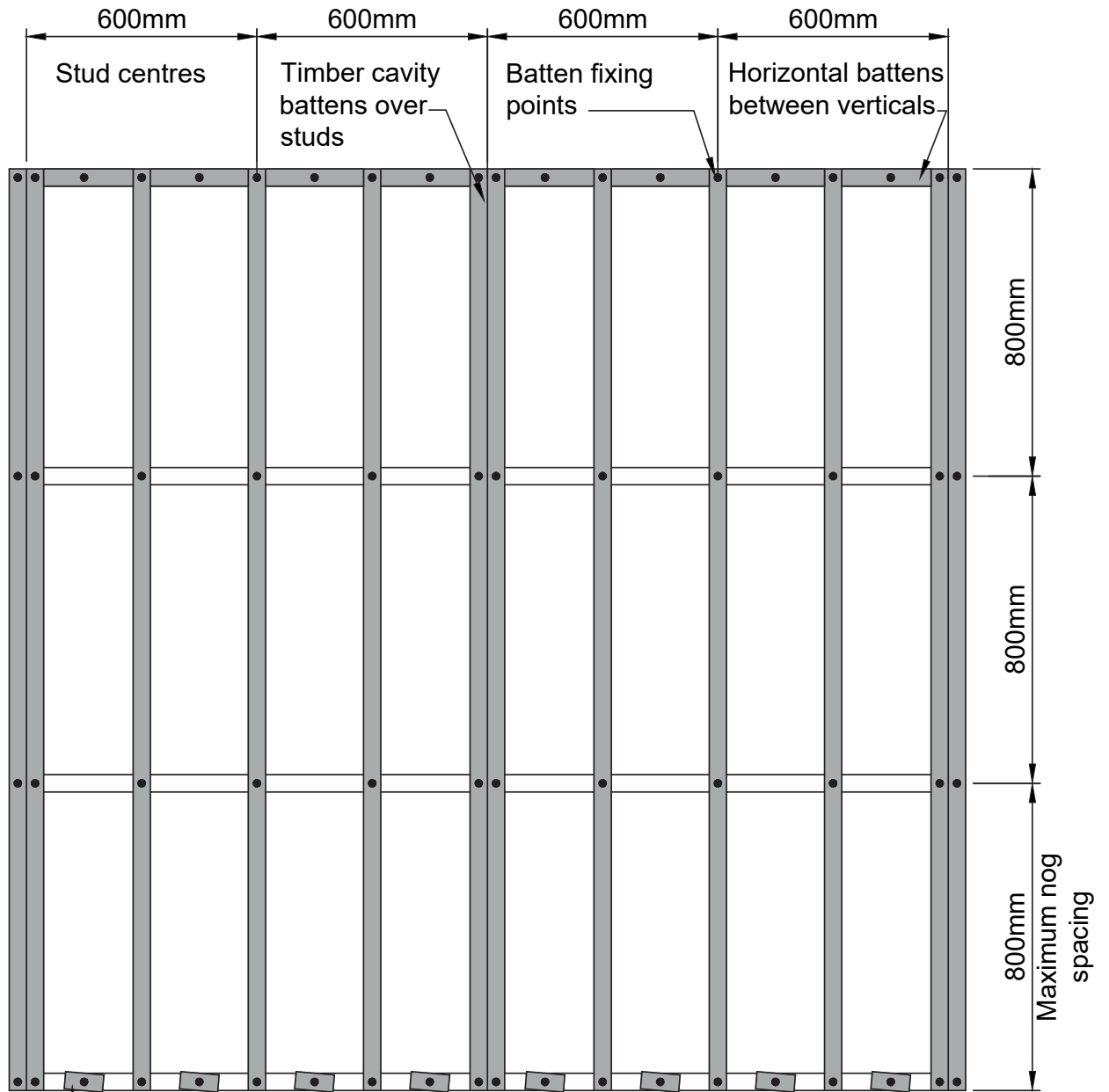


Nominal 19 x 45mm H3.1 treated timber horizontal packers @ 100mm long fix with one nail central

Note: Horizontal packers must be set to a fall of 5° min where shown

Note! Section notations refer to fig numbers.

Figure 2: Cavity batten fixing



100mm long horizontal packers bottom of sheet.

Intermediate timber batten or nylon strapping stapled to nogs

Note: No horizontal cavity packers required at nogs

Note: Horizontal packers must be set to a fall of 5° min where shown

Check Figure 5 for framing and batten requirements for vertical joint

Figure 3: Cavity fixed typical panel fixing setout

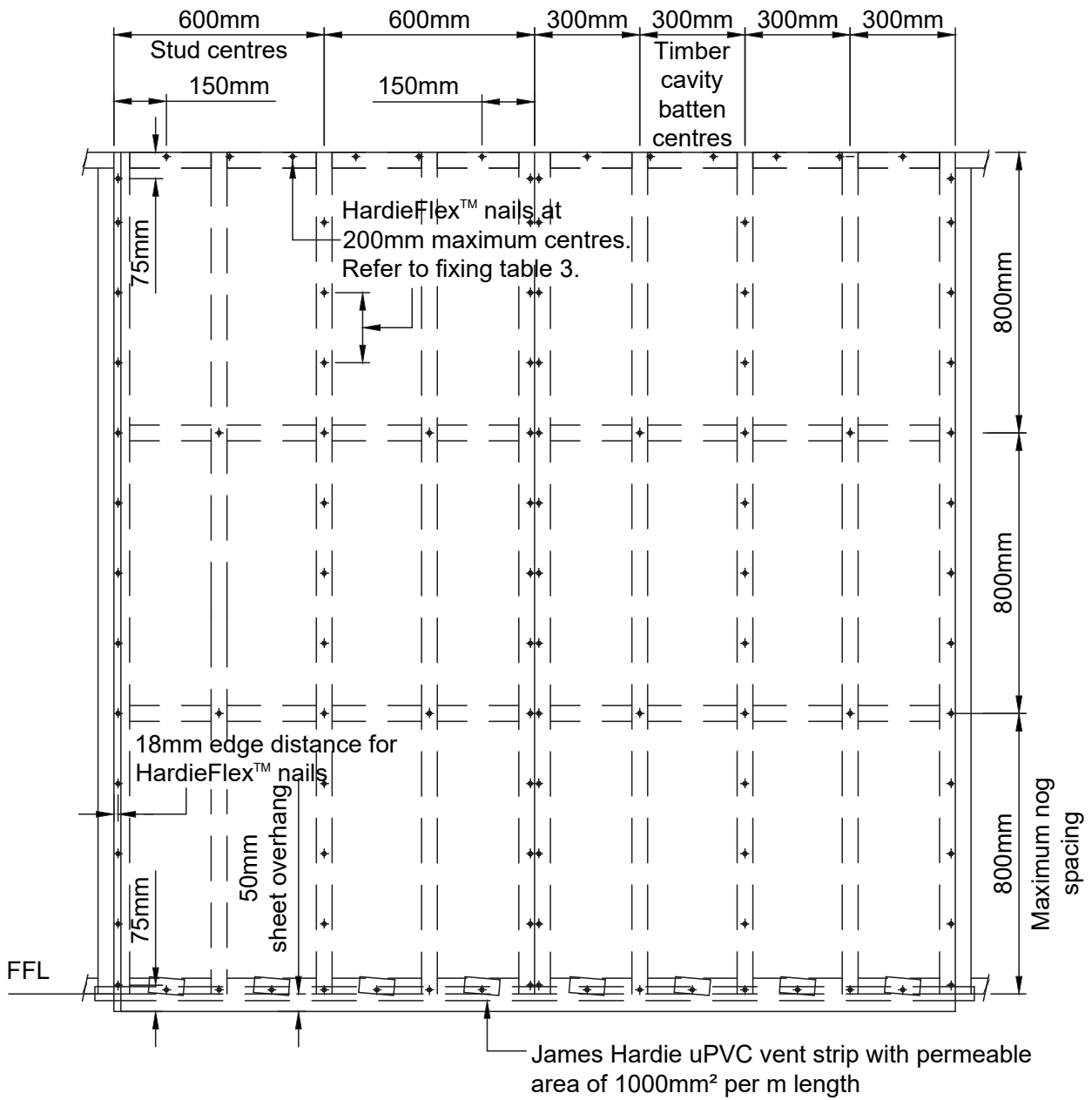


Figure 4: Cavity fixed foundation detail

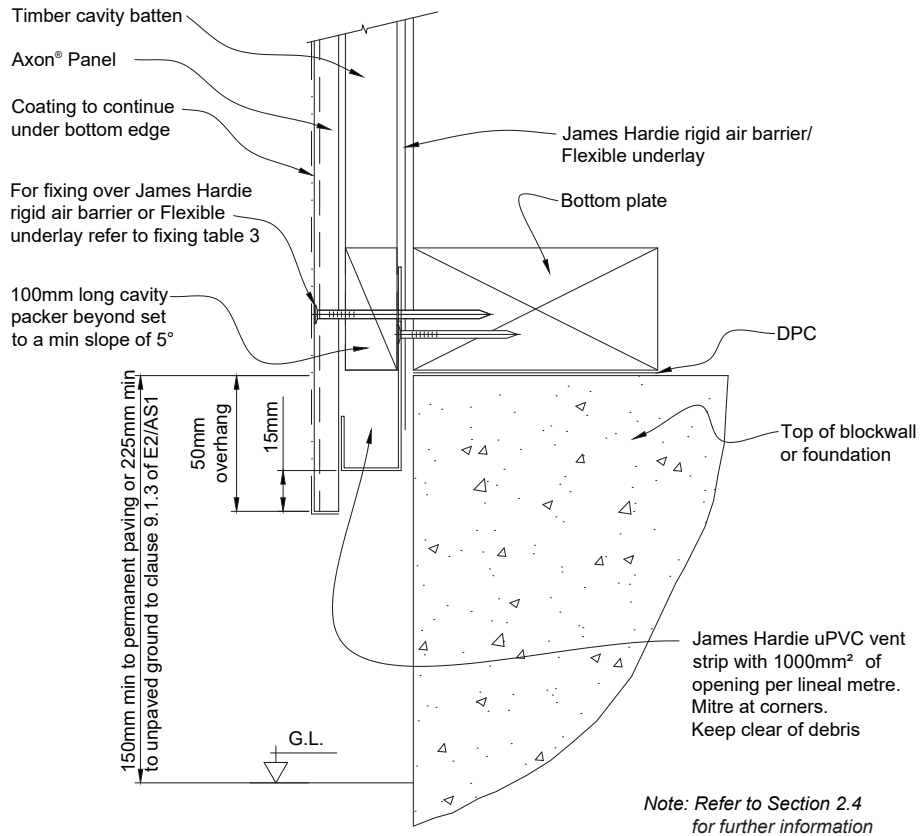


Figure 5: Cavity shiplap joint

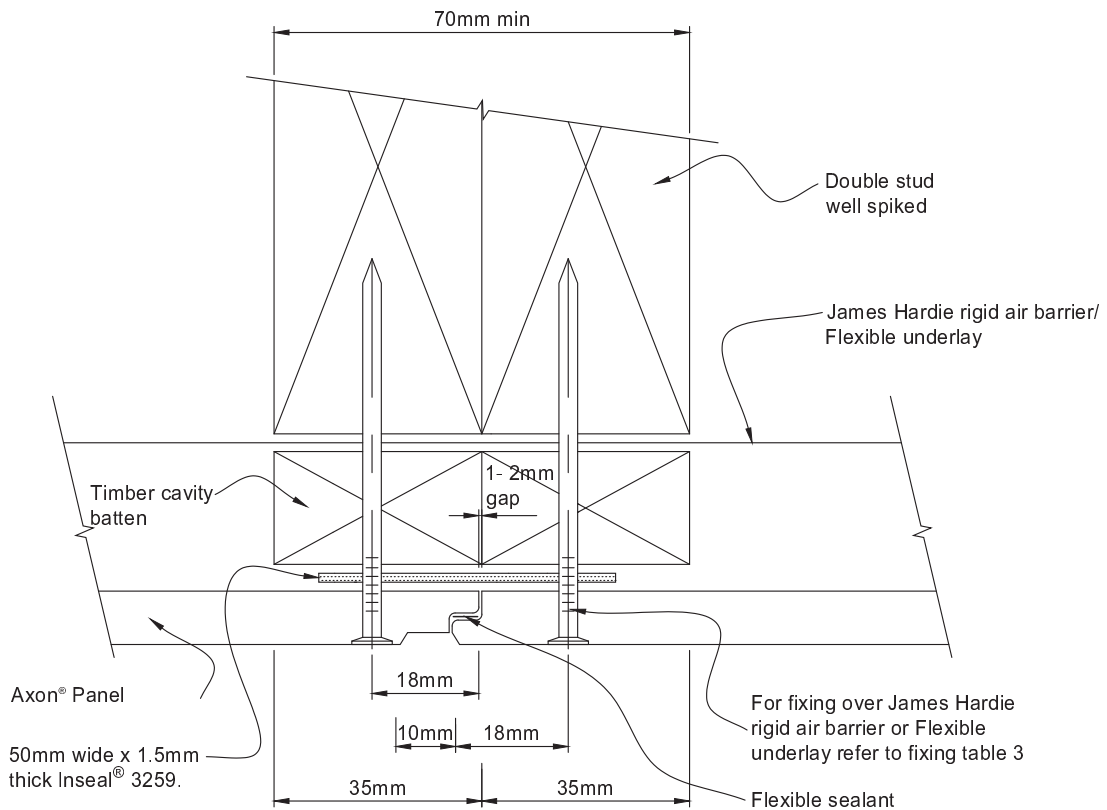


Figure 6: Cavity soffit detail

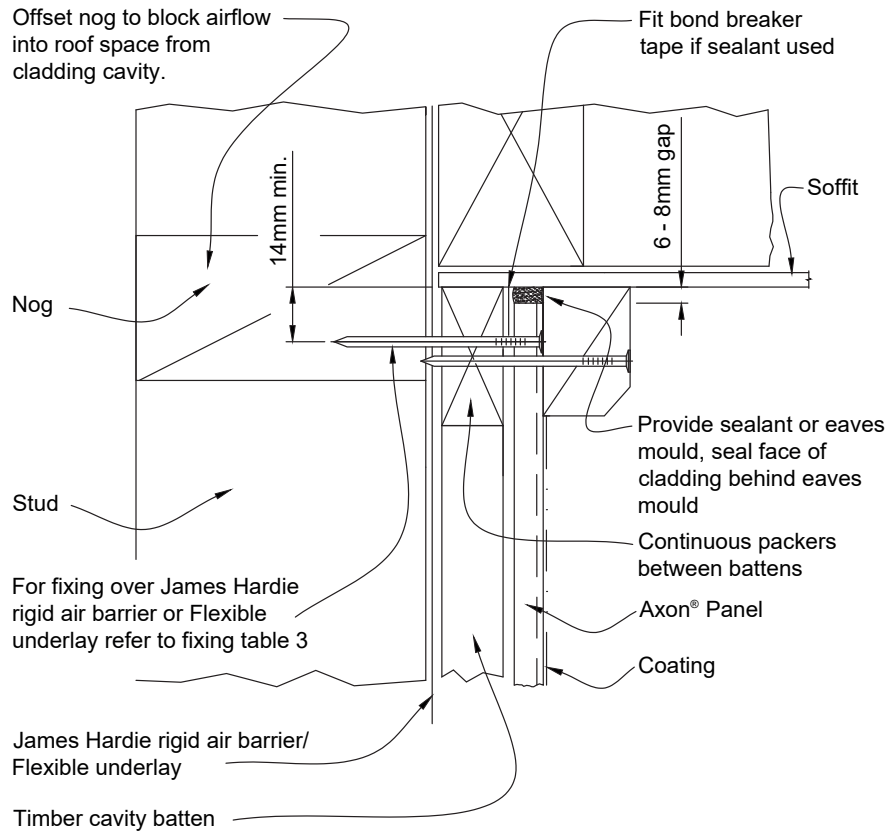


Figure 7: Cavity internal corner detail

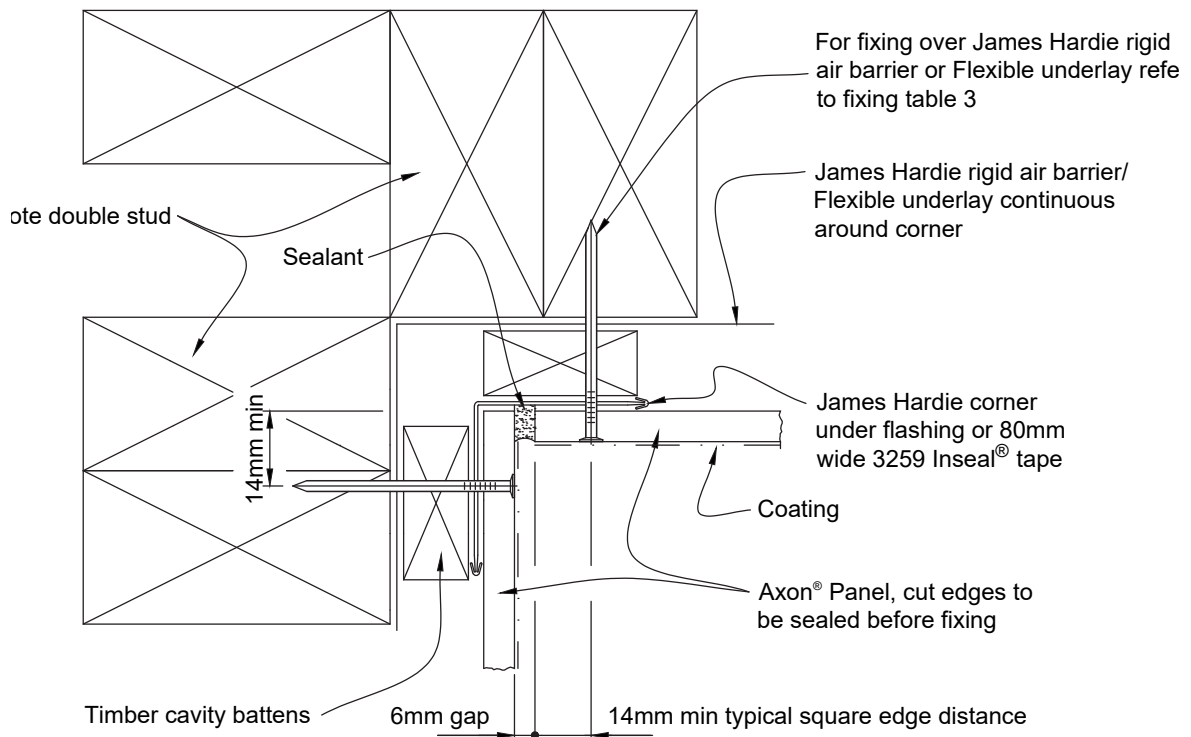
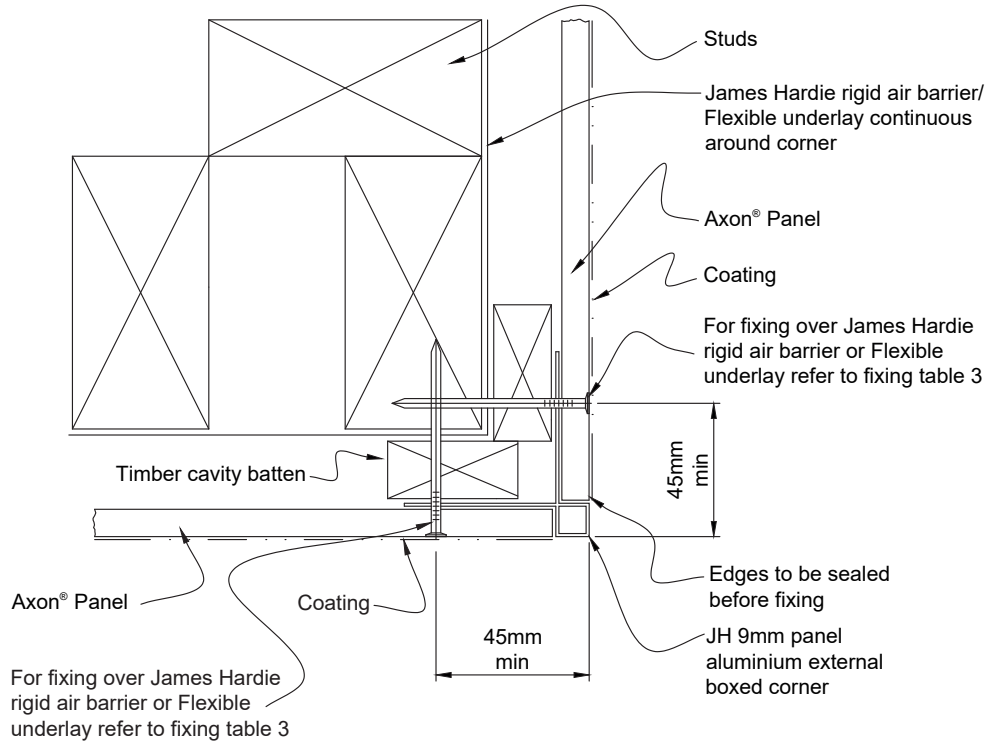


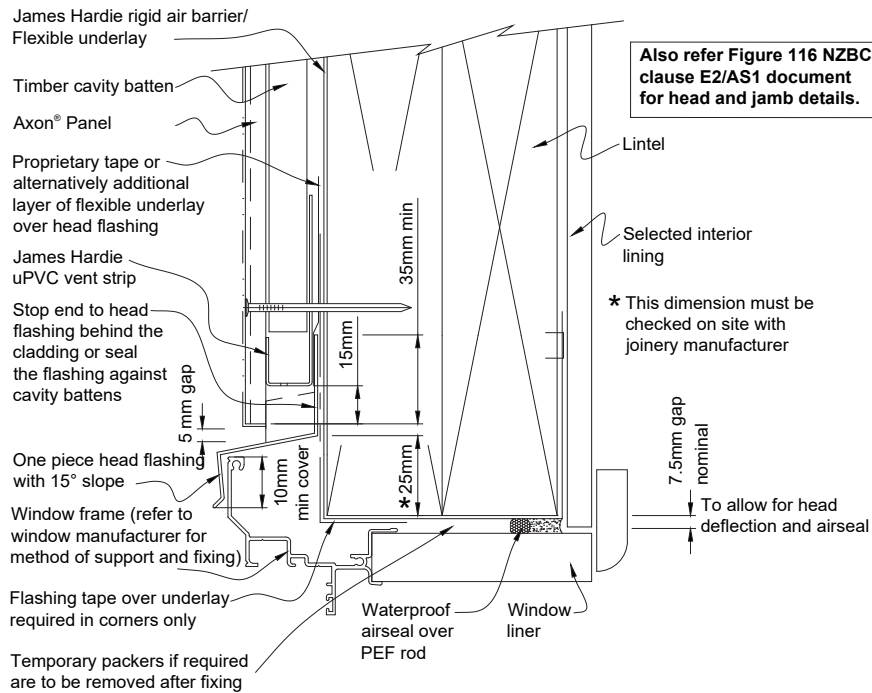
Figure 8: Cavity external corner detail



Note:

- Refer to Figure 27 for jointing with 'h' mould.
- Do not run corner mould continuous over floor joists.

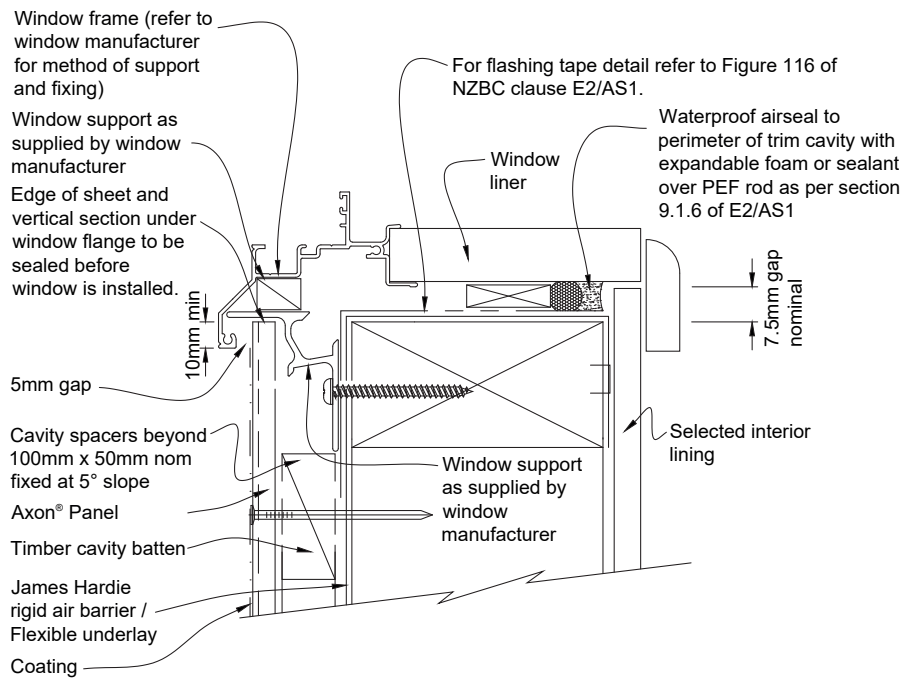
Figure 9: Cavity window head



Note:

- When James Hardie rigid air barrier is used flashing tape to be applied to the entire window opening
- Sealant must be installed between head flashing and window flange in VH and EH wind zones and SED projects
- Alternatively, the head flashing can be formed with stop ends

Figure 10: Section at sill



General notes for materials selection

1. Flashing materials must be selected based on environmental exposure, refer to NZS 3604 and Table 20 of NZBC E2/AS1.
2. Building underlay must comply with acceptable solution E2/AS1.
3. Flashing tape must have proven compatibility with the selected building underlay and other materials with which it comes into contact.
4. When James Hardie rigid air barriers are used flashing tape to be applied to the entire opening.

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

Figure 11: Cavity window jamb

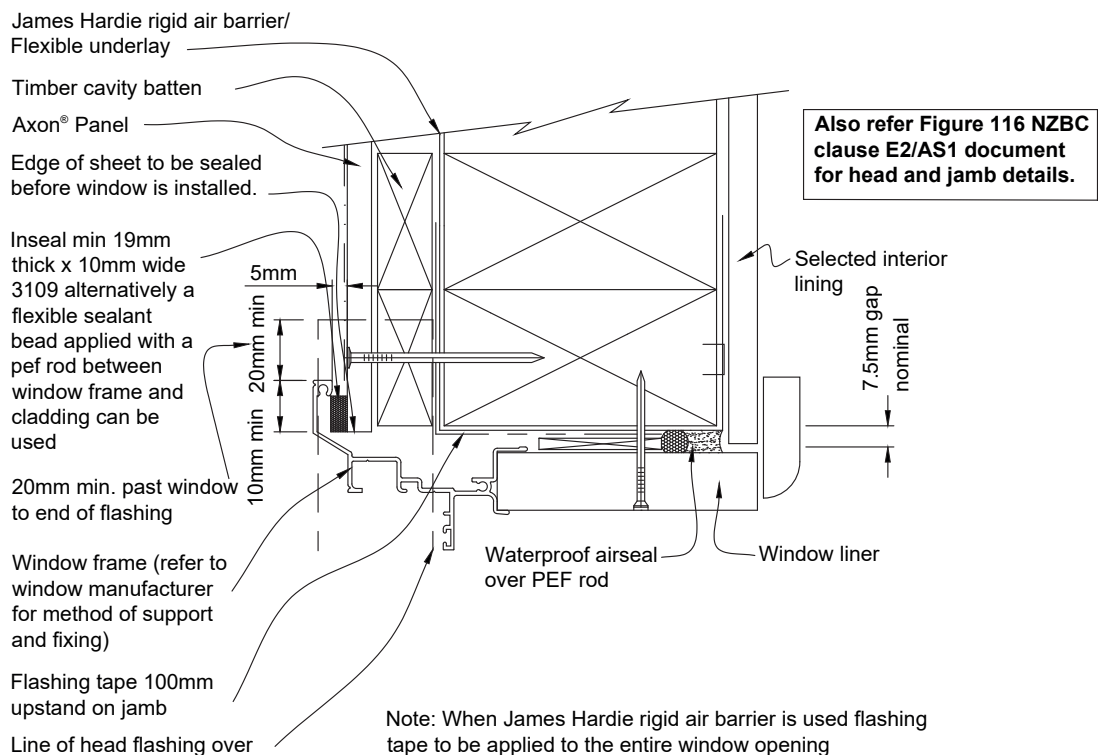
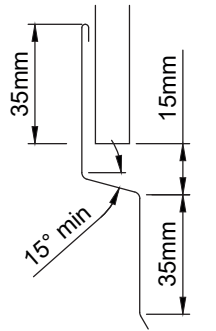


Figure 12: Cavity horizontal joint detail



Alternative Flashing Option

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

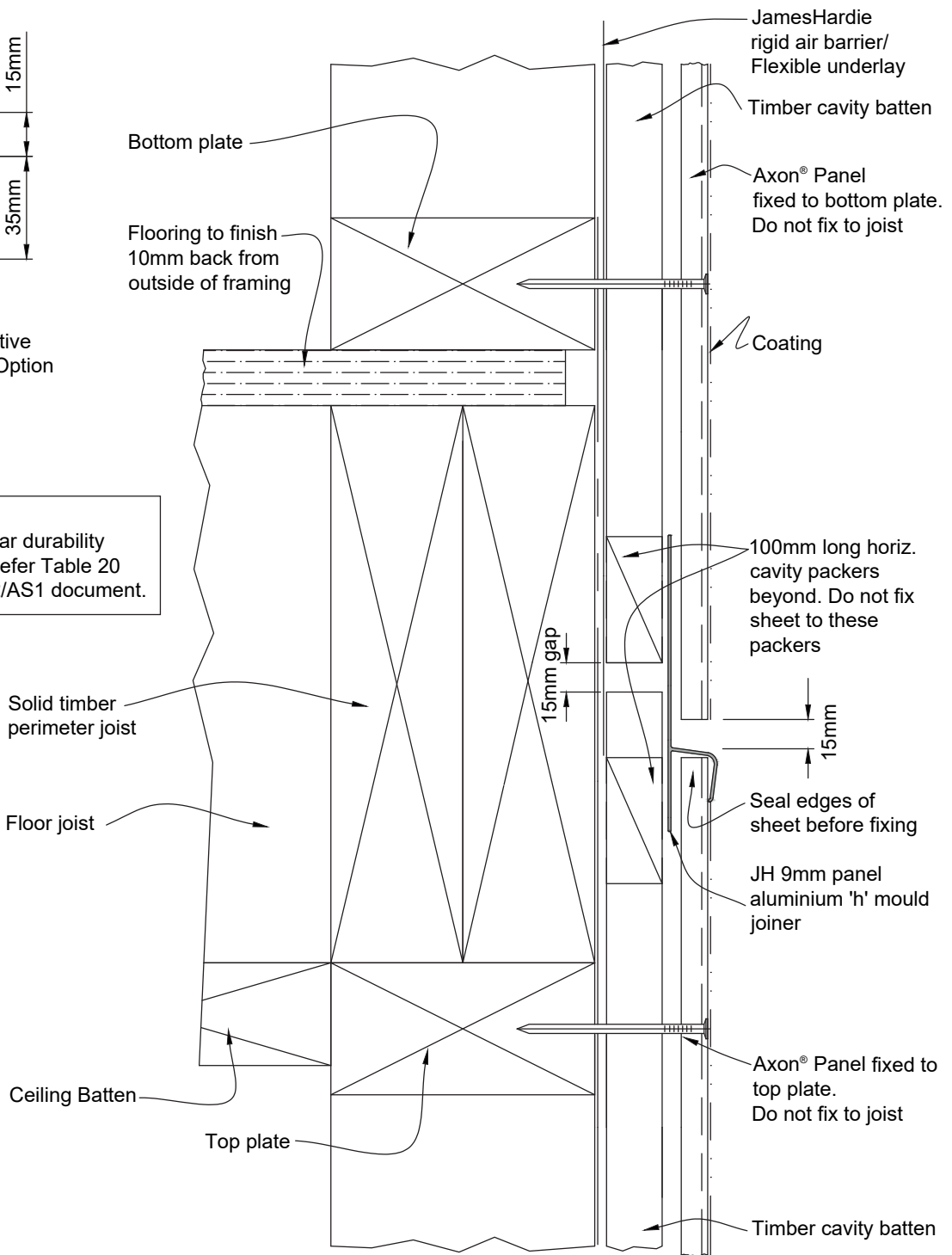


Figure 13: Cavity parapet flashing

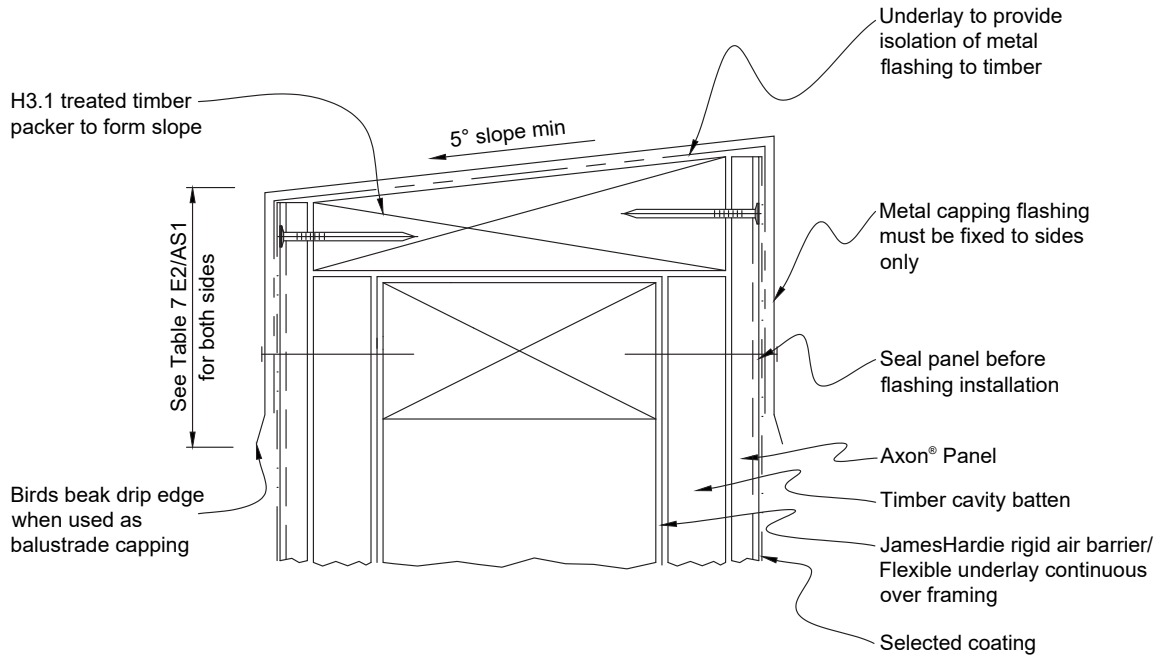


Figure 14: Cavity enclosed deck balustrade to wall junction

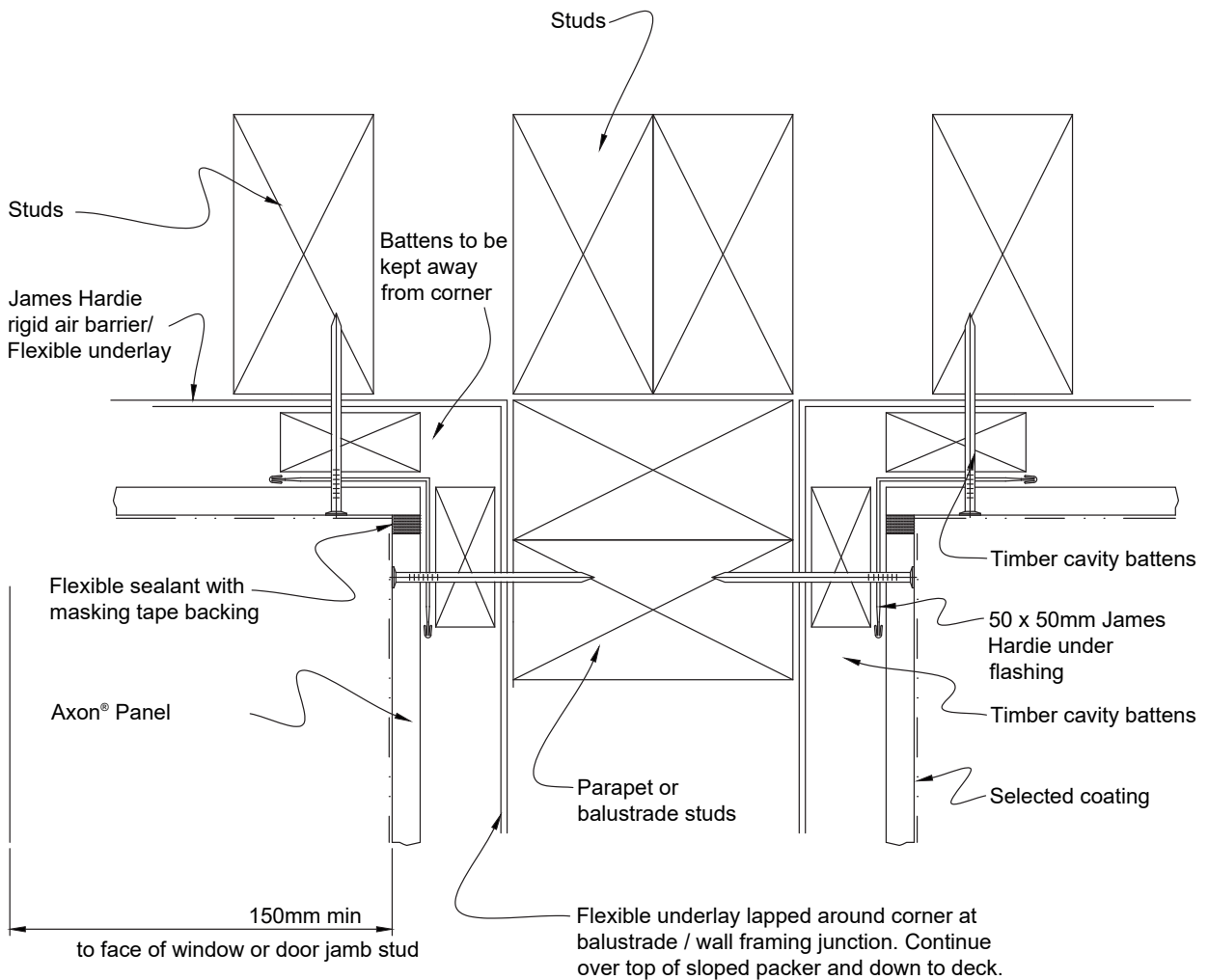
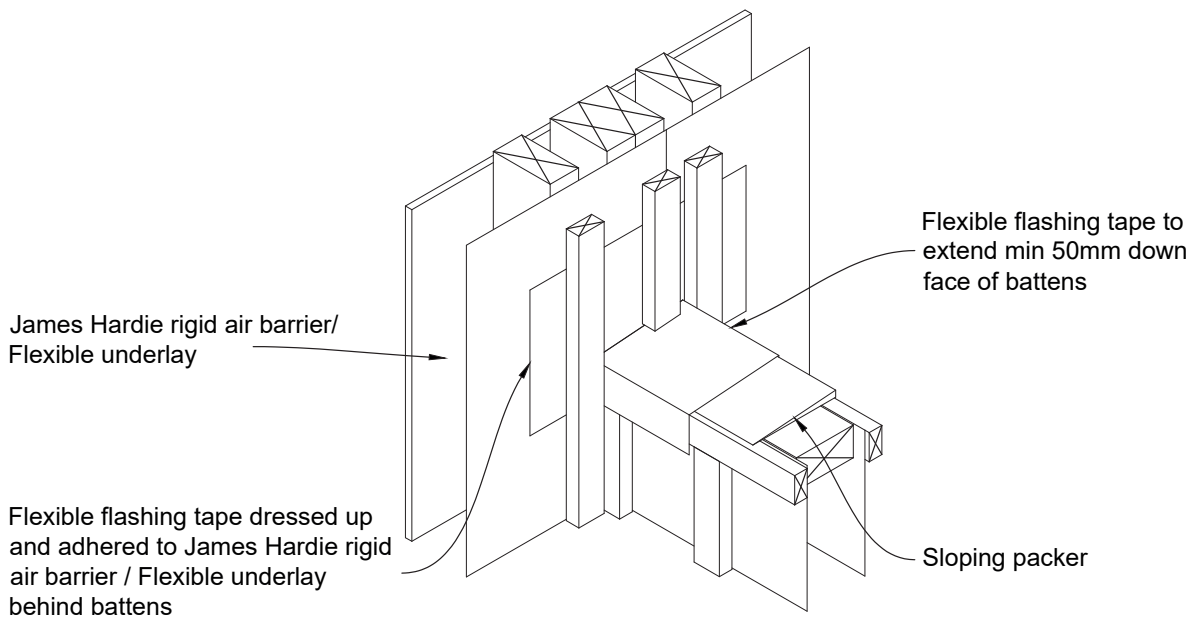
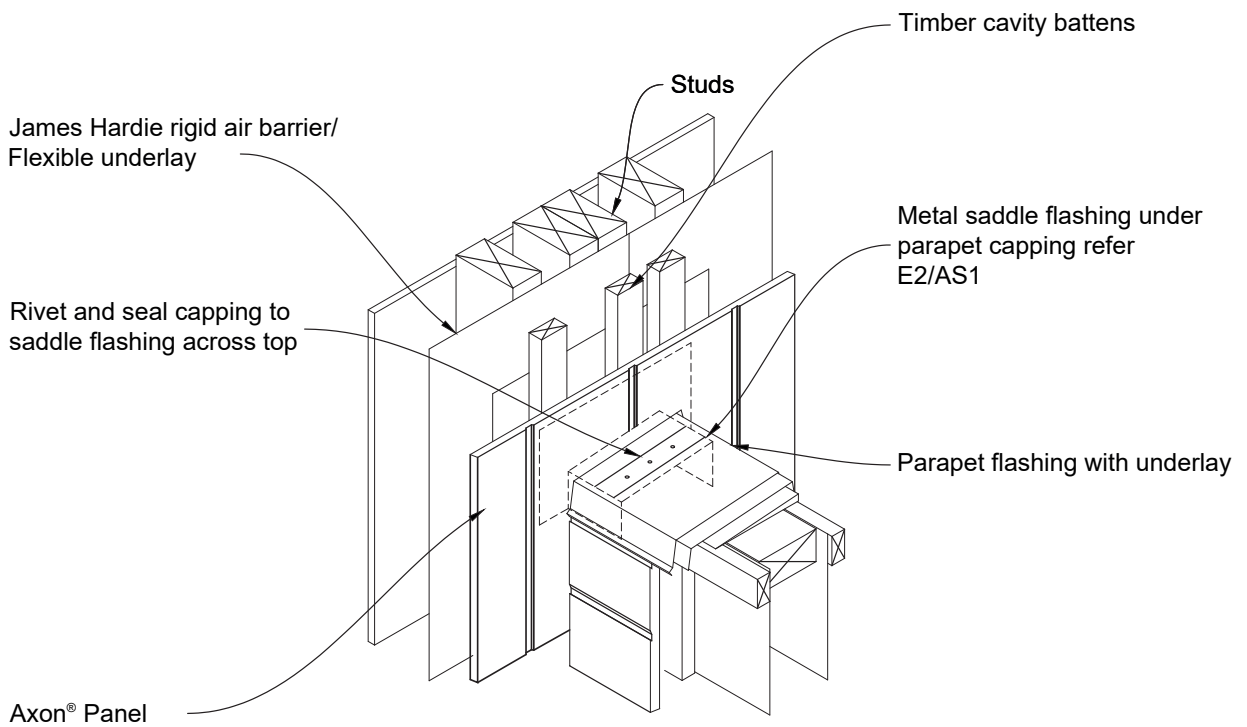


Figure 15: Cavity enclosed balustrade to wall



Flashing Tape Application Prior to Metal Flashing Fixing

Figure 16: Cavity enclosed deck

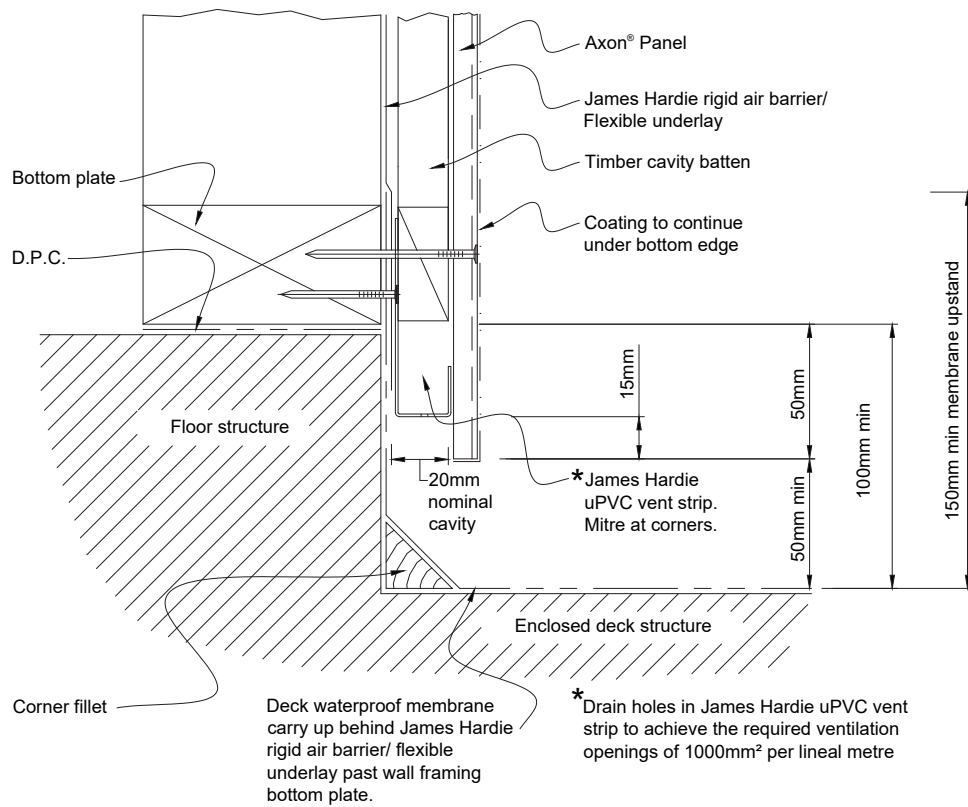


Figure 17: Cavity deck junction

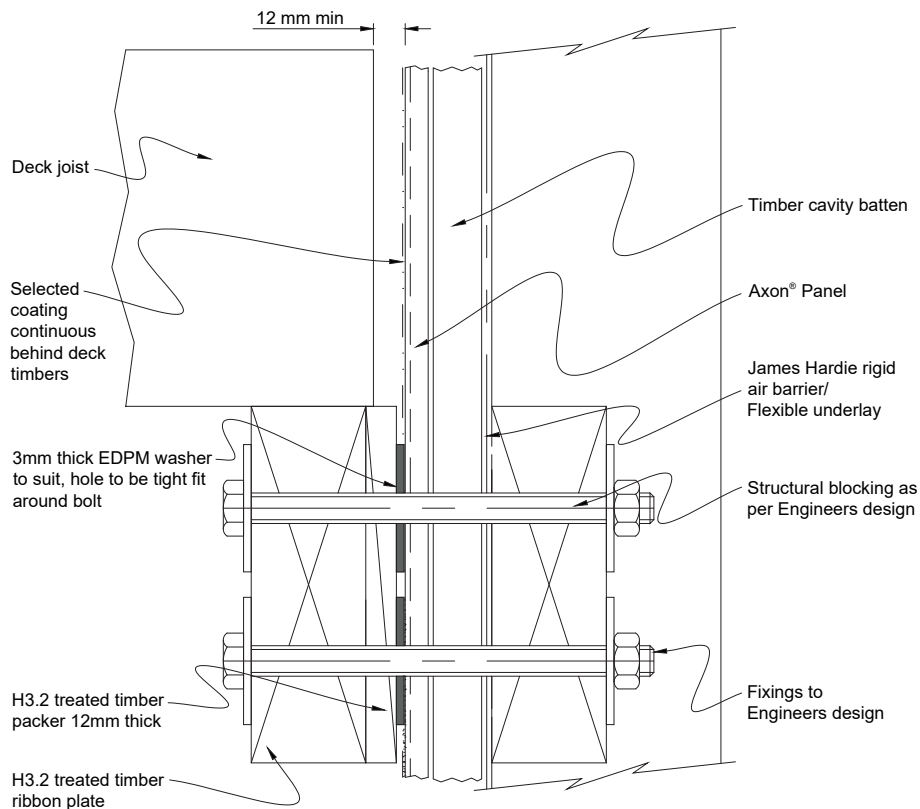


Figure 18: Cavity one piece apron flashing joint

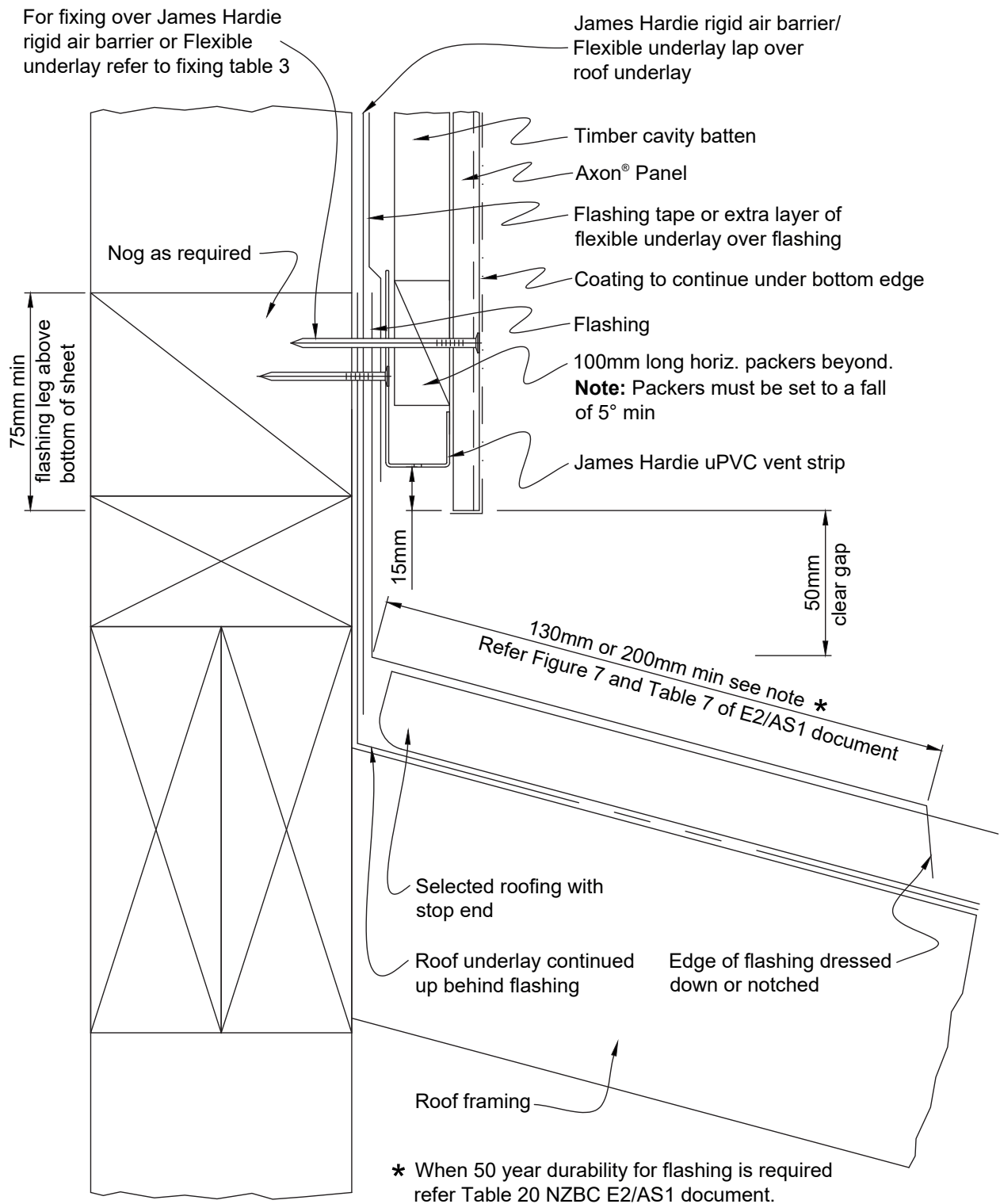


Figure 19: Cavity pipe penetration

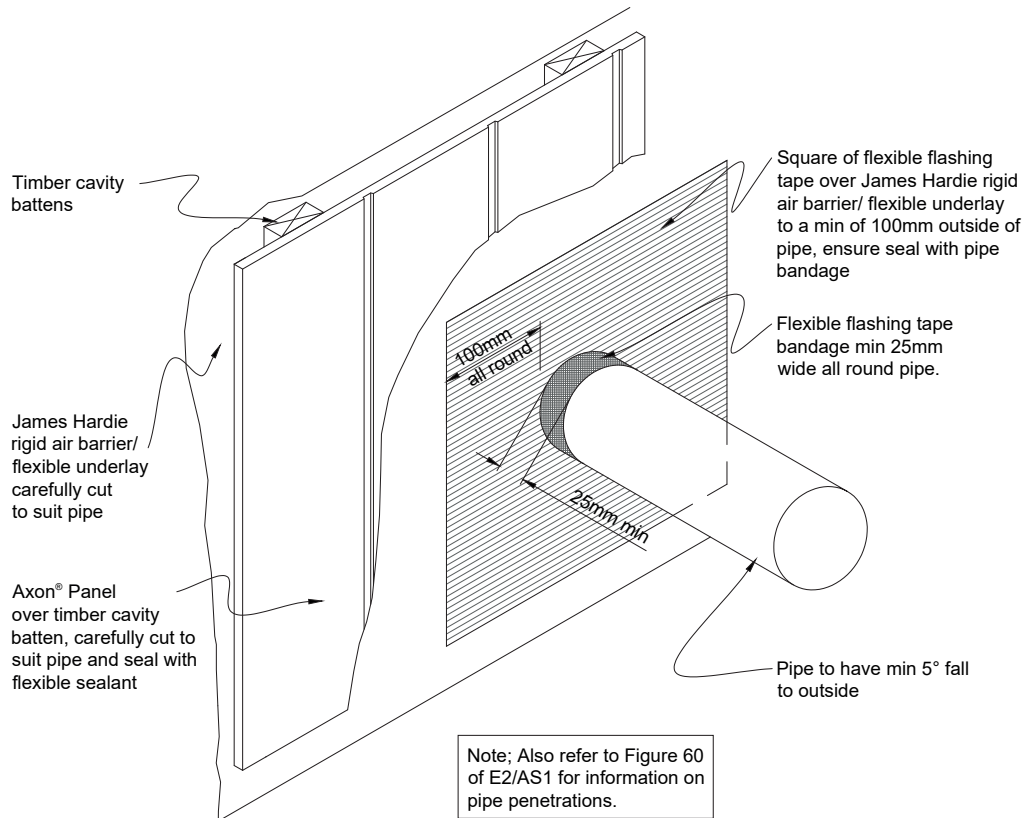
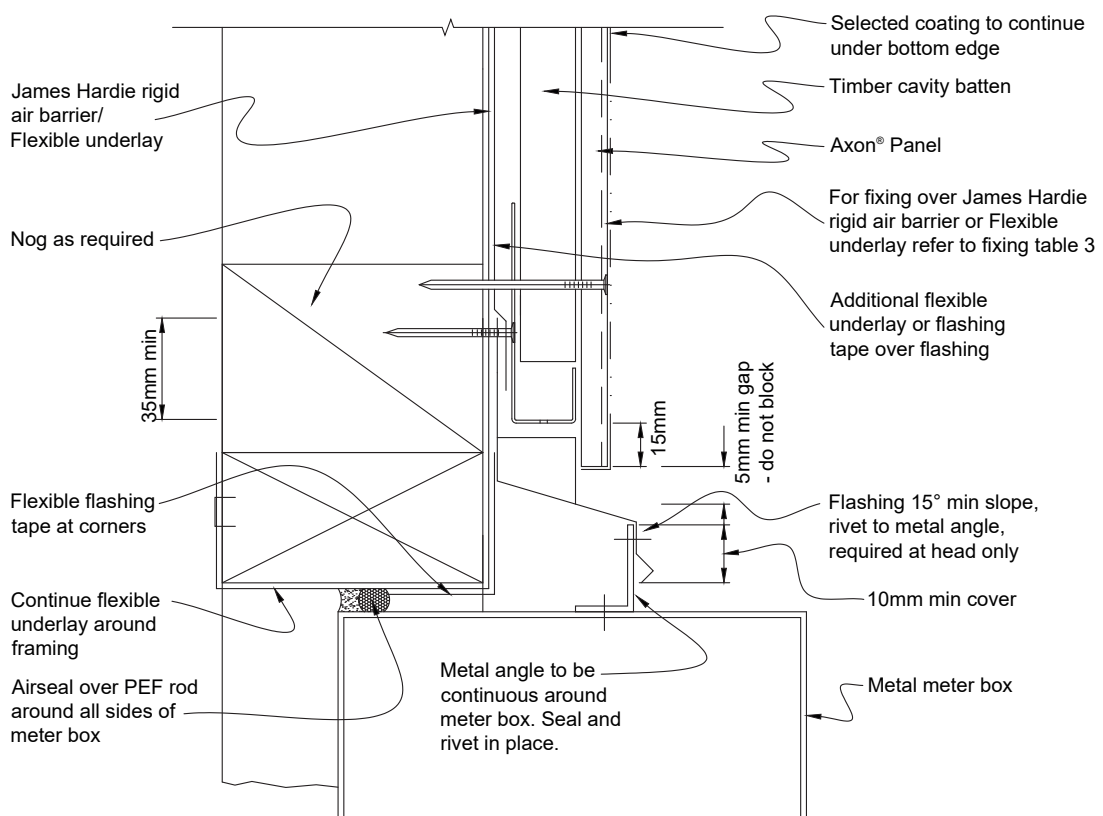


Figure 20: Cavity meter box at head



Note: When James Hardie rigid air barrier is used flashing tape to be applied to the entire opening

Figure 21: Cavity meter box at sill

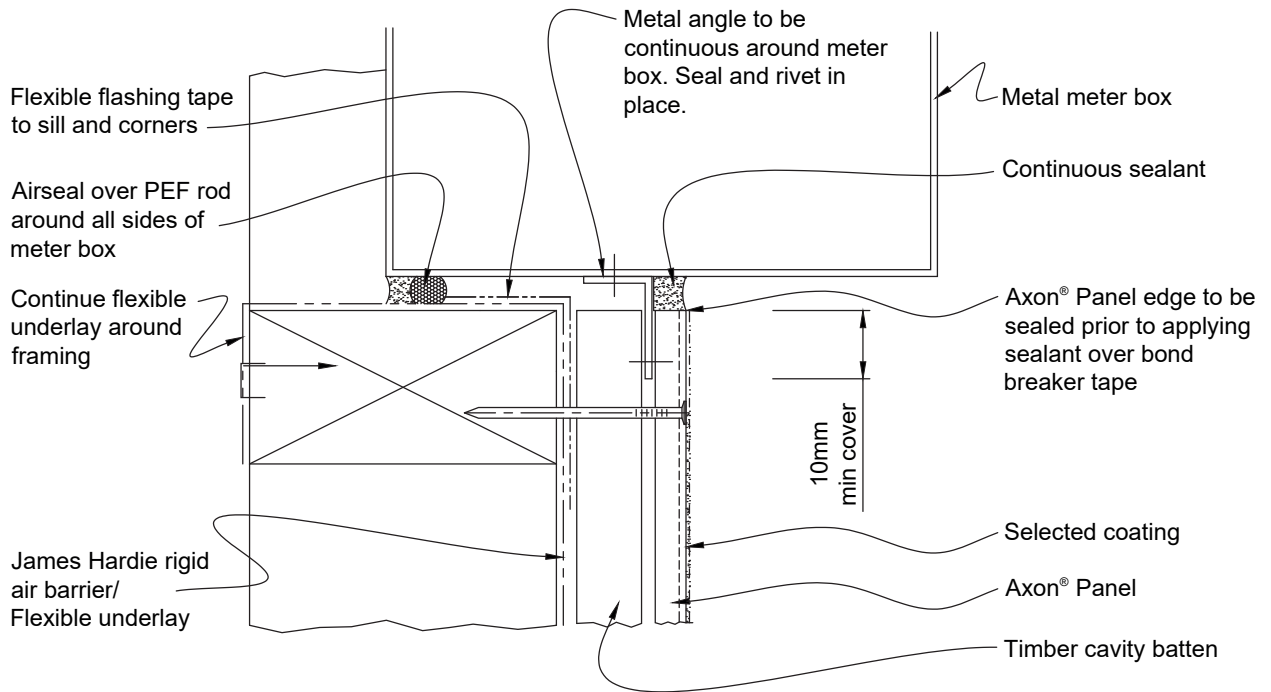
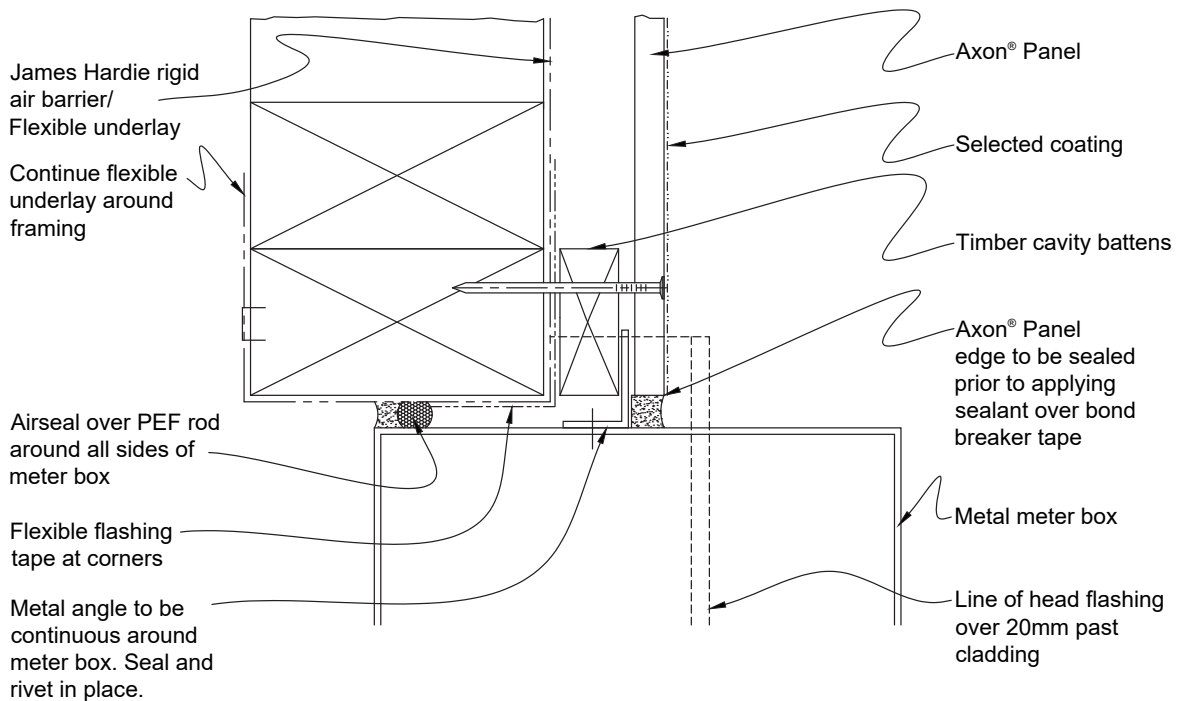


Figure 22: Cavity meter box at jamb



Note: When James Hardie rigid air barrier is used flashing tape to be applied to the entire opening

Figure 23: Cavity interstorey drainage

Note: This detail is required at the second storey joist level . Refer E2/AS1 clause 9.1.9.4.

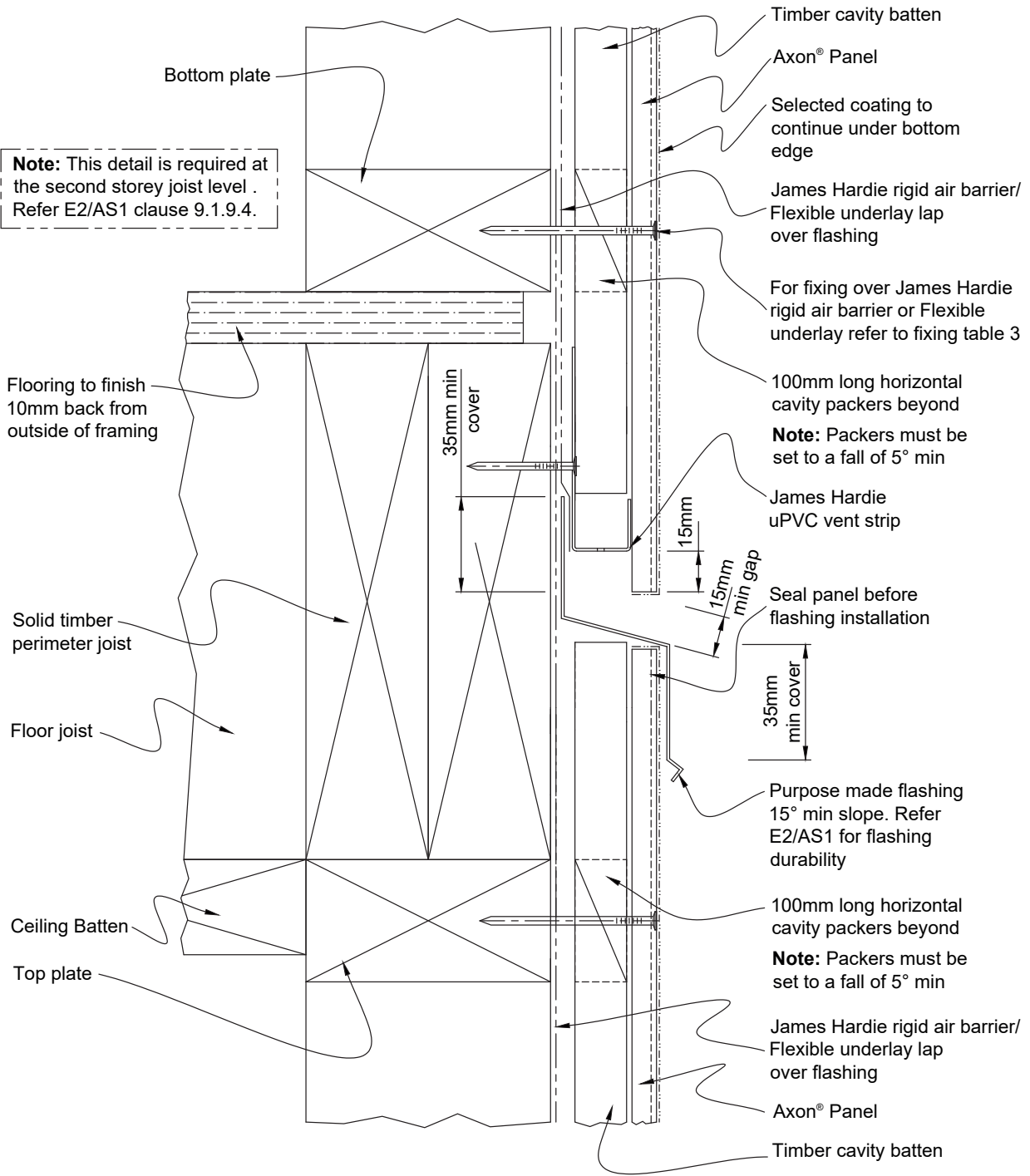


Figure 24: Cavity alternative head flashing termination against batten

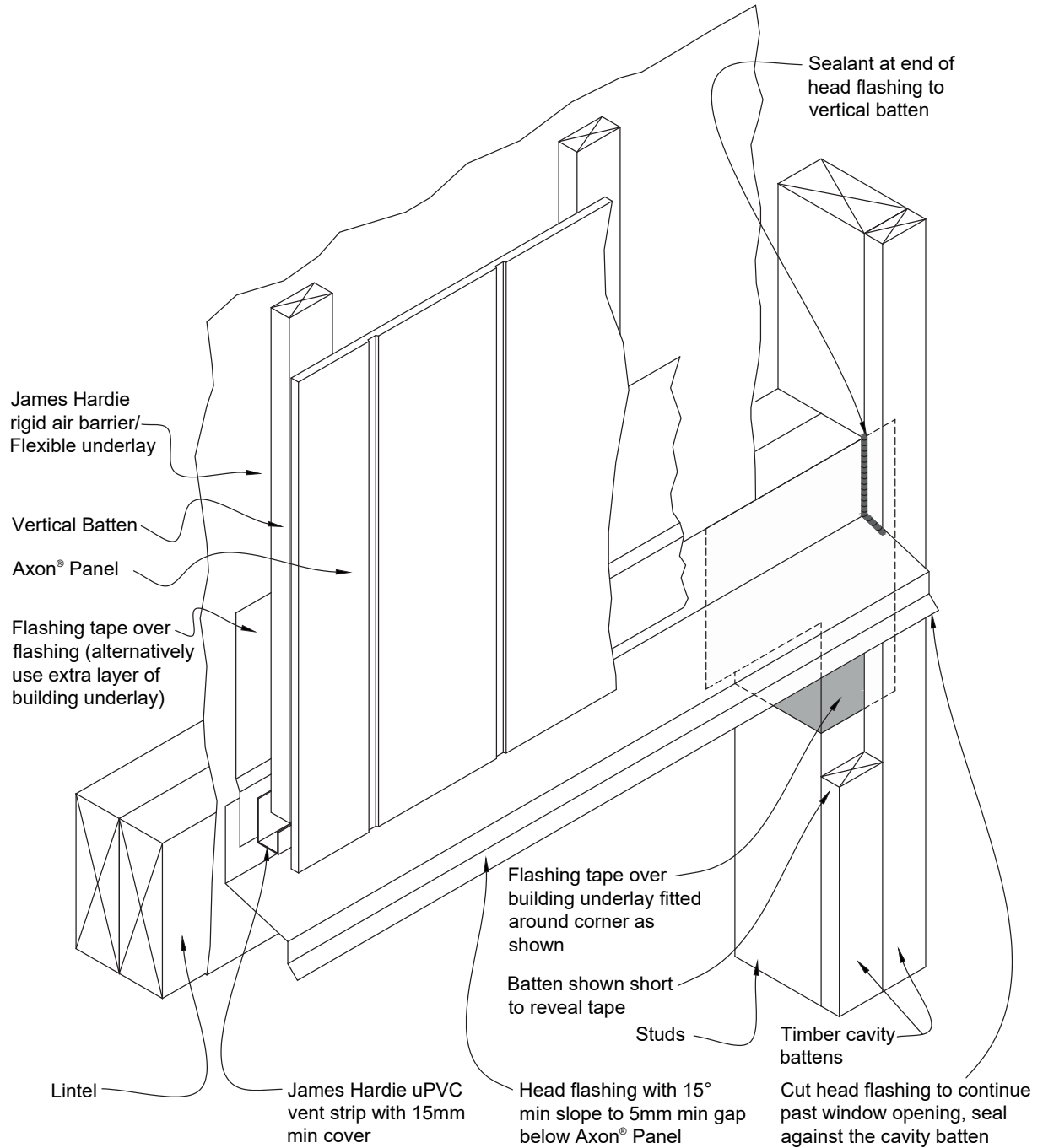
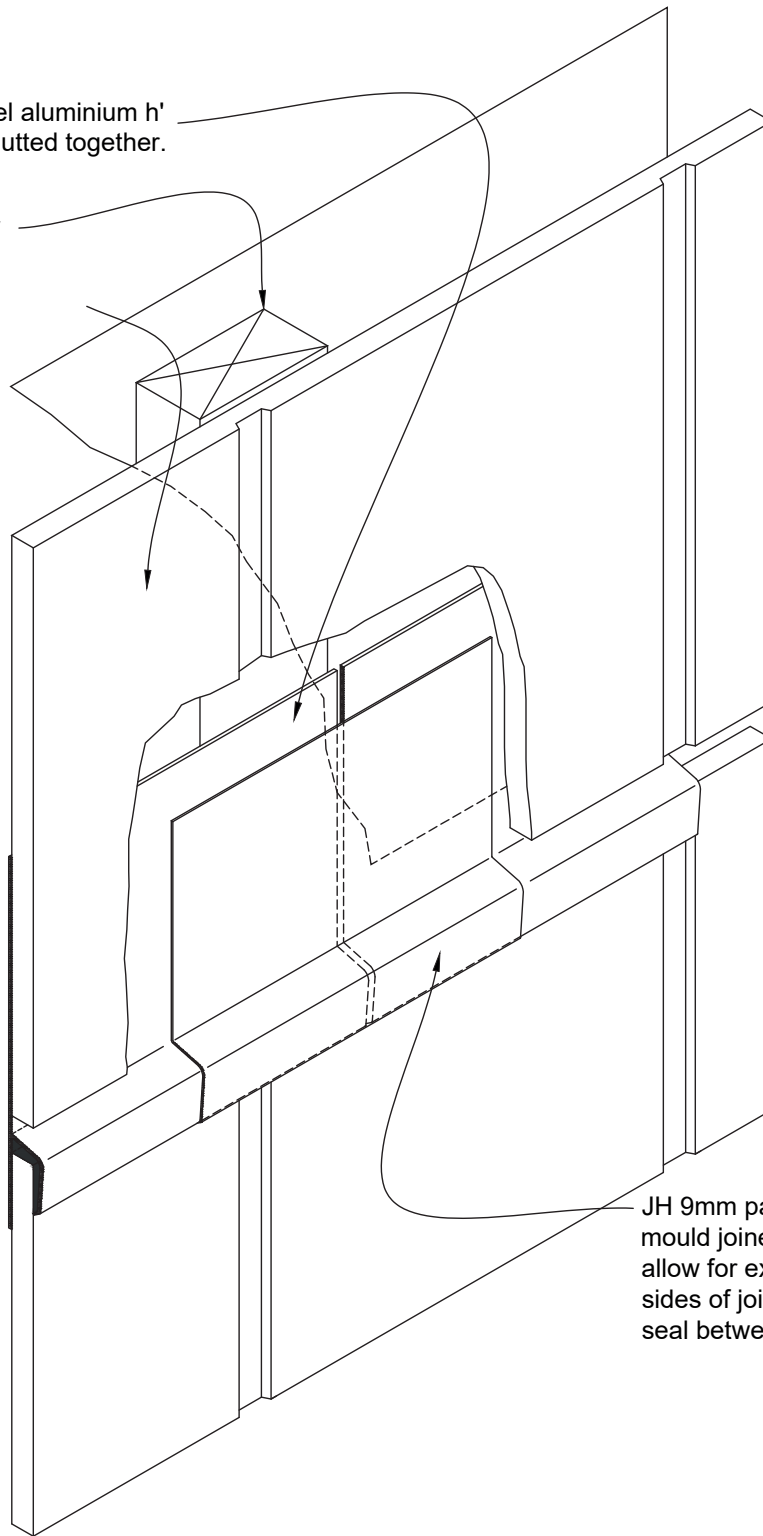


Figure 25: Cavity aluminium 'h' mould jointer

JH 9mm panel aluminium 'h'
mould ends butted together.

Timber cavity
battens

Axon® Panel



JH 9mm panel aluminium 'h'
mould jointer, flexible sealant to
allow for expansion to both
sides of jointer. Ensure adequate
seal between both components.

Figure 26: Cavity corner at 'h' mould joint detail

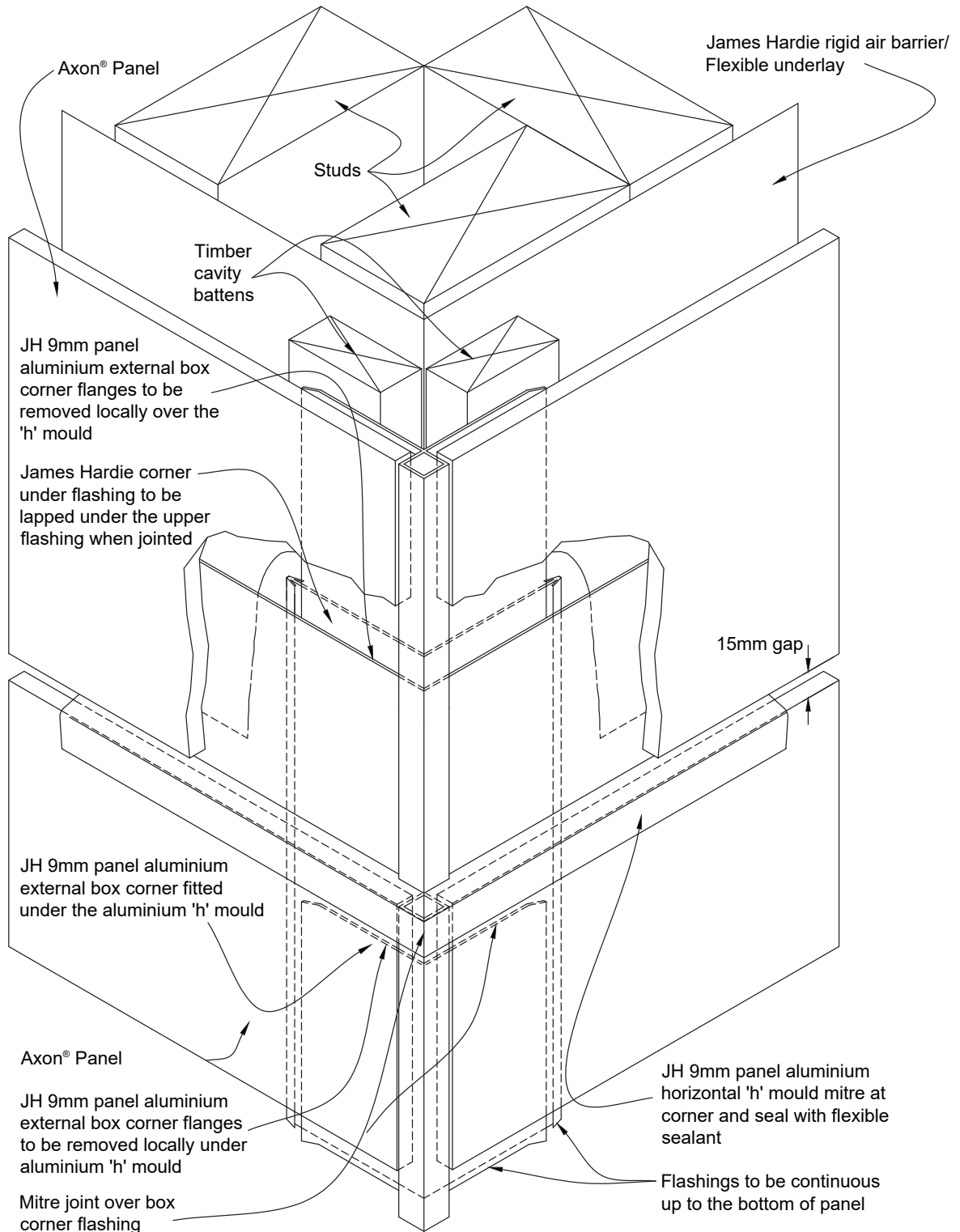
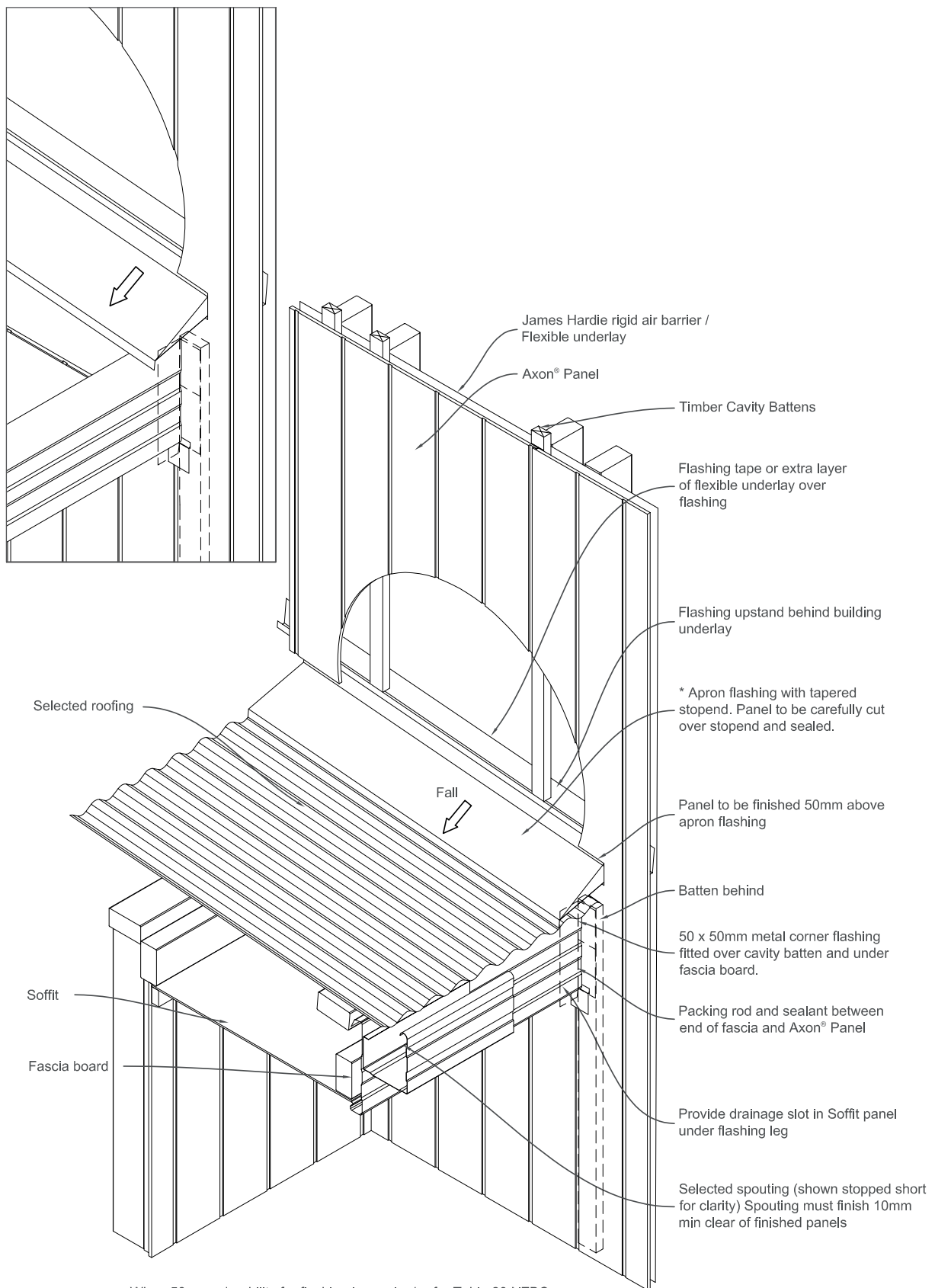
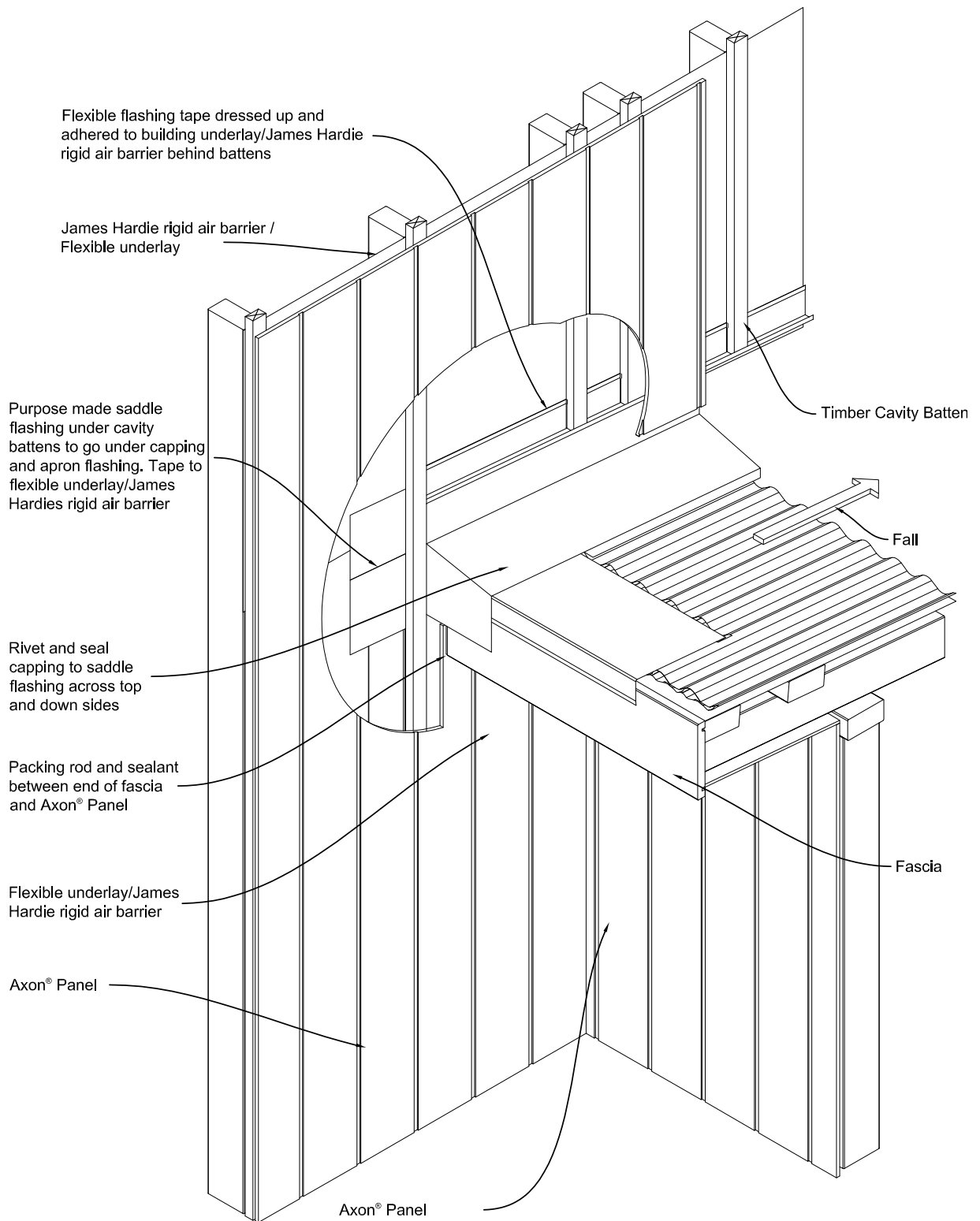


Figure 27: Cavity roof to wall junction



* When 50 year durability for flashing is required refer Table 20 NZBC E2/AS1 document.

Figure 28: Enclosed roof to wall intersection



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 the performance of the Axon™ Panel when installed in accordance with the 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.

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