

HardieFlex™
SHEET



Technical Specification

OCTOBER 2013 | NEW ZEALAND

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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™

Fax 0800 808 988

literaturefeedback@jameshardie.co.nz

1 Application and scope

1.1 APPLICATION

HardieFlex™ Sheet is manufactured in New Zealand by James Hardie from fibre cement which is a composition of Portland cement, ground sand, cellulose fibre and water. HardieFlex Sheet is a paneled light weight wall cladding solution for residential and light commercial buildings.

- HardieFlex Sheet is ideal for many general building purposes such as wall cladding, wide soffits, porches and gable ends etc.
- HardieFlex Sheet is a natural unsanded sheet and is suitable for a paint finish. A variety of jointing methods can be used to achieve the desired look.

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.

If you are an installer

Ensure that you follow the design, moisture management and associated details and material selection provided by the designer. All the details provided in this document must be read in conjunction with the specifier's 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 is for the use of HardieFlex Sheet limited to buildings which fall within the scope limitations of New Zealand Building Code (NZBC) Acceptable Solution 'E2/AS1' paragraph 1.1. This manual covers the use of HardieFlex Sheet for either construction methods i.e. direct fixed or cavity, used in external walls of timber framed buildings. Please refer to 'E2/AS1' for further information regarding the selection of construction methods for claddings.

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

1.3 DETAILS

Various HardieFlex Sheet details are provided in the Details section of this document. This specification and details in CAD file are also available to download from our web site at www.jameshardie.co.nz.

1.4 SPECIFIC DESIGN

For use of HardieFlex Sheet outside the scope of this document, 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

HardieFlex Sheet complies with section 9.7.2 of 'E2/AS1'. Information contained in this document is aligned with the requirements of NZBC Acceptable Solution 'E2/AS1'.

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 the NZBC.

All dimensions shown are in millimeters unless noted otherwise. All New Zealand Standards reference 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 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 NZBC requirements.

2.4 GROUND 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.

HardieFlex Sheets must overhang the bottom plate on a concrete slab by a minimum of 50mm as required by NZS 3604.

HardieFlex Sheets must have a minimum clearance of 100mm from paved ground and 175mm from unpaved ground.

On the 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 to Figures 3 and 22.

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 shall 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 information on designing for weathertightness refer to BRANZ Ltd and the Department of Building and Housing updates on the following websites respectively, www.branz.co.nz and www.dbh.govt.nz.

2.6 STRUCTURE

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.

2.7 WIND LOADING

HardieFlex Sheet cladding are suitable for use in all New Zealand wind zones 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.

2.8 STRUCTURAL BRACING

HardieFlex Sheet can be used to achieve structural bracing required for timber framed buildings designed and constructed in accordance with NZS 3604. The HardieFlex Sheet must be installed as per specific bracing system details that are available separately. HardieFlex Sheet bracing systems have been independently tested and assessed by BRANZ and are suitable for both construction methods i.e. direct fix and cavity. Refer to James Hardie Bracing Design Manual for details.

2.9 FIRE RATED WALLS

HardieFlex Sheet clad walls using direct fix or cavity construction method can achieve fire ratings up to 60/60/60 when the walls are constructed in accordance with this literature and include the fire rated system requirements as specified in James Hardie 'Fire and Acoustic' Design Manual. Refer to 'Fire and Acoustic' Design Manual for further information about fire rated systems.

2.10 ENERGY EFFICIENCY

External walls constructed using HardieFlex Sheet, bulk insulation, where the area of glazing is 30% or less of the total wall area and constructed as per this technical specification complies with the requirements for walls in NZBC Acceptable Solution H1/AS1 (NZBC Clause H1 Energy Efficiency), Replacement Table 1. To meet thermal insulation requirements for the construction, the bulk insulation as specified in Table 1 must be used. This insulation may be substituted with insulations having higher R-values. The thermal insulation of a wall gets affected when the depth of the timber framing is increased or decreased. The calculation used in Table 1 is based on a timber framing size 90 x 45mm and using an internal lining material such as James Hardie 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 R-Values of construction 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

This HardieFlex Sheet technical specification is only suitable for timber-framed buildings. Other framing materials outside the scope of this specification.

3.2 DIMENSIONS

A 45mm (nominal) minimum stud width is required at all sheet edges. Elsewhere a 35mm wide stud may be used.

3.3 TIMBER GRADE

Minimum timber grade requirements are No.1 Framing grade as per NZS 3631 'New Zealand Timber Grading Rules' or equivalent.

3.4 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 sites in accordance with the recommendations of the framing manufacturer.

NOTE:

Refer to NZS 3602 for information about the allowable moisture content in timber.

3.5 FRAME CONSTRUCTION

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

All timber framing sizes and set-out must comply with NZS 3604 and as specified in this specification. Use of timber framing must be in accordance with framing manufacturer's specification.

For specific engineering design for timber framing refer to NZS 3603 and AS/NZS 1170.

3.5.1 Direct Fix Construction Method

For direct fixed construction method the following framing is required:

- Studs provided at 600mm centres maximum and
- Nogs/dwangs provided at 1200mm centres maximum.

3.5.2 Cavity Construction Method

For cavity construction method the following framing is required:

- When studs are spaced at 600mm centres maximum then the nogs/dwangs must be provided at 800mm centres maximum.
- When studs are spaced at 400mm centres then the nogs/dwangs may be provided at 1200mm centres.
- An extra stud is required in internal corners.

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 NZS 3604. All framing shall be made flush.

3.7 CURVED WALLS

HardieFlex Sheet can be used in a curved application. Refer to James Hardie technical support for further information.

4 Preparation

4.1 BUILDING UNDERLAY/HOMERAB® PRECLAD™ LINING

Building underlay or HomeRAB® PreClad™ Lining must be provided as per the requirements of NZBC Acceptable Solution E2/AS1 'External Moisture' and NZS 3604. The building underlay must comply with Table 23 of E2/AS1 and AS/NZS 4200.1. The building underlay must be fixed in accordance with E2/AS1, NZS 3604 and AS/NZS 4200.2 'Pliable Building Membranes and Underlay – Installation' standard 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 NZBC Acceptable Solution E2/AS1 Table 23. HomeRAB PreClad Lining is suitable for use in these applications. It must be installed in accordance with James Hardie Rigid Air Barriers Installation Manual.

4.2 RIGID AIR BARRIER

For EH wind zones RAB® Board must be used in lieu of building underlays. Refer to James Hardie Rigid Air Barriers Installation Manual for information regarding installation.

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 NZBC Acceptable Solution 'E2/AS1' Table 3, require HardieFlex Sheet to be installed on a cavity.

The cavity battens provide airspace between the frame and the sheet and are considered a 'packer' only in this specification.

The timber 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 following requirements:

- be minimum 18mm thick.
- be minimum as wide as the width of studs.
- when studs are at 600mm centres battens to be provided at 300mm centres.
- be fixed by the cladding fixings to the main framing through the building underlay.
- until claddings are fixed the battens only need to be tacked to the framing.

NOTE:

Batten fixing is required temporarily to keep them straight on the wall during construction.

No intermediate batten between studs is required:

- when studs are spaced at maximum 400mm centres and
- when rigid sheathings instead of building underlays are used.

NOTE:

100mm long cavity packers must be used where required to support fixings in this circumstance.

Battens must be fixed with 40 x 2.8mm HardieFlex nails at 800mm centres maximum.

4.5 FLASHINGS

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

The building underlay 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 building underlay. James Hardie will assume no responsibility for water infiltration within the wall due to poor installation of flashings or building underlays. The selected flashing materials must comply with the durability requirements of the NZBC Acceptable Solution 'E2/AS1'.

5 Fixing HardieFlex Sheet

5.1 GENERAL

HardieFlex Sheets must be kept dry and under cover whilst in storage or during installation. Framing moisture contents must not exceed the maximum limit specified in NZS 3602 prior to sheet installation. Every endeavour must be made to keep framing dry once sheet fixing commences.

All sheet edges must be sealed prior to installation. The sheet edges must also be sealed around window/door openings and other penetrations e.g. meter boxes etc.

5.2 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 2.

Table 2

Exposure conditions and nail selection prescribed by NZS 3604		
Nail Material		
Zone D*	Zone C outside sea spray zone and Zone B and Geothermal hot spots	Bracing — All zones
Grade 316 Stainless	Hot-dipped galvanised or 316 stainless	Grade 316 stainless

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

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

HardieFlex Sheet must be fixed to framing using the fixings as specified in Table 3 and in accordance with the following requirements:

- Nails must have a minimum clearance of 12mm from sheet edges and a minimum of 75mm vertically and 150mm horizontally from sheet corners.
- Nails must finish flush with sheet surface.

Table 3

Sheet fixing	
Direct to stud fixing	
40 x 2.8mm HardieFlex™ nails	Fix sheet at 200mm centres at all sheet edges as well as all intermediate framing.
Cavity construction up to and including VH wind zones	
60 x 3.15mm HardieFlex™ nails	Fix sheet at 200mm centres at all studs and at 150mm centres at top plate and bottom plate.
Cavity construction on buildings with EH wind zone or with uls design wind pressure of up to 2.5kPa	
60 x 3.15mm HardieFlex™ nails	Fix sheet at 150mm centres at all sheet edges as well as all intermediate framing.

When using rigid air barrier like HomeRAB PreClad Lining or RAB Board, the cladding fixing nails must be increased in length equal to the thickness of the rigid air barrier.

NOTE:

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

7 Finishing

5.4 GUN NAILING

HardieFlex Sheets can be fixed using nail guns. The gun nails used must have a full round head to provide the required holding power. The length and gauge of nails must at a minimum be as specified in this document. Check with nail gun manufacturer for more information.

NOTE:

Do not use D Head nails. Do not use gun nailing for bracing applications.

5.5 SHEET LAYOUT

- All sheet edges must be supported by the framing.
- HardieFlex Sheet must be fixed vertically.

6 Jointing

6.1 GENERAL

HardieFlex Sheets can be jointed in a number of ways to achieve different panelised look of the walls.

6.2 VERTICAL JOINT

HardieFlex Sheets could have the following types of vertical joints.

- uPVC Hardiejointer Joint, refer to Figure 4 and 23
- Timber Batten Joint, refer to Figure 5 and 24
- Flexible Sealant Joint, refer to Figure 6 and 25

6.3 INTERNAL CORNER AND EXTERNAL CORNER

HardieFlex Sheet could have the following types of internal and external corners.

- uPVC Jointer, refer to Figure 7, 8, 26, 27 and 34
- Timber Batten Joint, refer to Figure 9, 10, 28 and 29
- Flexible Sealant Joint, refer to Figure 11, 12, 30 and 31

6.4 HORIZONTAL JOINT

At floor joist levels a horizontal joint must be provided to accommodate the movement resulting from timber joist shrinkage and settlement.

- For HardieFlex Sheets use a James Hardie uPVC 'h' mould to form a horizontal joint or a purpose made metal 'Z' flashing could also be used to form a horizontal joint.

7.1 PREPARATION

Painting of HardieFlex Sheets is required in order to meet the durability requirements of the NZBC and product warranties. HardieFlex Sheets must be dry and free from dirt before painting. Coating must be completed within 3 months of sheet installation.

When using uPVC flashings, the light reflective value of the colour used must be more than 40% as required under 'E2/AS1'. Dark colours cause excessive movement and deteriorate the cladding performance.

7.2 SEALANTS

All sealants must meet the relevant requirements of the NZBC. Application and use of sealants must comply 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

Use only quality exterior paints complying with AS 3730. Manufacturer's specification for the selected paint must be followed. Note that some paints require undercoat before applying the finish coat. Prior to coating, the surface should be examined to ensure it is clean, dry and free of any dust or contaminants. When using uPVC flashings, the light reflective value (LRV) for the colour must not be less than 40%.

Paints with a low LRV will absorb more solar heat and could cause the components used in the wall to expand or contract. This combined with glossy paints and wet timber used at construction stage, could lead to increased chances of fastener read through as is common with any other building material.

Enamel — based paints can be used, utilising a three-coat system. Refer to the paint manufacturer for details before commencing the coating work.

Paint must not be applied when the temperature is below 10° C.

8 Storage and handling

HardieFlex Sheets must be laid flat on a smooth level surface. Edges and corners must be protected from chipping. To ensure optimum performance, store panels under cover and keep dry prior to fixing. If the sheets become wet, allow them to dry thoroughly before fixing. Do not carry sheets on the flat, carry in the vertical position to avoid excessive bending.

9 Maintenance

It is the responsibility of the specifier to determine normal maintenance required to comply with the NZBC Acceptable Solution B2/AS1. 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.

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

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

10 Product information

10.1 MANUFACTURING AND CLASSIFICATION

HardieFlex Sheets are a cellulose fibre reinforced cement building product. The basic composition is Portland cement, ground sand, cellulose fibre and water. The sheets are easily identified by the name 'HardieFlex' printed at regular intervals on the back face of sheet.

HardieFlex Sheets are manufactured to AS/NZS 2908.2 'Cellulose-Cement Products Part 2: Flat Sheets' (ISO 8336 'Fibre Cement Flat Sheets') standards in New Zealand. James Hardie New Zealand is an ISO 9001 'Telarc' certified manufacturer. HardieFlex Sheets are 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.

10.2 PRODUCT MASS

HardieFlex Sheets are manufactured in two thickness. The 6.0 mm thick sheet has a Mass of 8.6 kg/m² at EMC and the 7.5 mm thick sheet has a Mass of 10.8 kg/m² at EMC.

HardieFlex Sheets are defined as a Light Weight Wall Cladding (not exceeding 30kg/m²) as per NZS 3604.

10.3 SHEET SIZES

Available sizes of HardieFlex Sheets are specified in Table 4.

Table 4

Sheet sizes HardieFlex Sheets — 6mm and 7.5mm					
Thickness (mm)	Width (mm)	Length (mm)			
		1800	2400	2700	3000
6	900		✓		
6	1200	✓	✓	✓	✓
7.5	1200		✓	✓	✓

10.4 DURABILITY

HardieFlex Sheets, when installed and maintained as per the technical specification, will meet the durability requirements for claddings as required in the NZBC Approved Document B2 'Durability'.

10.4.1 Resistance to moisture/rotting

HardieFlex Sheets demonstrate resistance to permanent moisture induced deterioration (rotting) and has passed the following tests in accordance with AS/NZS 2908.2:

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

10.4.2 Resistance to fire

HardieFlex Sheet is classified as 'Non-Combustible Material' which is suitable for use as external cladding and complies with the provisions of Clause C 'Protection From Fire' compliance document of NZBC.

10.4.3 Alpine regions

In regions subject to freeze/thaw conditions, HardieFlex Sheet 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 is expected.

The HardieFlex Sheet has been tested in accordance with AS/NZS 2908.2 Clause 8.2.3.

11 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 which is considered by some international authorities to be a cause of cancer from some occupational sources. Breathing excessive amounts of respirable silica dust can also cause a disabling and potentially fatal lung disease called silicosis, and has been linked with other diseases. Some studies suggest smoking may increase these risks. During installation or handling: (1) work in outdoor areas with ample ventilation; (2) minimise dust when cutting by using either 'Score and Snap' knife, fibre cement shears or, where not feasible, use a HardieBlade™ Saw Blade and dust-reducing circular saw attached to a HEPA vacuum; (3) warn others in the immediate area to avoid breathing dust; (4) wear a properly-fitted, approved dust mask or respirator (e.g. P1 or P2) in accordance with applicable government regulations and manufacturer instructions to further limit respirable silica exposures. During clean-up, use HEPA vacuums or wet cleanup methods - never dry sweep. 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.

James Hardie recommended safe working practices

CUTTING OUTDOORS

1. Position cutting station so that wind will blow dust away from user or others in working area.
2. Use one of the following methods based on the required cutting rate:

BEST

- Score and snap
- Hand guillotine
- Fibreshear

BETTER

- Dust reducing circular saw equipped with HardieBlade™ Saw Blade and HEPA vacuum extraction.

GOOD

- Dust reducing circular saw equipped with HardieBlade™ Saw Blade

CUTTING INDOORS

- Cut only using score and snap, hand guillotine or fibreshears (manual, electric or pneumatic).
- Position cutting station in well-ventilated area

Drilling/other machining

When drilling or machining you should always wear a P1 or P2 dust mask and warn others in the immediate area.

IMPORTANT NOTES

1. For maximum protection (lowest respirable dust production), James Hardie recommends always using "Best" - level cutting methods where feasible
2. NEVER use a power saw indoors
3. NEVER use a circular saw blade that does not carry the HardieBlade™ logo
4. NEVER dry sweep — Use wet suppression or HEPA Vacuum
5. NEVER use grinders
6. ALWAYS follow tool manufacturer's safety recommendations

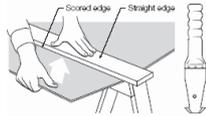
P1 or P2 respirators can be used in conjunction with above cutting practices to further reduce dust exposures. Additional exposure information is available at www.jameshardie.co.nz to help you determine the most appropriate cutting method for your job requirements. If concern still exists about exposure levels or you do not comply with the above practices, you should always consult a qualified industrial hygienist or contact James Hardie for further information.

Working instructions

Refer to recommended Safe Working Practices before starting any cutting or machining of product.

Score and Snap

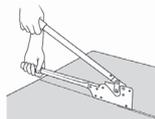
Score and Snap is a fast and efficient method of cutting the product using special tungsten tipped Score and Snap knife.



Preferably score on the face side of the product. Score against a straight edge and repeat the action to obtain adequate depth for clean break — normally 1/3 of sheet thickness. Snap upwards to achieve break. Smooth any rough edges with a rasp.

Hand Guillotine

Make guillotine cut on the off-cut side of line to allow for the thickness of the blade.



Fibreshear Heavy Duty

An electrically powered, fast, clean and effortless way of cutting James Hardie building products, especially around curves such as archways. Make Fibreshear cut on the “off-cut” side of the line to allow for the thickness of the shear.



HardieBlade™ Saw Blade

The HardieBlade™ Saw Blade used with a dust-reducing saw and HEPA vacuum extraction allows for fast, clean cutting of James Hardie fibre cement products. A dust-reducing saw uses a dust deflector or a dust collector connected to a vacuum system. 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.



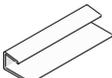
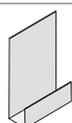
Storage and handling

All James Hardie building products should be stored to avoid damage, with edges and corners of the sheets protected from chipping. James Hardie building products must be installed in a dry state and be protected from rain during transport and storage. The product must be laid flat under cover on a smooth level surface clear of the ground to avoid exposure to water or moisture, etc.

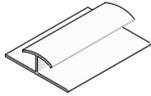
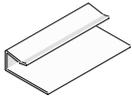
Quality

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.

12 Accessories

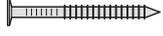
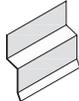
Accessories/tools supplied by James Hardie				
6mm HardieFlex Sheet	Accessory	Code	Size (mm)	Material/appearance
	6mm Capping Mould 2400 3000	300539 300540	2400 long 3000 long	uPVC/Bone colour
	6mm Horizontal Flashing	302254	3000 long	uPVC/Bone colour
	6mm Hardiejointer 2400 3000	300730 300734	2400 long 3000 long	uPVC/Bone colour
6mm and 7.5mm HardieFlex Sheets	Accessory	Code	Size (mm)	Material/appearance
	Vent Strip	302490	3000 long	uPVC
	Horizontal Flashing Jointer	301921	100 long	uPVC/Bone colour
	6mm Horizontal Flashing	302254	3000 long	uPVC/Bone colour
	6mm Hardiejointer 2400 3000	300730 300734	2400 long 3000 long	uPVC/Bone colour
	Corner Flashing Jointer	301920	50 x 50	uPVC/Bone colour
	Inseal 3259 1.5mm thick 50mm 80mm	300767 300769	50m roll 50m roll	Black Compressible Foam
	HardieFlex Nail - 5kg	302782	60 x 3.15mm x 6.8mmø head size	316 Stainless Steel
	HardieFlex Nail - 5kg	302784	60 x 3.15mm x 6.8mmø head size	Hot Dip Galvanised
	HardieBlade™ Saw Blade	300660	4 tooth — 184mm	Diamond Tipped
	Corner Underflashing 50mm x 50mm	303745	3000 long	uPVC/Bone colour
	2 piece Internal Corner	305756	3000 long	uPVC/Bone colour
	2 piece External Corner	305755	3000 long	uPVC/Bone colour

Accessories/Tools supplied by James Hardie

7.5mm HardieFlex Sheet	Accessory	Code	Size (mm)	Material/appearance
	7.5mm Hardiejointer 2400 3000	300731 300735	2400 long 3000 long	uPVC/Bone colour
	7.5mm Capping Mould	300541	3000 long	uPVC/Bone colour
	7.5mm Horizontal Flashing	302256	3000 long	uPVC/Bone colour

Accessories not supplied by James Hardie

James Hardie recommends the following products for use in conjunction with its HardieFlex Sheets. James Hardie does not supply these products. Please contact component manufacturer for information on their warranties and further information on their products.

	Accessory	Size (mm)	Material/appearance
	HardieFlex™ nail/Fibre Cement nail	40 x 2.8mm	316 Stainless Steel
	HardieFlex™ nail/Fibre Cement nail	40 x 2.8mm	Hot Dip Galvanised
	HardieFlex™ nail/Fibre Cement nail	60 x 3.15mm	316 Stainless Steel
	HardieFlex™ nail/Fibre Cement nail	60 x 3.15mm	Hot Dip Galvanised
	Sikaflex AT-Facade or similar	Tube	
	PEF rod Sika Boom or similar	Polyethylene foam	
	Flashing tape Tyvek, Protecto wrap or similar	Proprietary tape to adhere to building underlay	
	Inseal 3109 Sealing Strip	19mm x 10mm x 12m	Black Compressible Foam
	Flashing to Table 20 'E2/AS1'	Refer Figure 13	Flashing fabricator
	Scoring Knife		Tungsten Carbide

13 Details

Various details outlined in the following table are available on Pages 13 to 38.

Table 7

Details				
Description	Direct fixed		Cavity construction	
	Figure	Page	Figure	Page
Framing	Figure 1	14	Figure 19	25
Sheet Fixing	Figure 2	15	Figure 21	27
Concrete Foundation Detail	Figure 3	16	Figure 22	28
Vertical uPVC Joint	Figure 4	16	Figure 23	29
Timber Batten Joint	Figure 5	17	Figure 24	29
Vertical Sealant Joint	Figure 6	17	Figure 25	29
Internal uPVC Corner Joint	Figure 7	18	Figure 26	30
External uPVC Corner Joint	Figure 8	18	Figure 27	30
Internal Timber Batten Corner	Figure 9	19	Figure 28	31
External Timber Batten Corner	Figure 10	19	Figure 29	31
Internal Sealant Joint Corner	Figure 11	20	Figure 30	32
External Sealant Joint Corner	Figure 12	20	Figure 31	32
Horizontal Control Joint	Figure 13	21	Figure 33	34
Soffit Detail	Figure 14	22	Figure 32	33
'h' Mould Jointer	Figure 15	22		
Window Sill	Figure 16	23	Figure 35	35
Window Head	Figure 17	24	Figure 36	36
Window Jamb	Figure 18	24	Figure 37	36
Cavity Batten Fixing			Figure 20	26
Corner to 'h' Mould Joint			Figure 34	35
One Piece Apron Flashing Joint			Figure 38	37
Parapet Flashing			Figure 39	37
Pipe Penetration			Figure 40	38

Figure 1: Direct fix framing

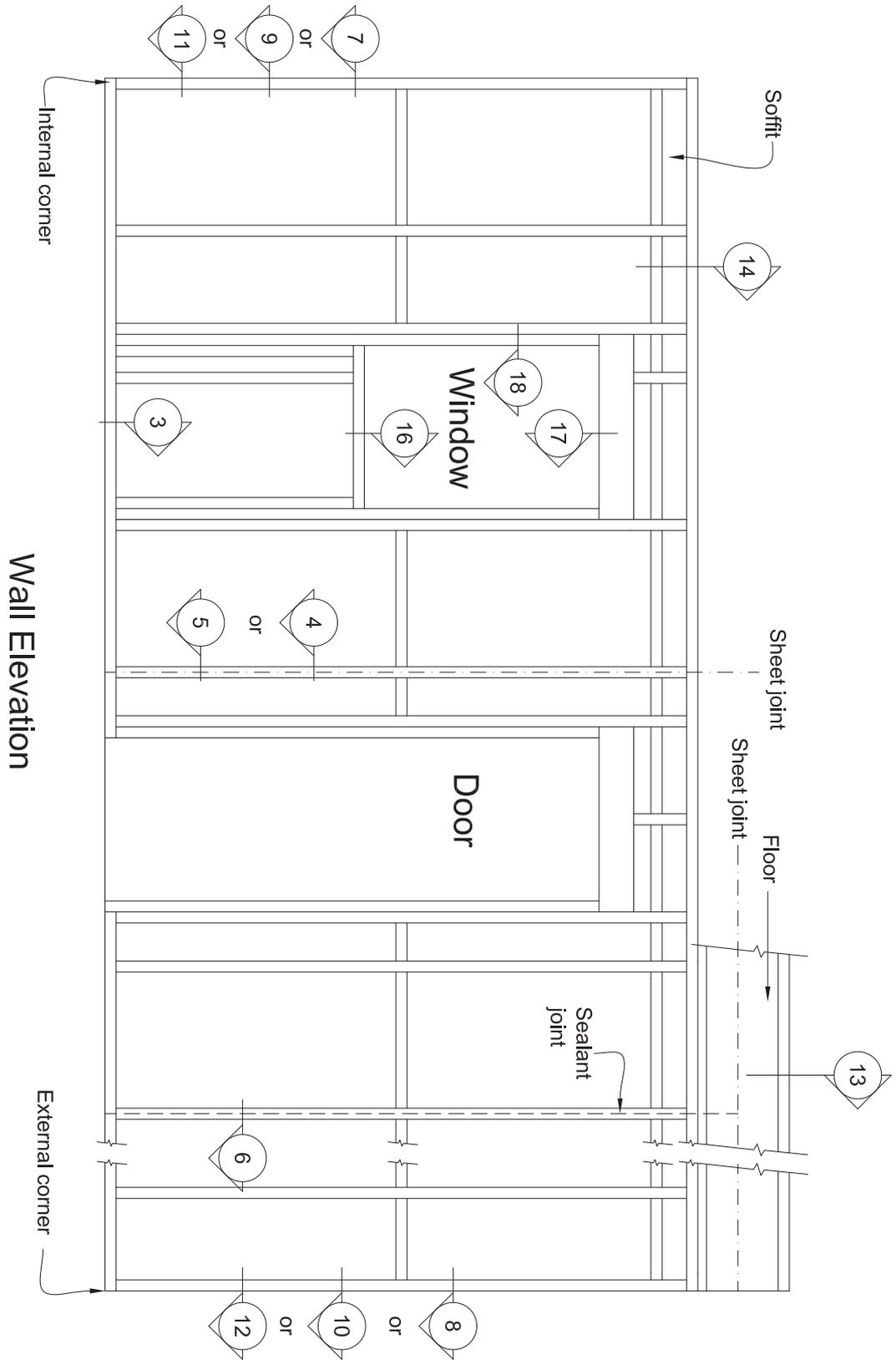


Figure 2: Direct fix sheet fixing

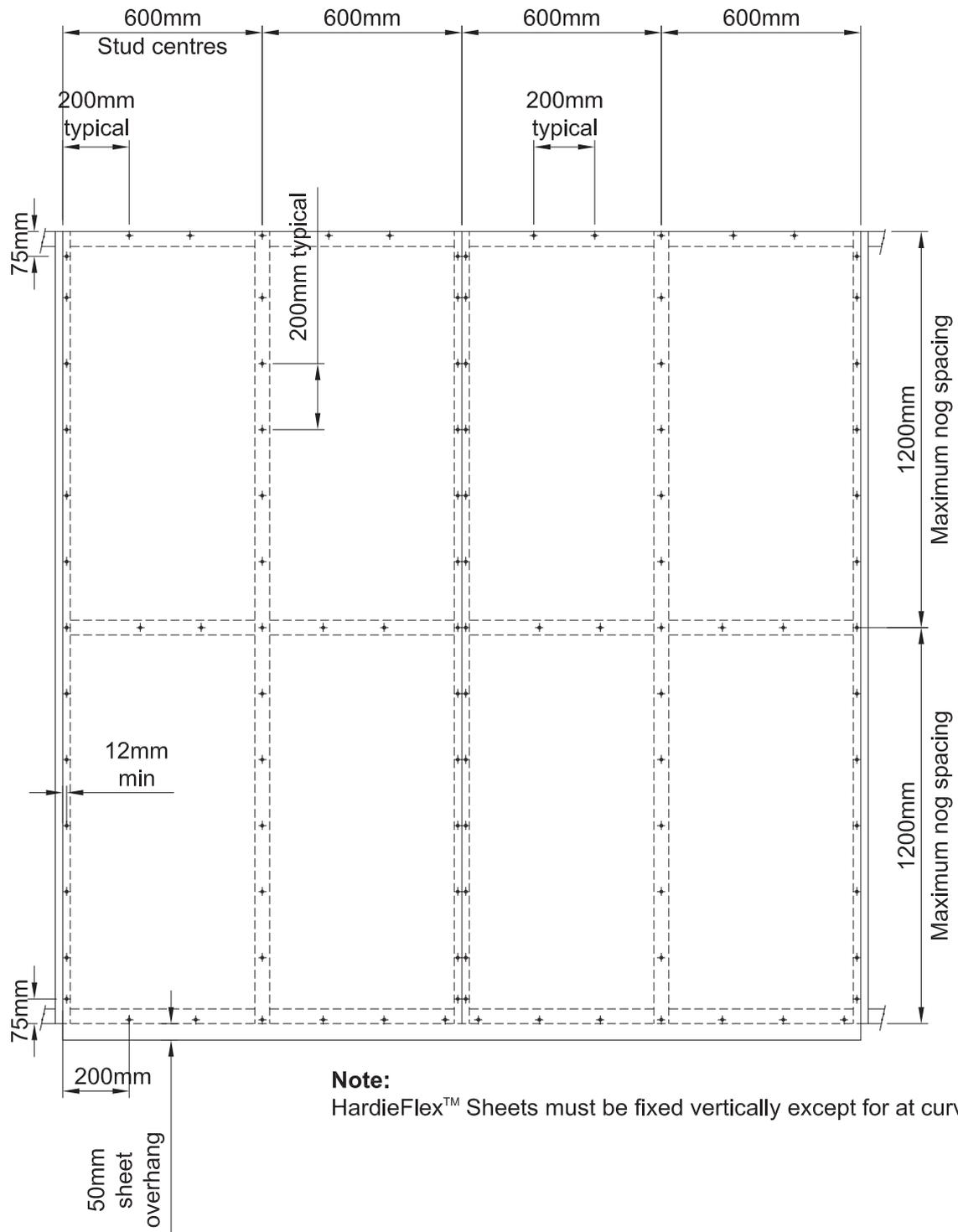


Figure 3: Direct fix concrete foundation detail

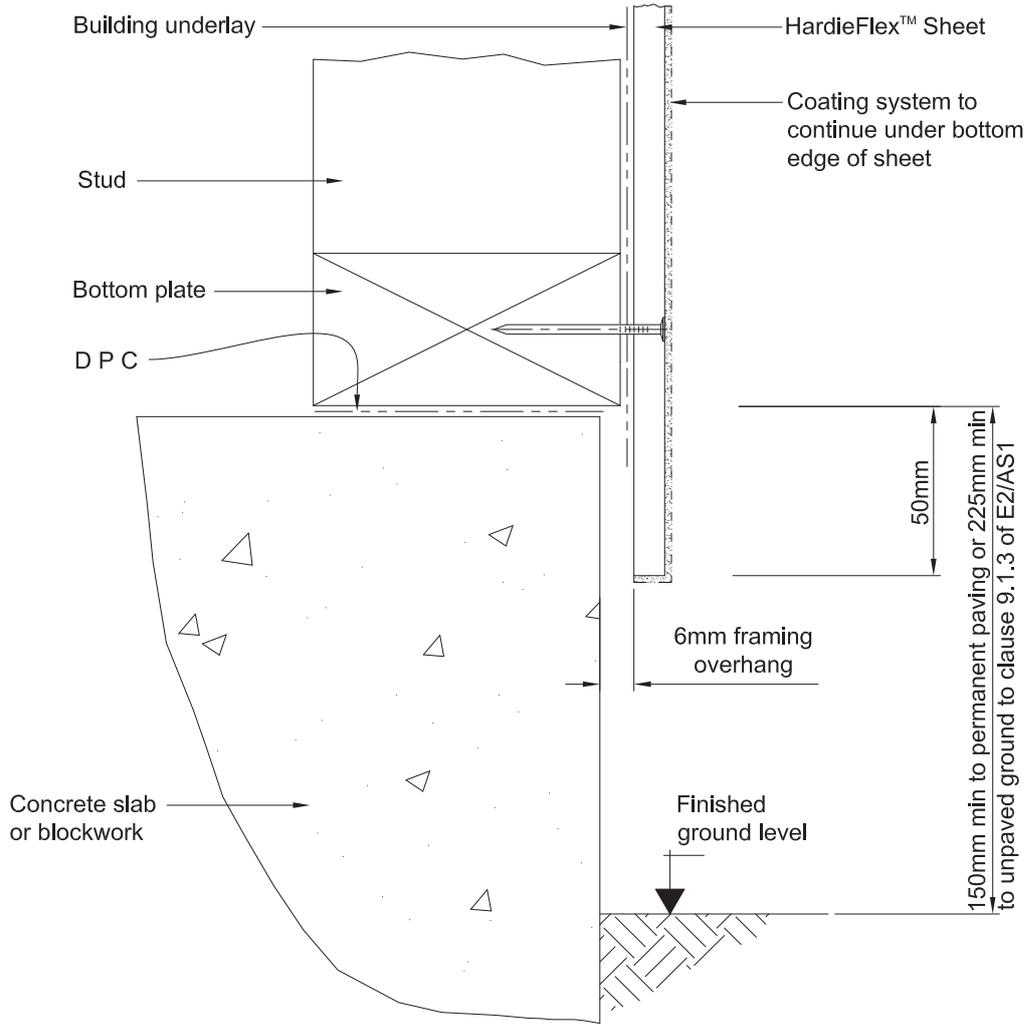


Figure 4: Direct fix vertical uPVC joint

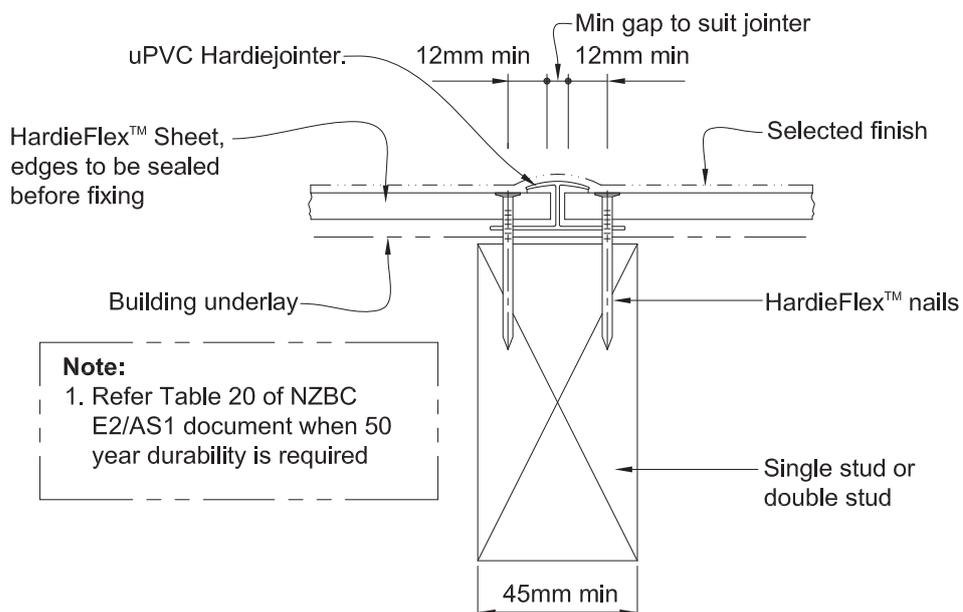
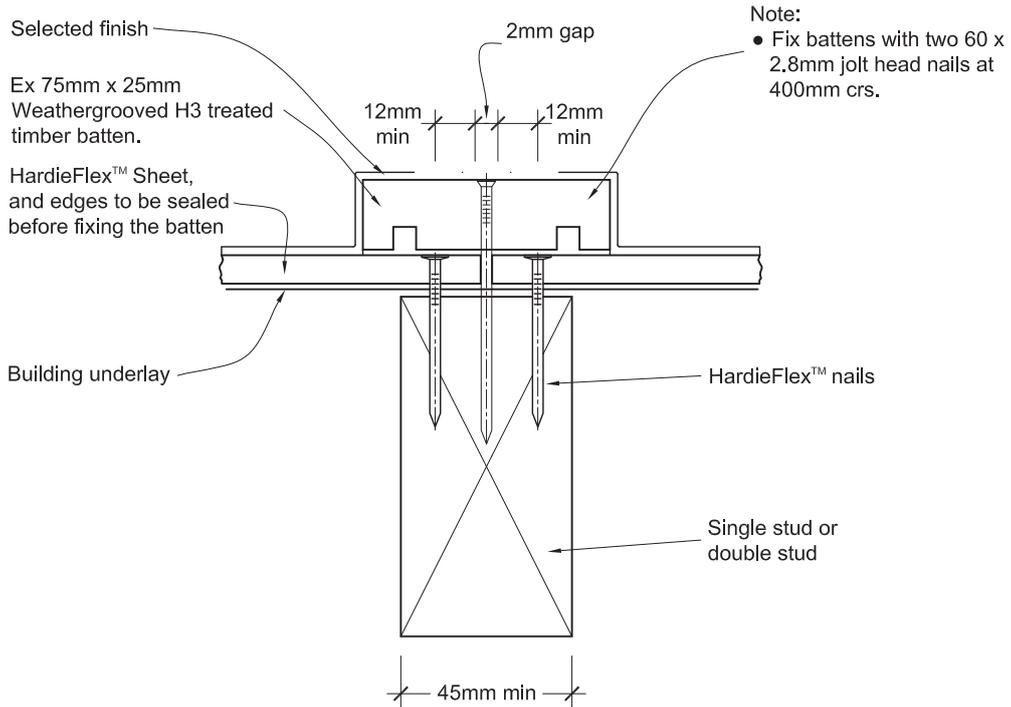


Figure 5: Direct fix vertical timber batten joint



Alternatively a Scyon® Axent™ Trim with two 6mm continuous beads Bostik Seal N Flex-1 can be used.

Figure 6: Direct fix vertical sealant joint

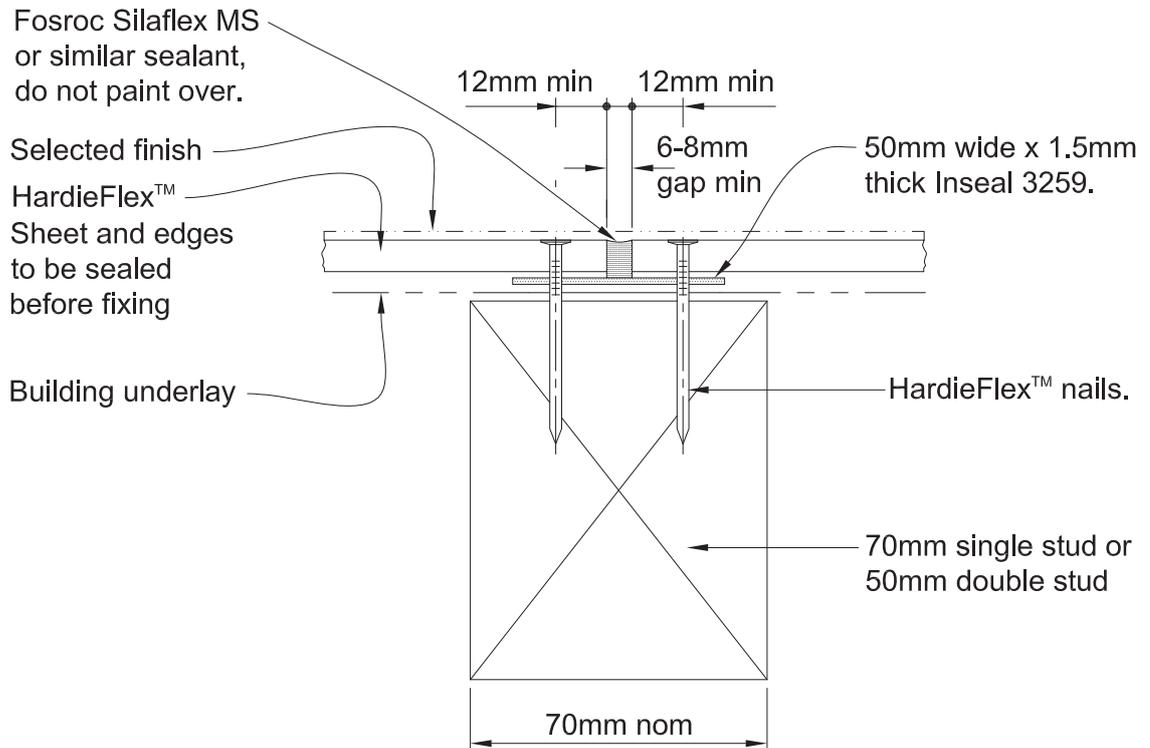
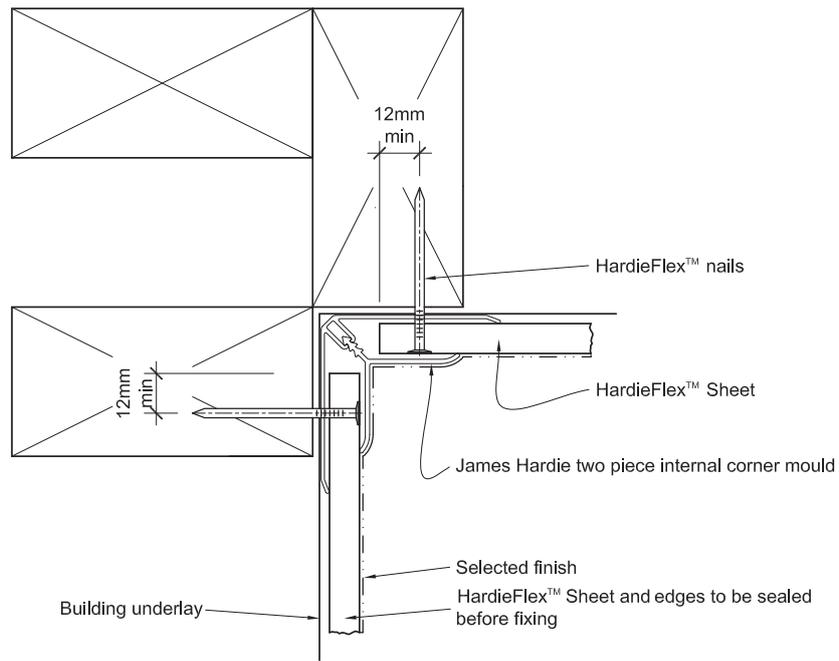
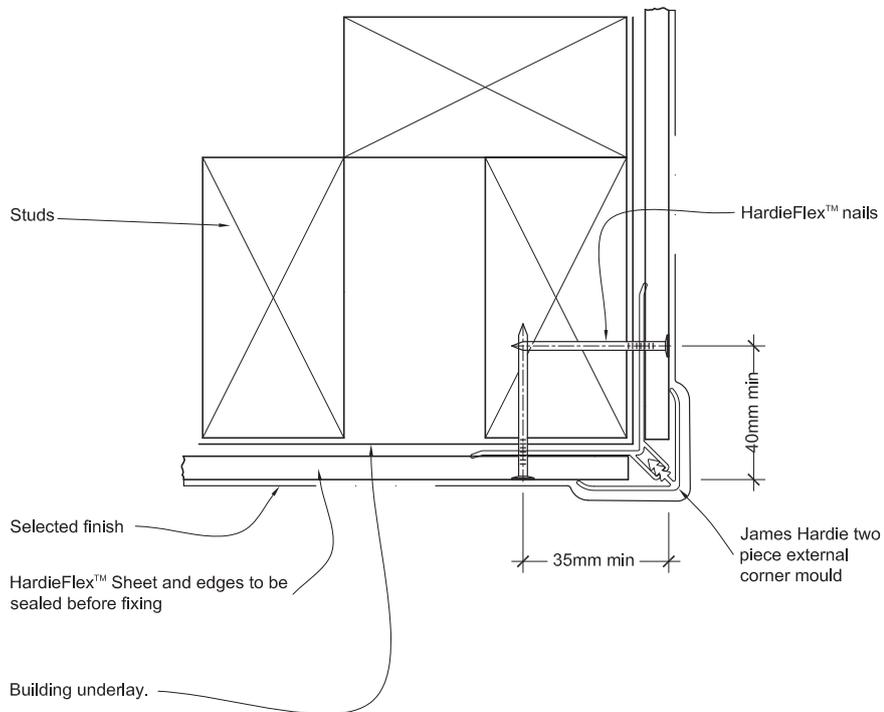


Figure 7: Direct fix internal uPVC corner joint



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

Figure 8: Direct fix external uPVC corner joint



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

Figure 9: Direct fix internal timber batten corner

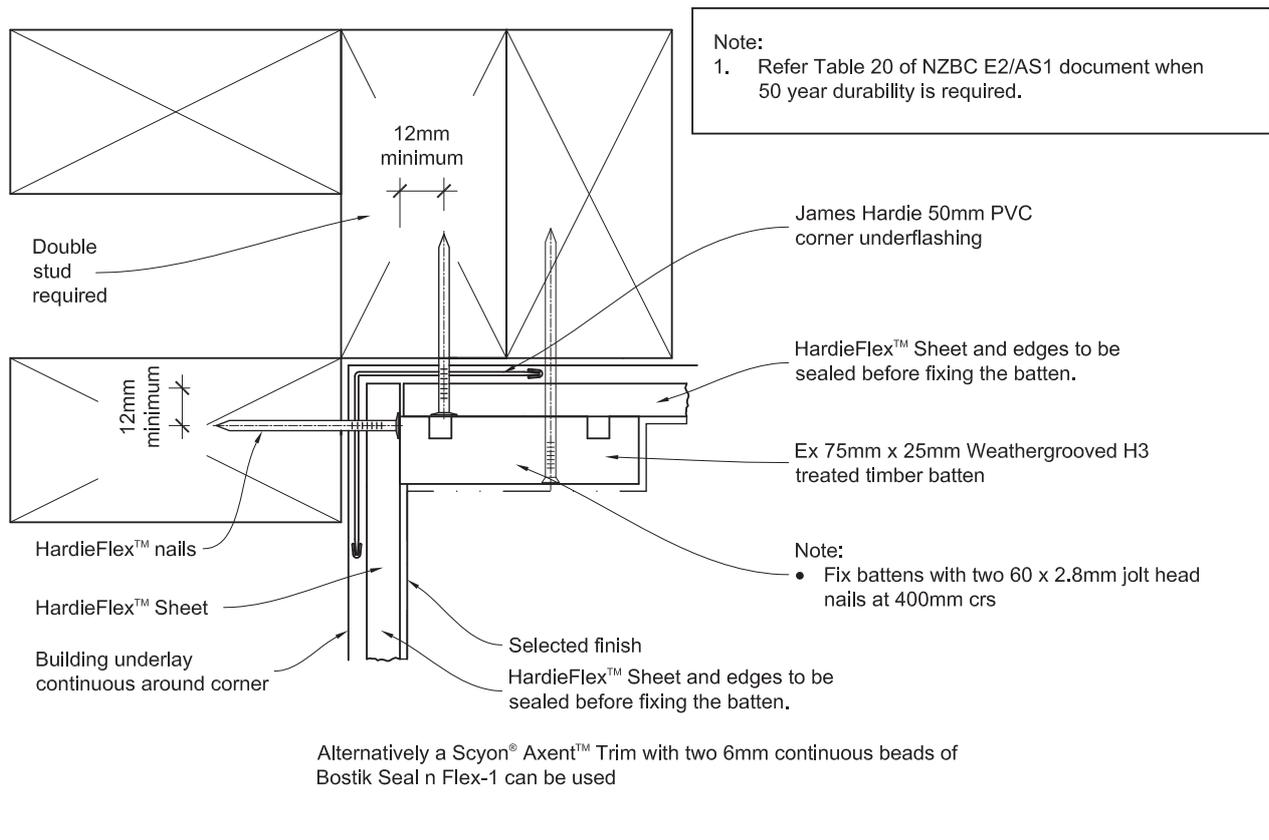


Figure 10: Direct fix external timber batten corner

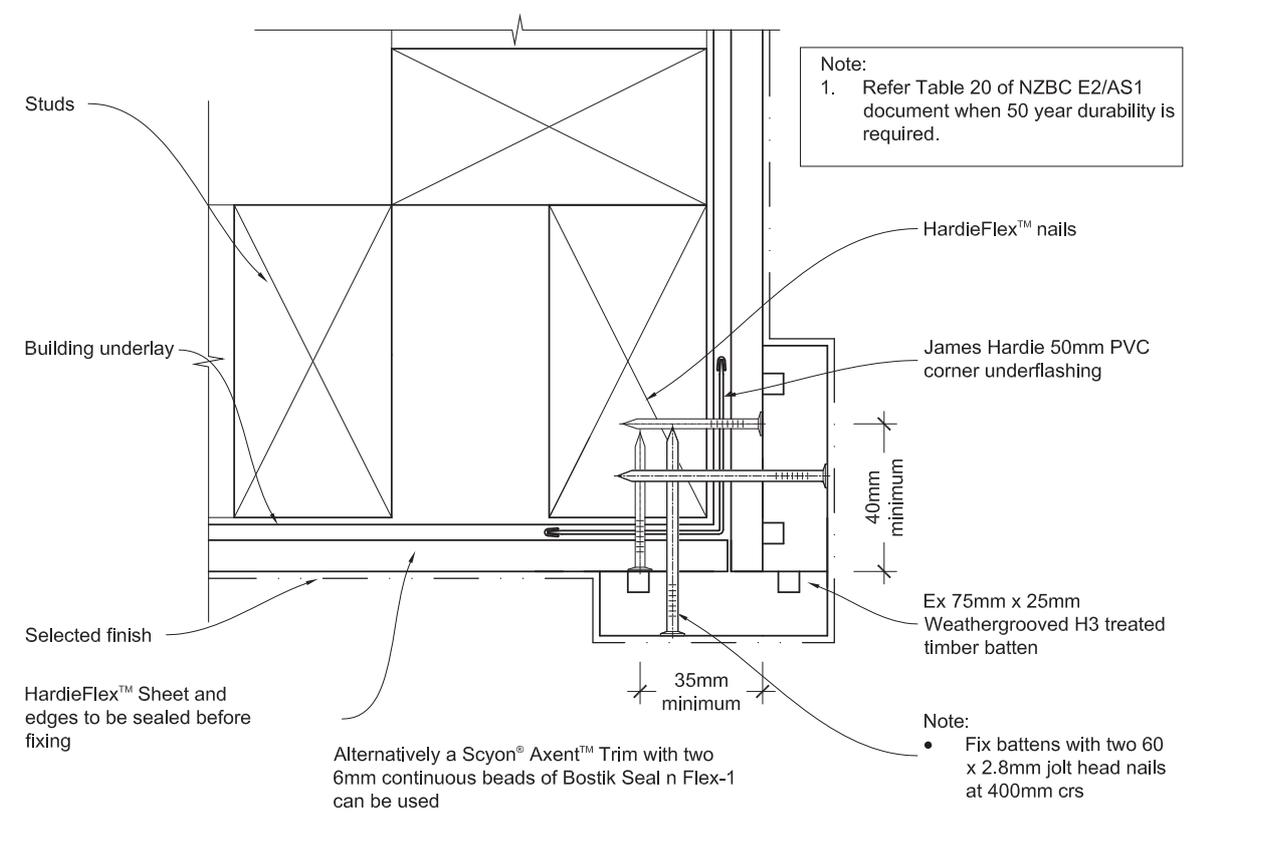


Figure 11: Direct fix internal sealant joint corner

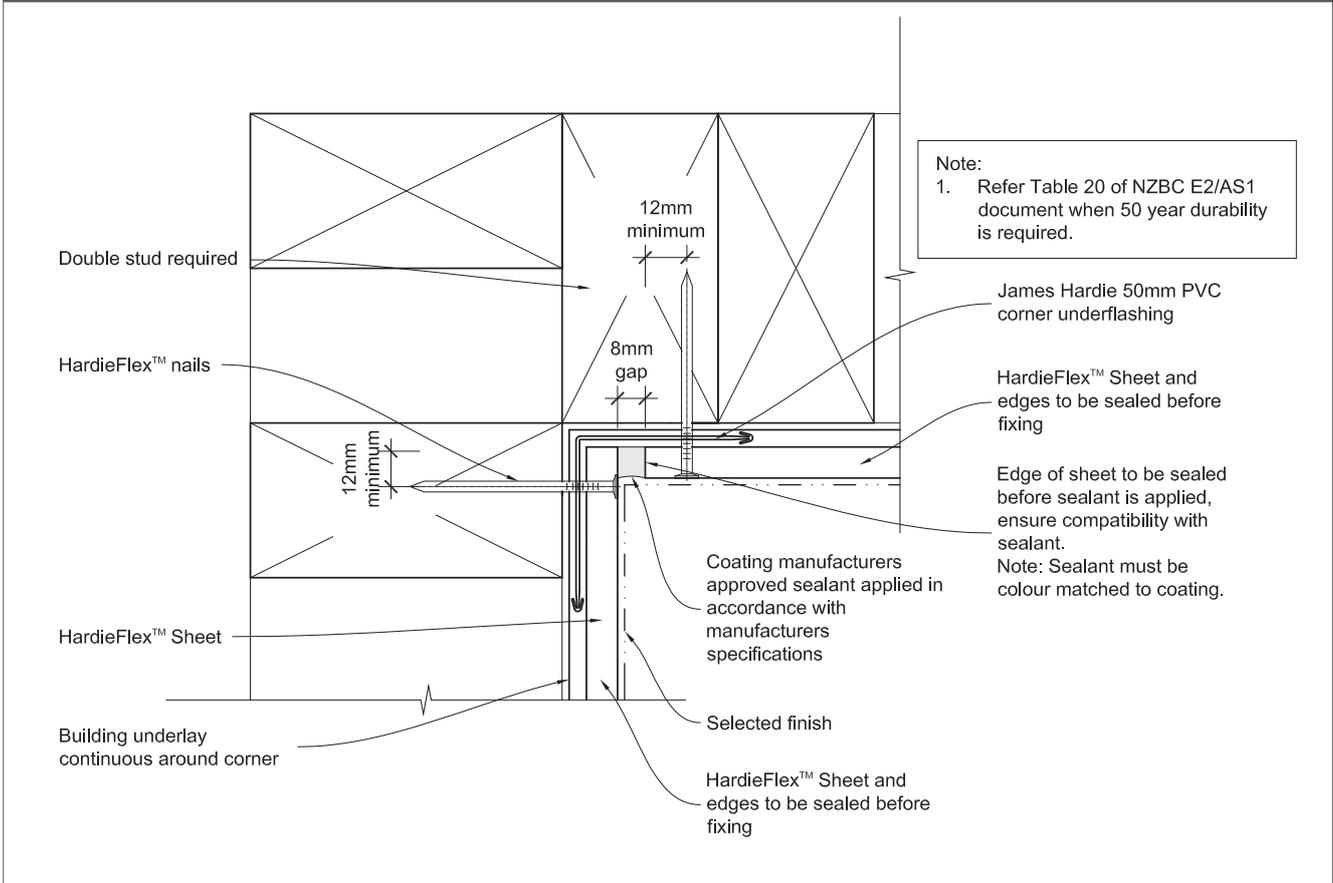


Figure 12: Direct fix external sealant joint corner

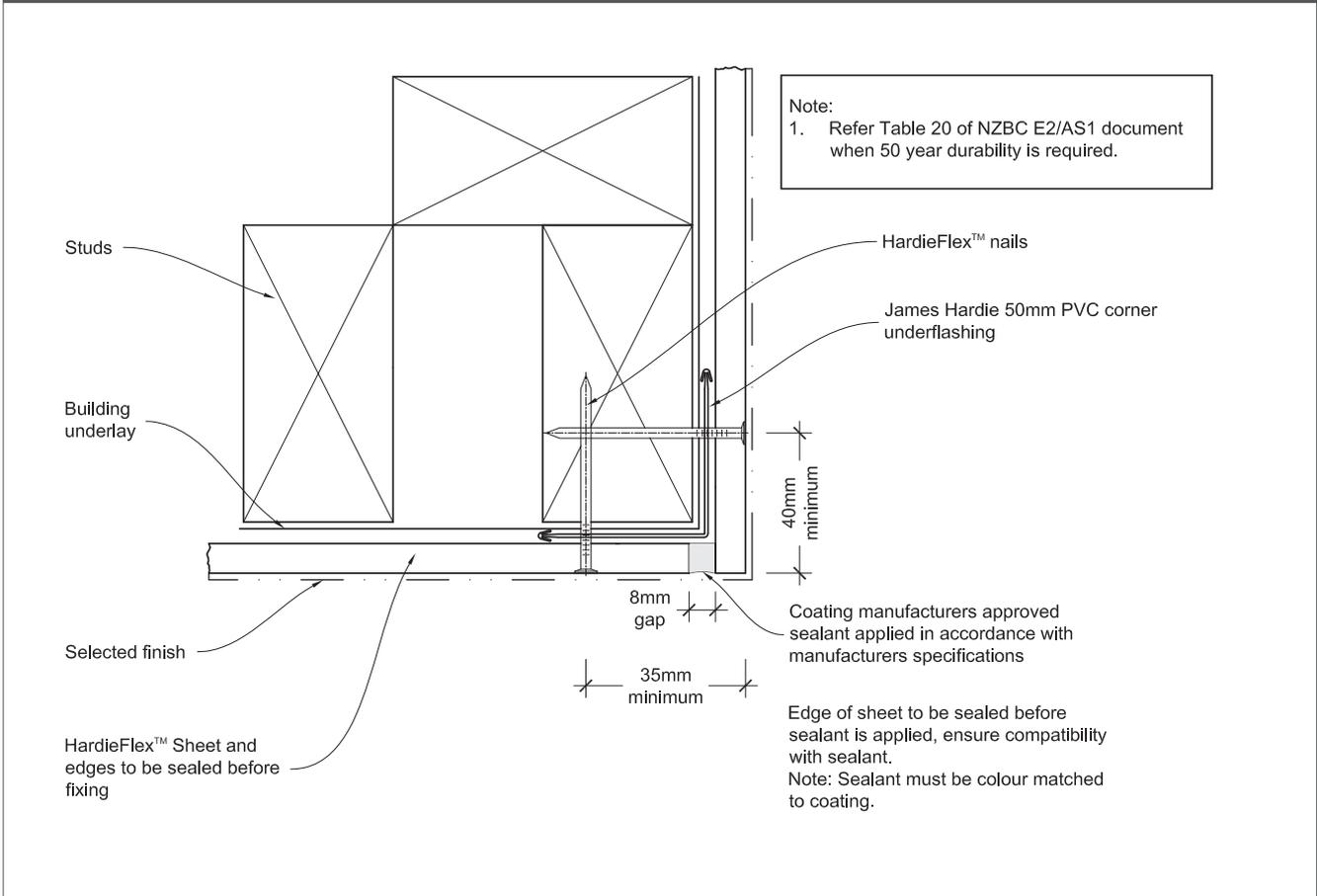
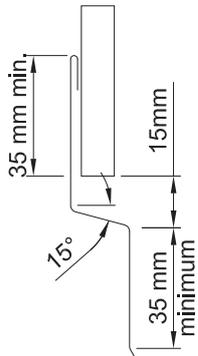
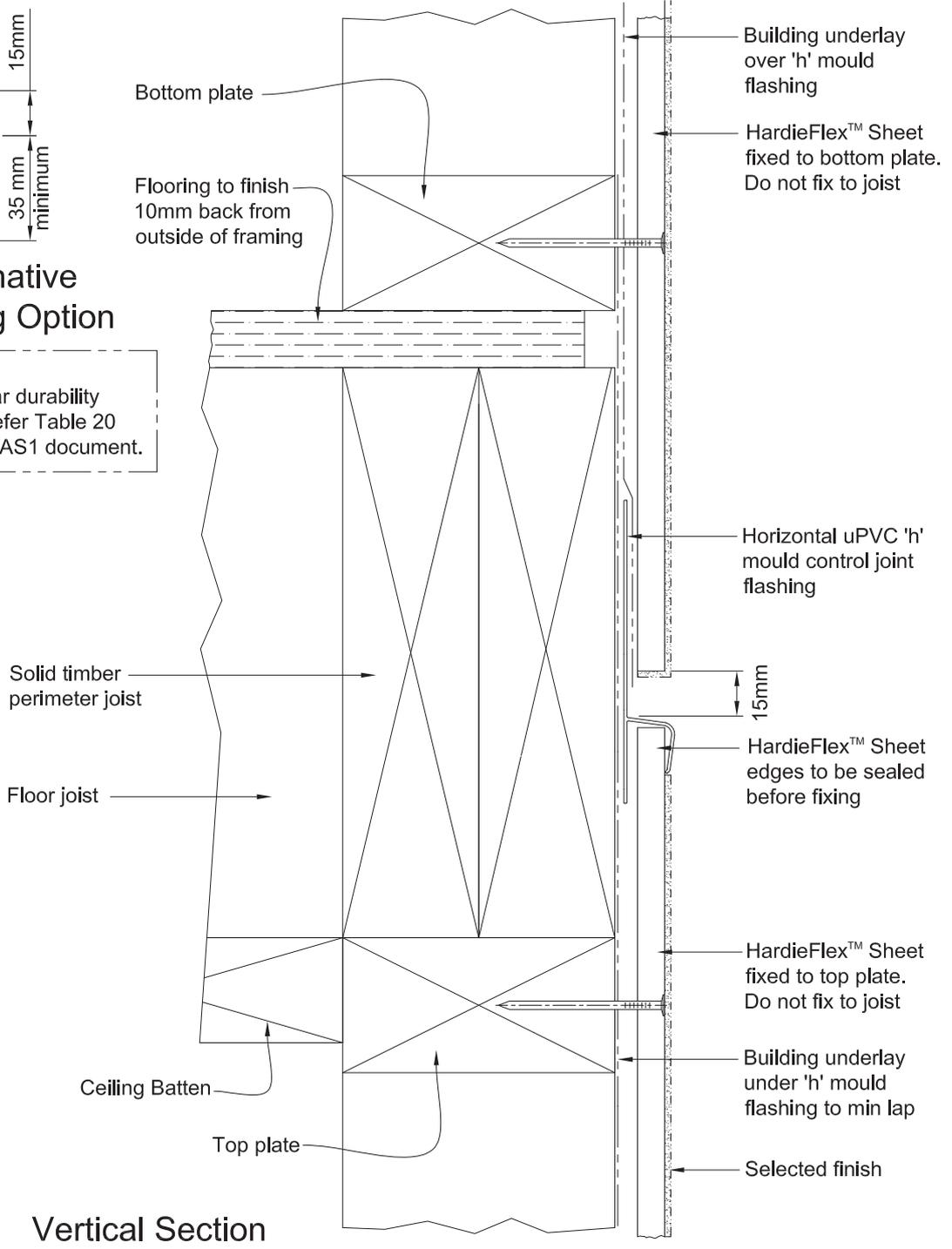


Figure 13: Direct fix horizontal control joint



Alternative Flashing Option

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



Vertical Section

Figure 14: Direct fix soffit detail

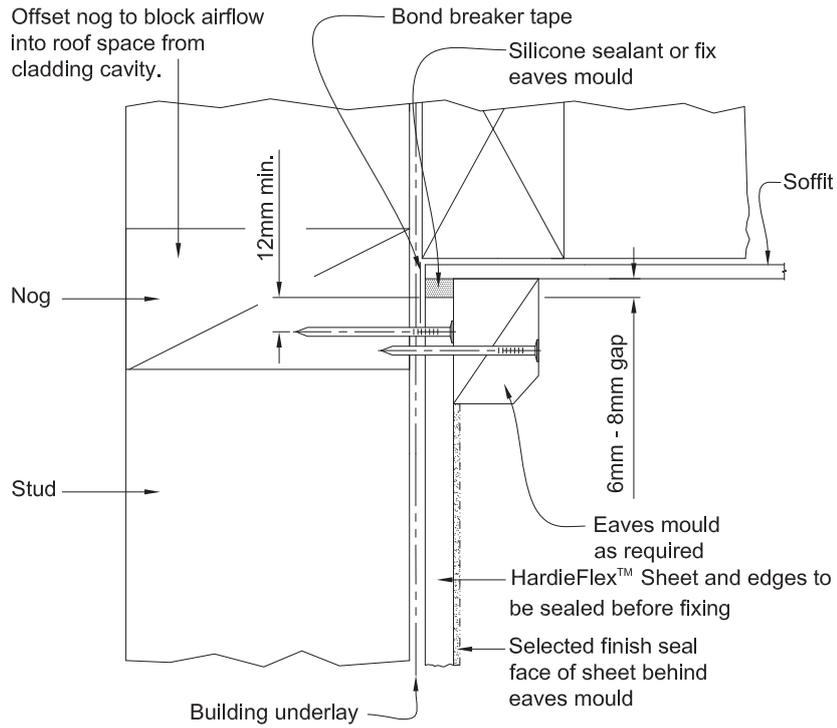


Figure 15: 'h' mould joiner

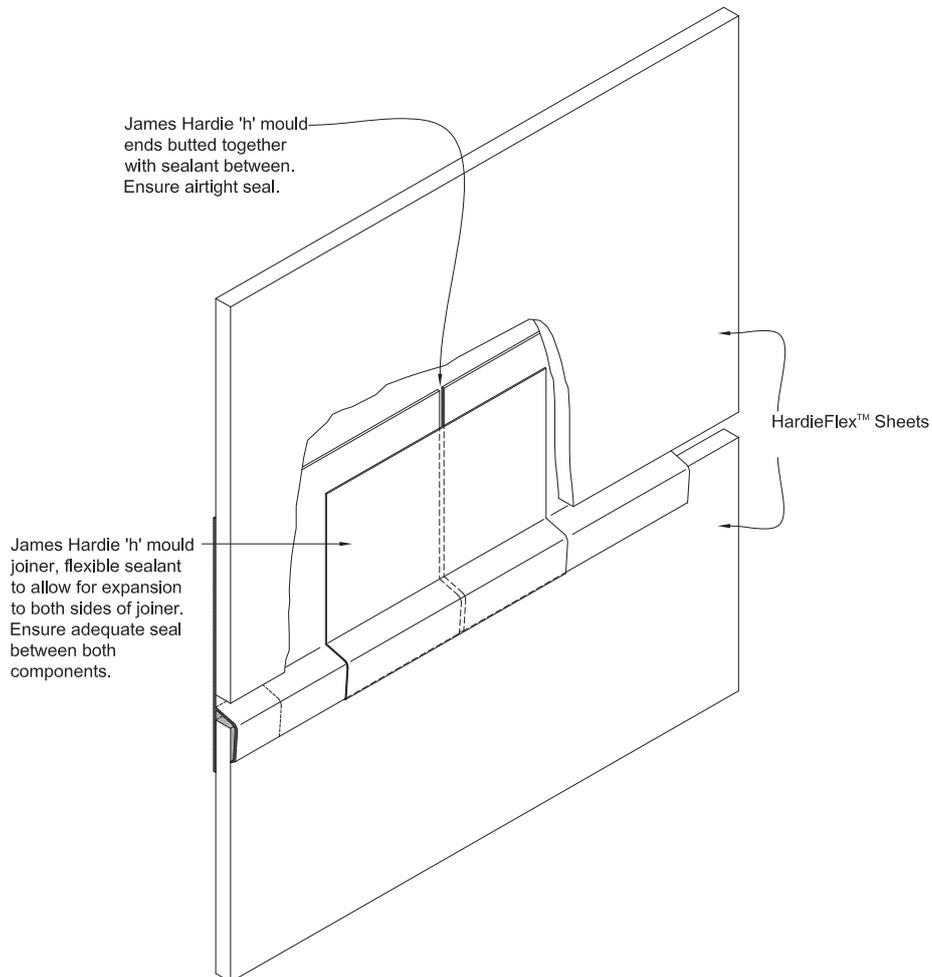


Figure 16: Direct fix window sill

Sill flashing to extend behind line of aluminium frame, with 8mm min upstand to back and sloping end dams. Refer to Figure 72A of E2/AS1 Sill flashing to extend under jamb battens at each end

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

Frame block supplied by joinery manufacturer to support joinery unit

Edge of Sheet and vertical section under window flange to be sealed before window is installed.

For flashing tape detail refer to Figures 72 and 115 of NZBC clause E2/AS1.

Window liner

Waterproof airseal to perimeter of trim cavity with expandable foam or sealant as per section 9.1.6 of E2/AS1

35mm min cover
10mm min
5mm gap

8mm gap nominal

Selected interior lining

HardieFlex™ Sheet

Selected finish

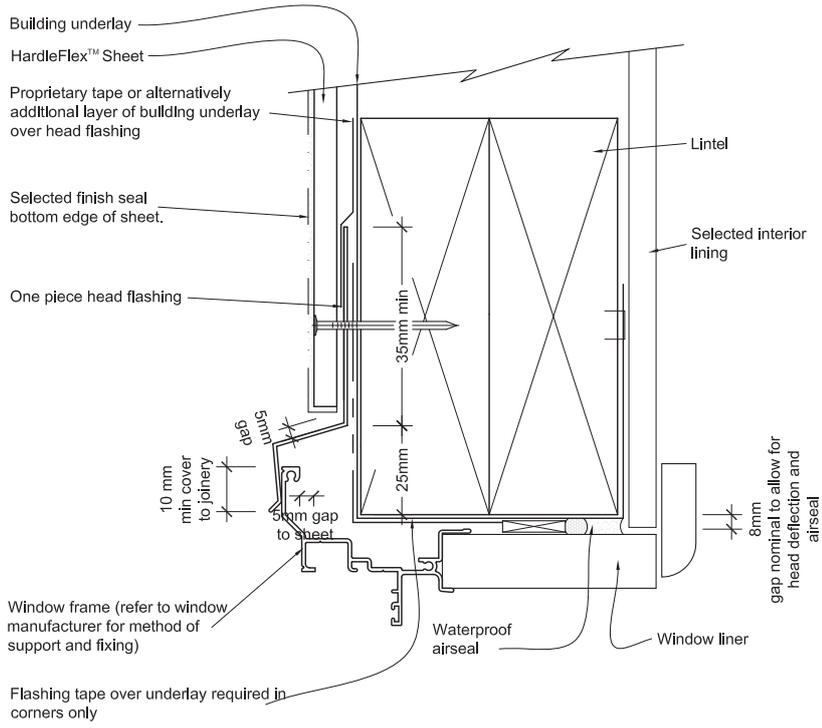
Building underlay

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 and NZS 3604.
3. Flashing tape must have proven compatibility with the selected building underlay and other materials with which it comes into contact as per Table 21 of E2/AS1.

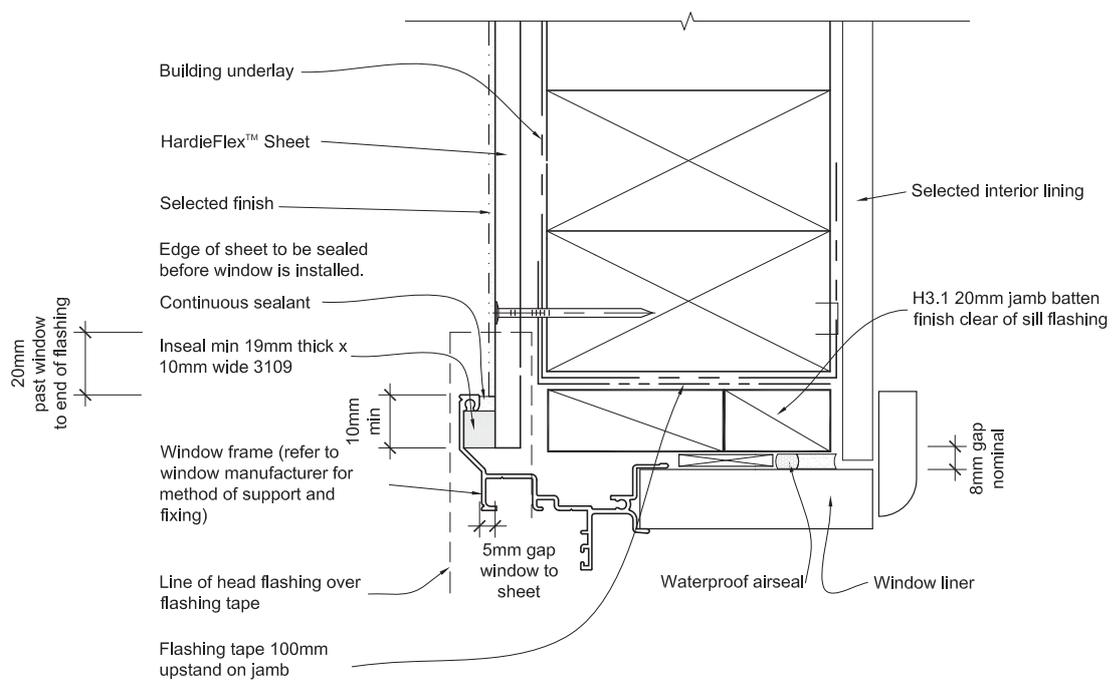
Refer to the manufacturer or supplier for technical information for these materials.

Figure 17: Direct fix window head



Note:
1. Also refer Figure 115 NZBC Clause E2/AS1 document for head and jamb details.

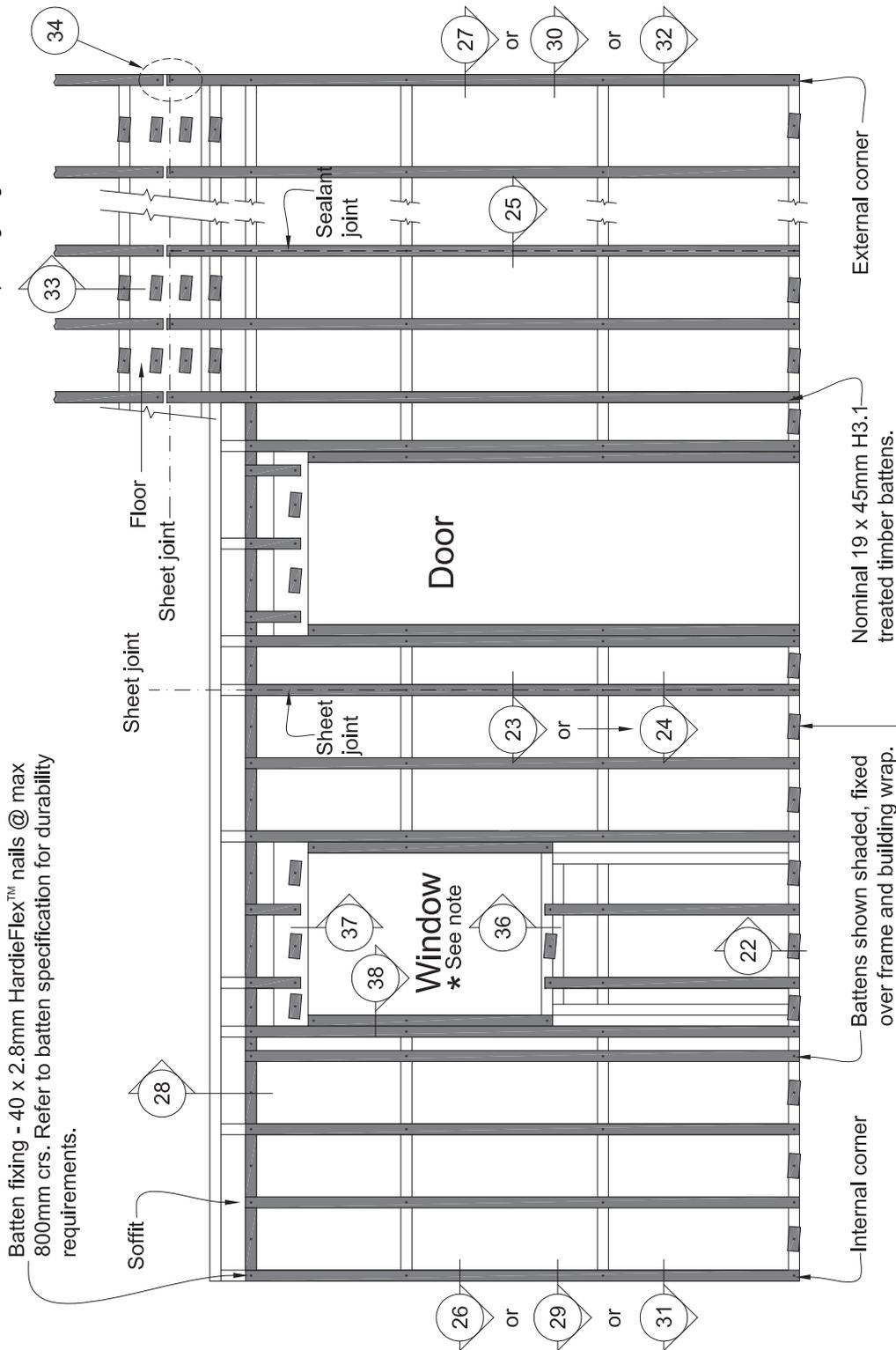
Figure 18: Direct fix window jamb



Note:
1. Also refer Figure 115 NZBC E2/AS1 document for head and jamb details

Figure 19: Cavity fix framing

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



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 x 100mm long - fix with one nail central

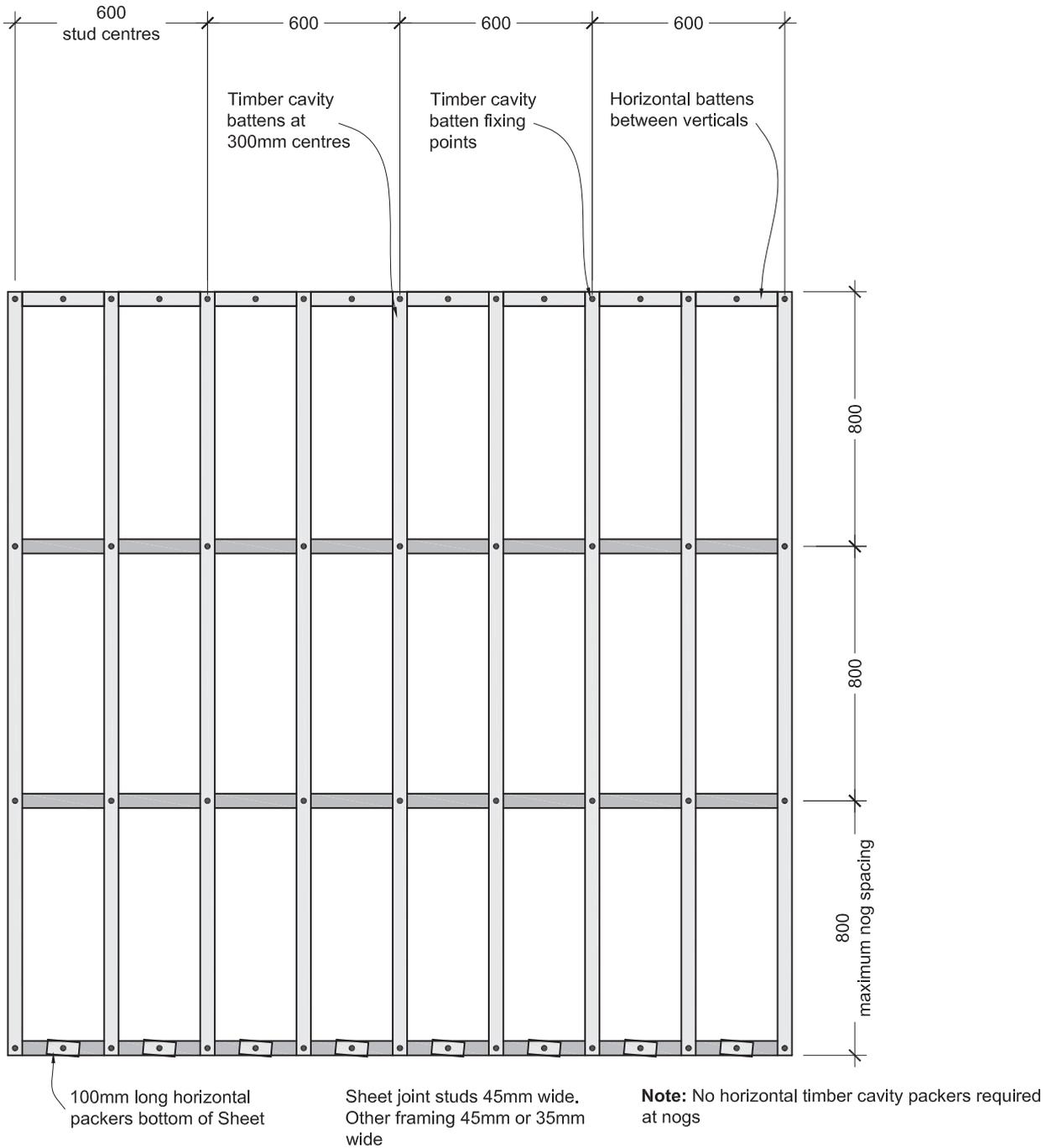
Note: Horizontal packers must be set to a fall of 5° min where shown

Note: If studs are placed at 400mm centres no intermediate battens are required and nogs may be placed at max 1200mm centres. 100mm long packers will be required between battens as shown

Note! Section notations refer to Figure numbers.

WALL ELEVATION

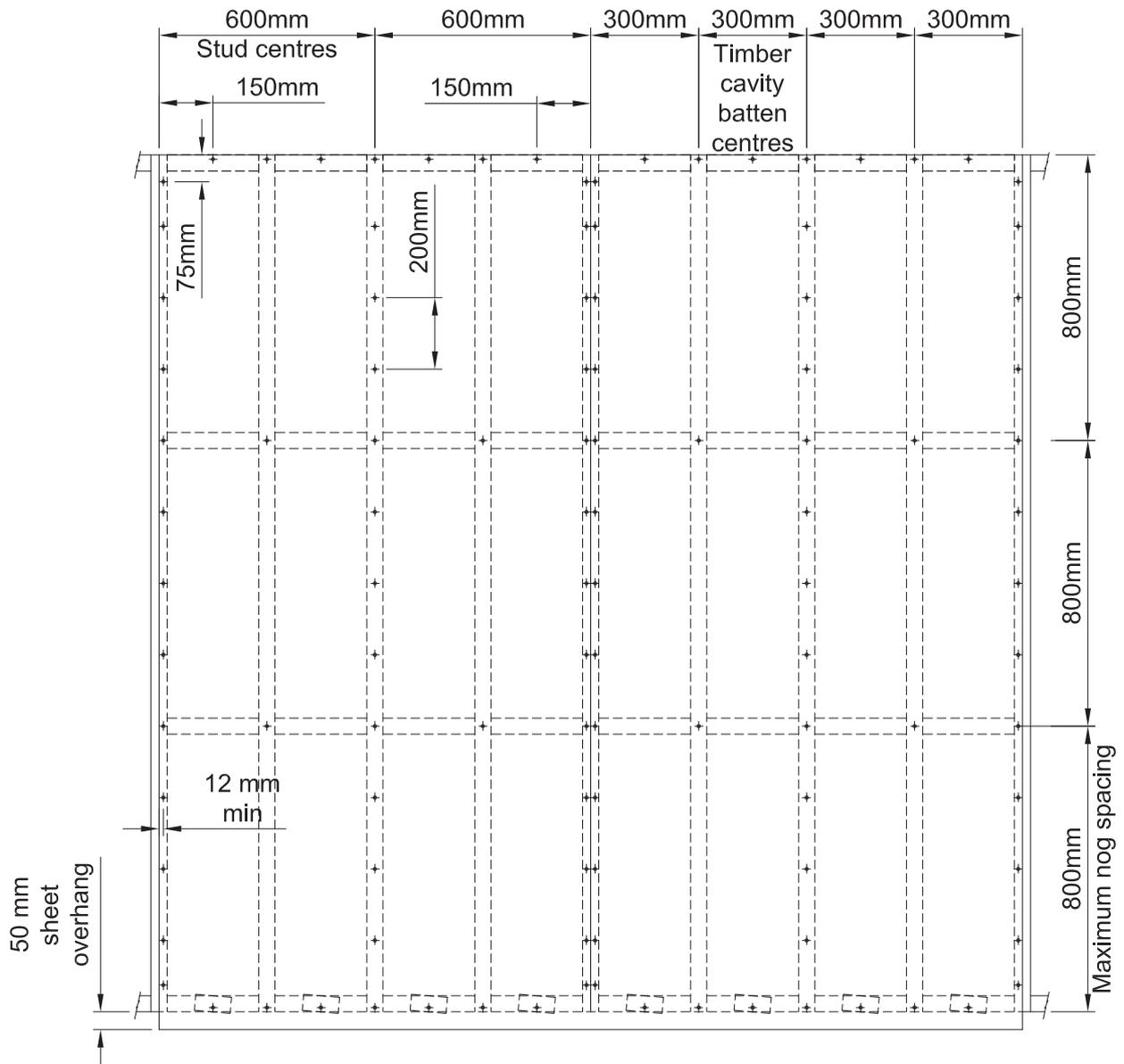
Figure 20: Cavity batten fixing



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

Note: If studs are placed at 400mm centres no intermediate battens are required and nogs may be placed at max 1200mm centres. 100mm long packers will be required between battens as shown

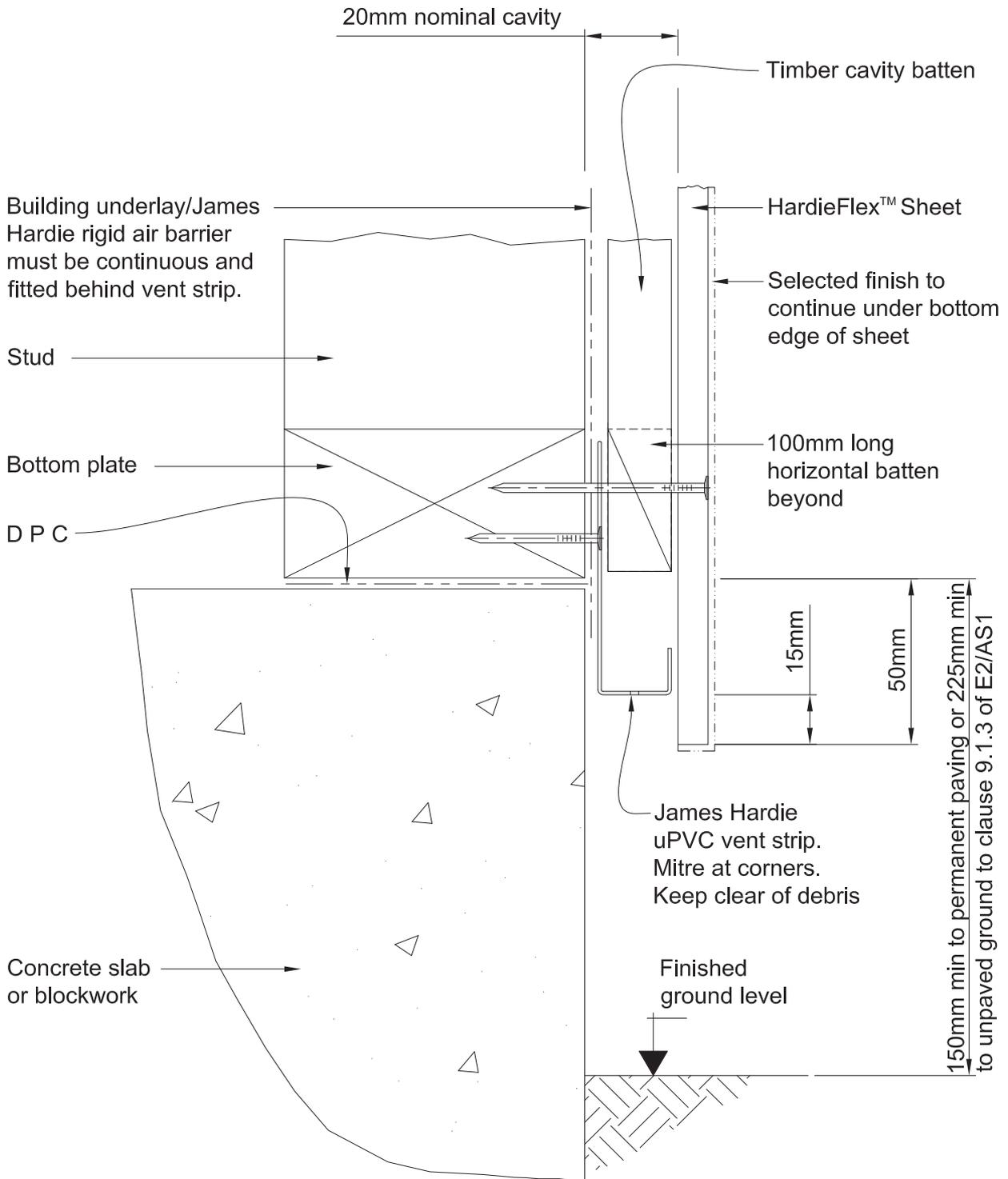
Figure 21: Cavity sheet fixing



Note: All horizontal packers must be set to a fall of 5° minimum

Note: HardieFlex™ Sheets must be fixed vertically.

Figure 22: Cavity concrete foundation detail



Foundation Detail

Figure 23: Cavity vertical uPVC joint

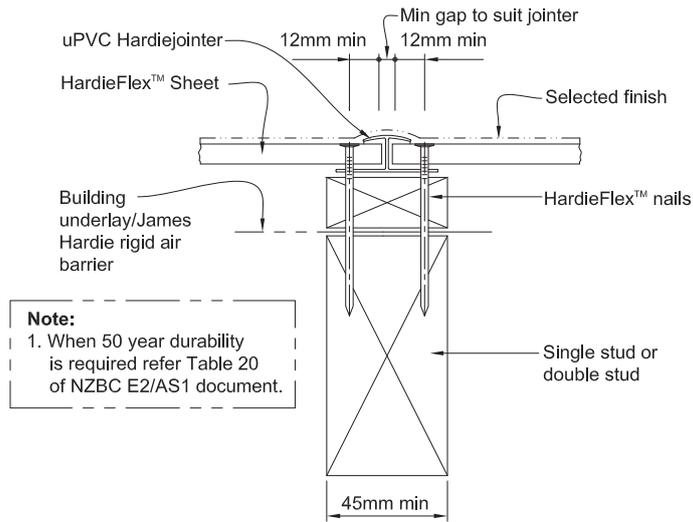


Figure 24: Cavity vertical timber batten joint

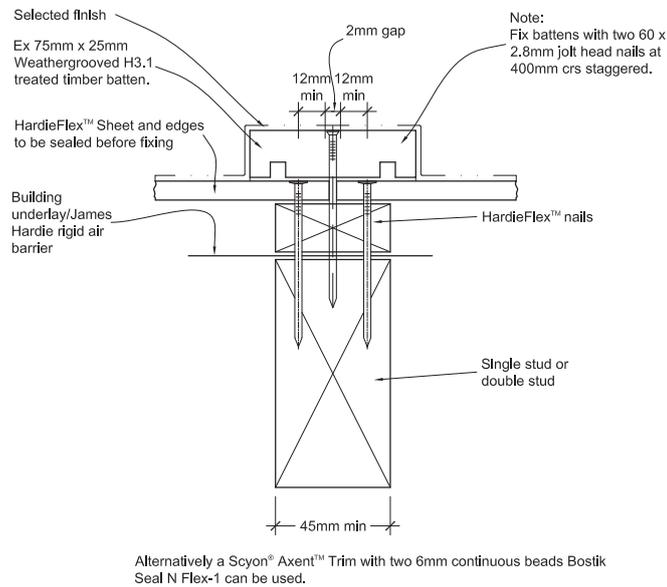


Figure 25: Cavity vertical sealant joint

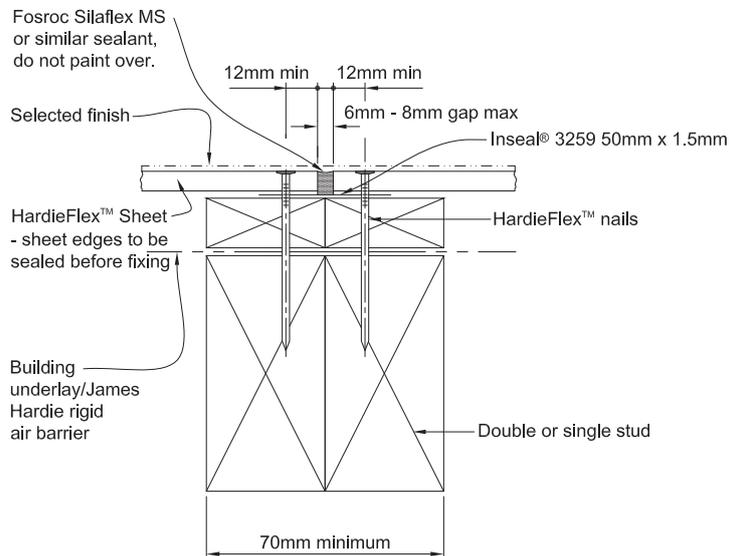
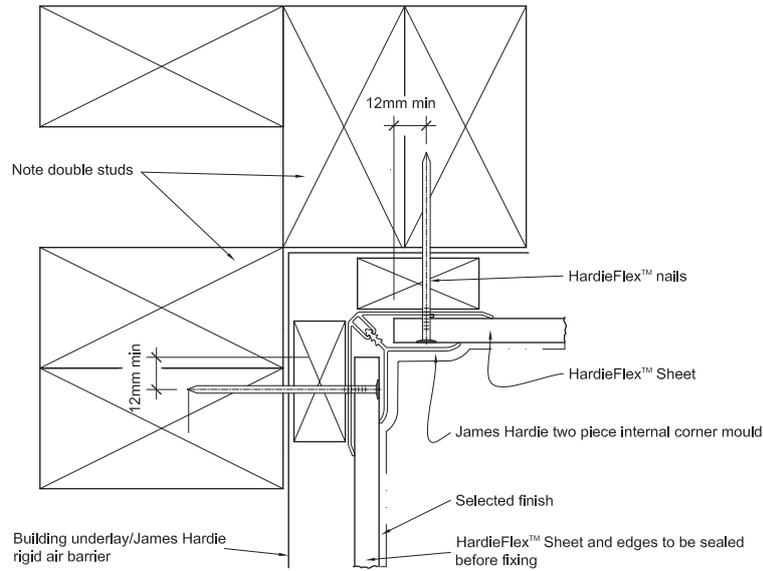
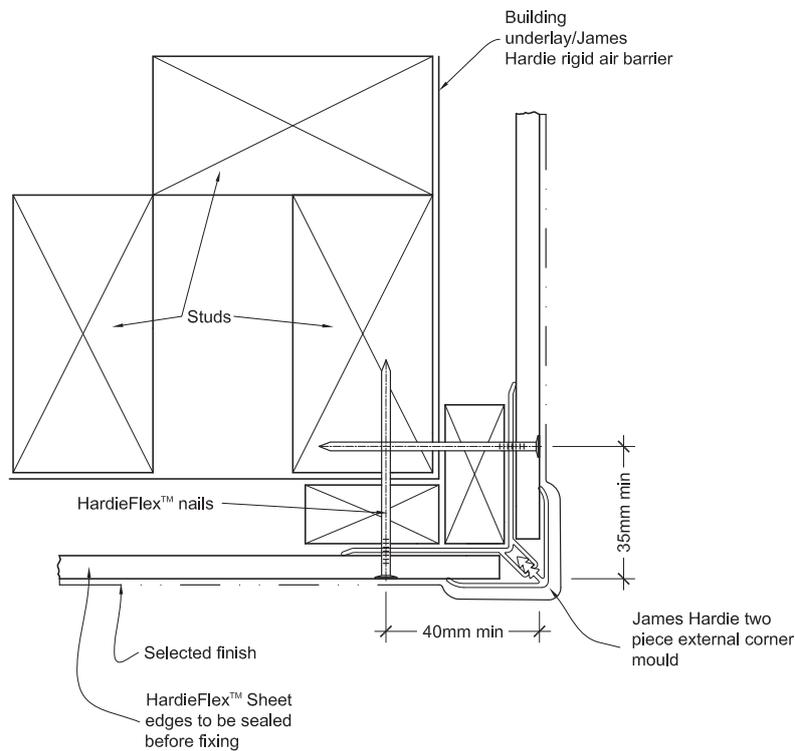


Figure 26: Cavity internal uPVC corner joint



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

Figure 27: Cavity external uPVC corner joint



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

Figure 28: Cavity internal timber batten corner

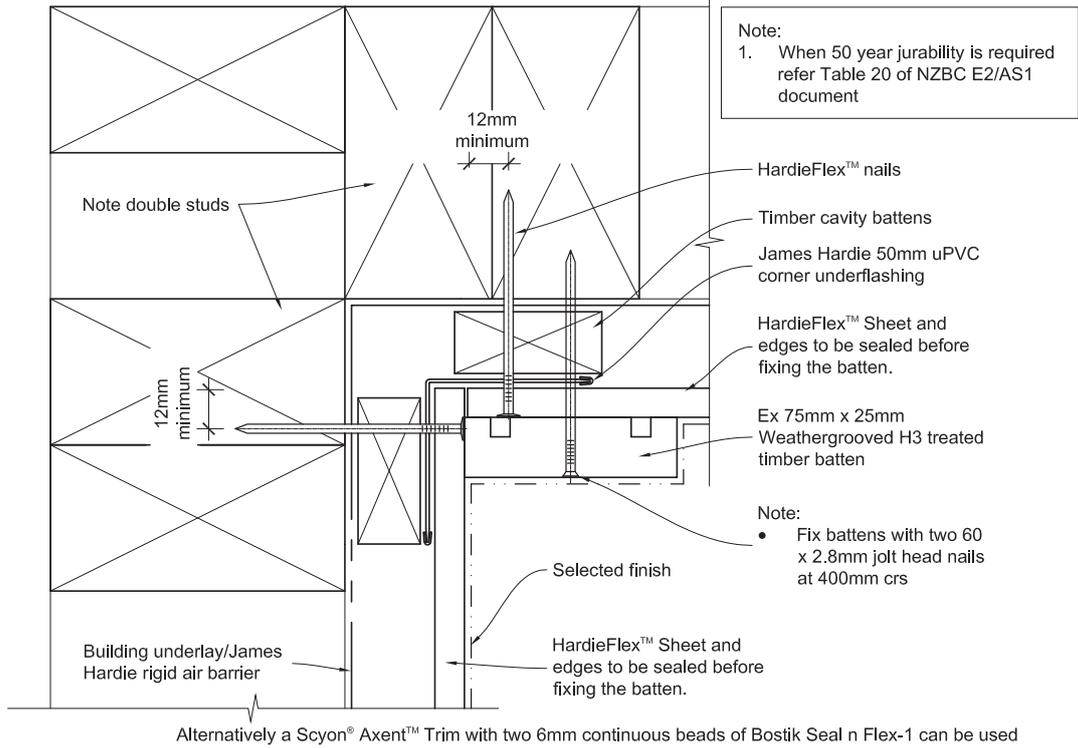


Figure 29: Cavity external timber batten corner

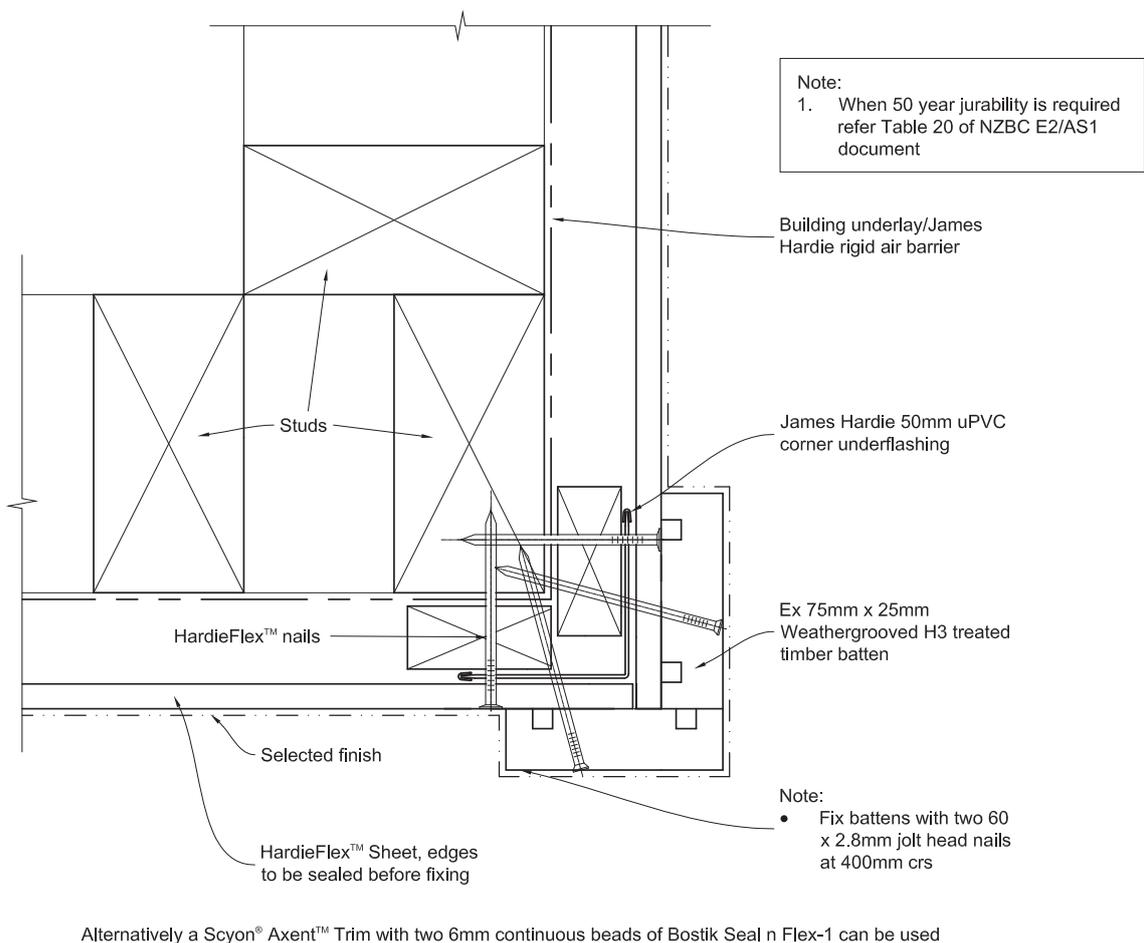


Figure 30: Cavity internal sealant joint corner

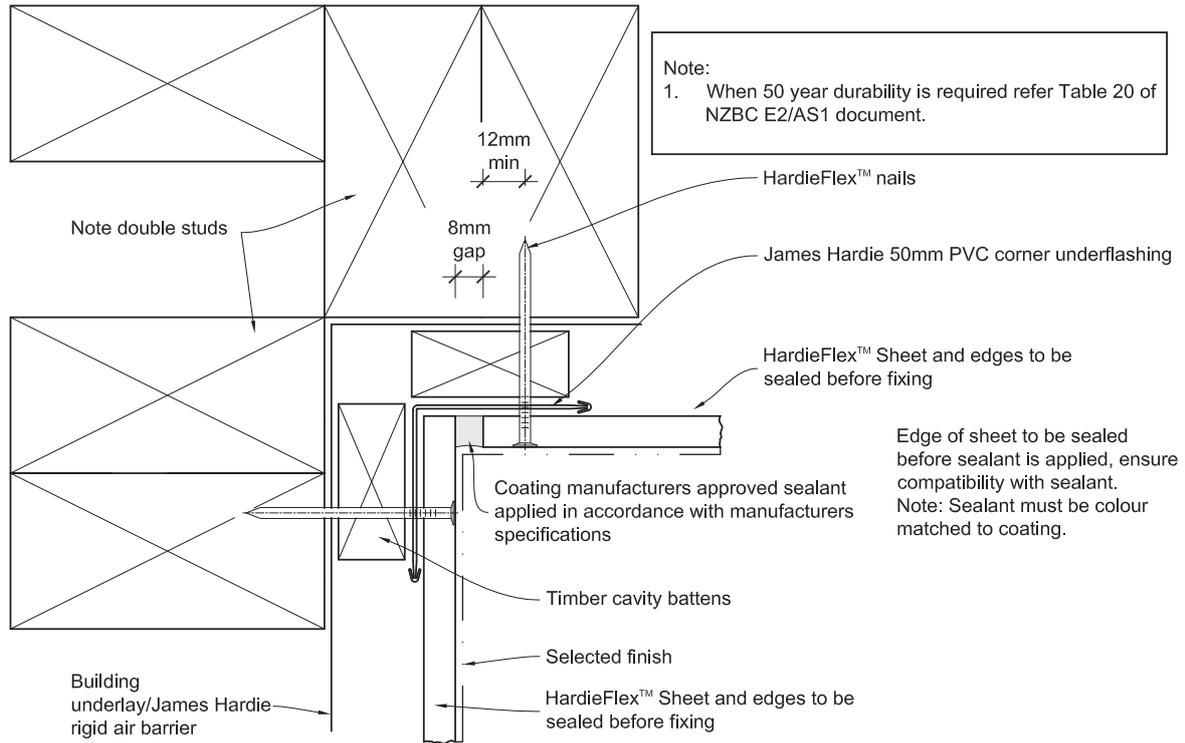


Figure 31: Cavity external sealant joint corner

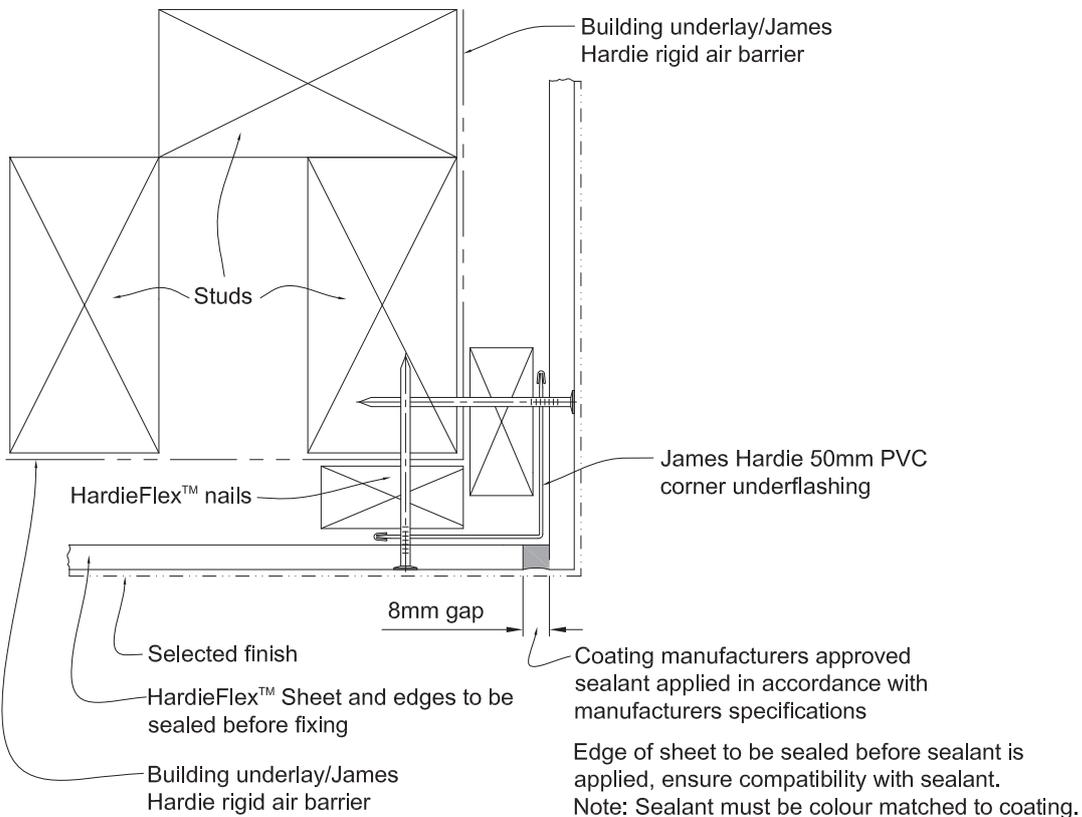


Figure 32: Cavity soffit detail

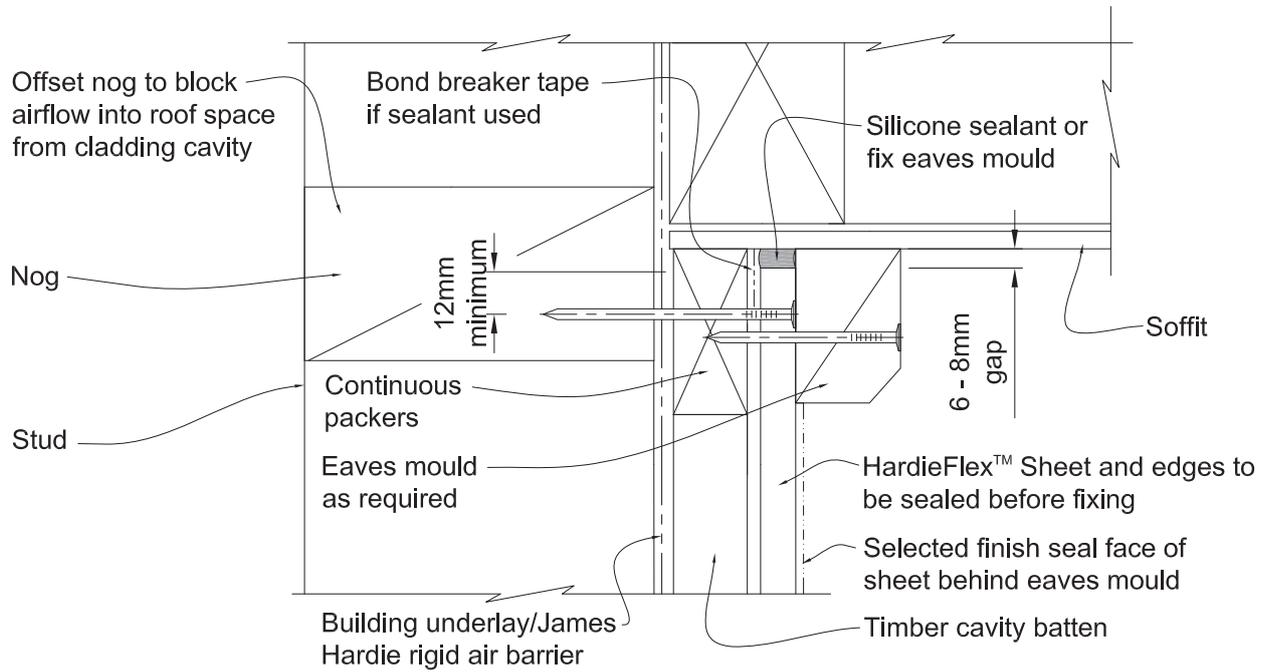


Figure 34: Cavity corner to 'h' mould joint

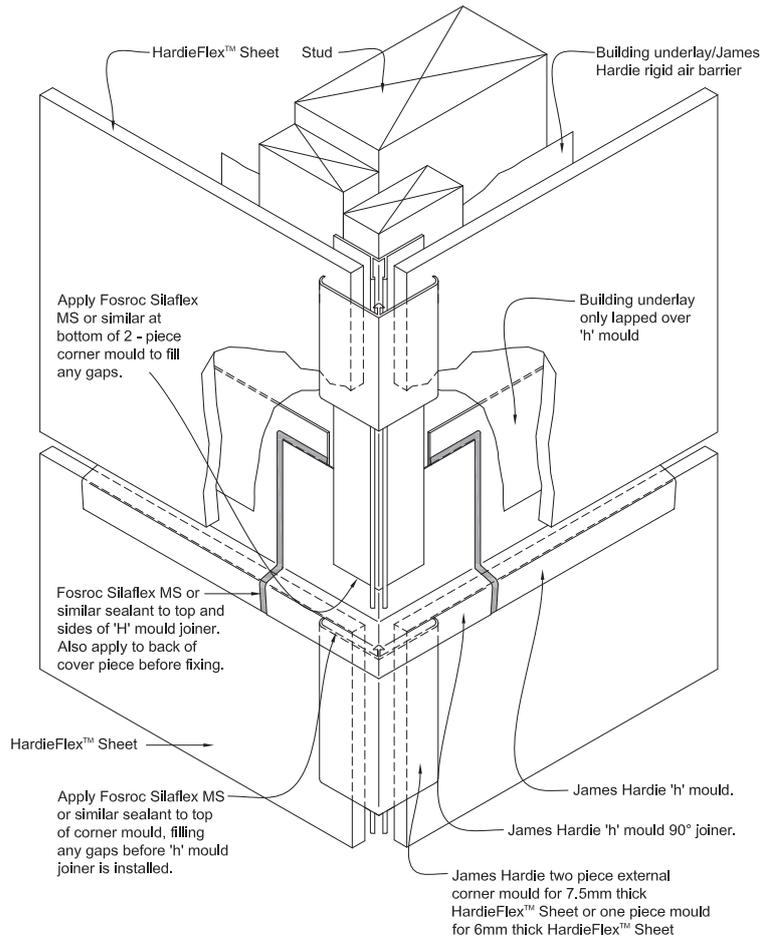
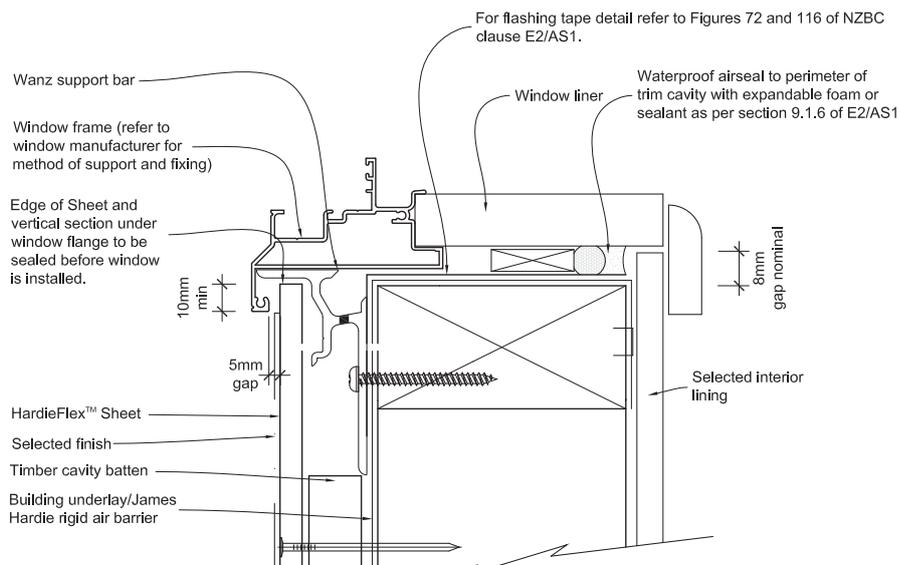


Figure 35: Cavity window sill



General notes for materials selection

1. Flashing materials must be selected based on environmental exposure, refer to NZS 3604 and Table 20 of NZBC clause 'E2/AS1'.
2. Building underlay must comply with acceptable solution NZBC clause 'E2/AS1' and NZS 3604.
3. Flashing tape must have proven compatibility with the selected building underlay and other materials with which it comes into contact as per Table 21 of NZBC clause 'E2/AS1'.

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

Figure 36: Cavity window head

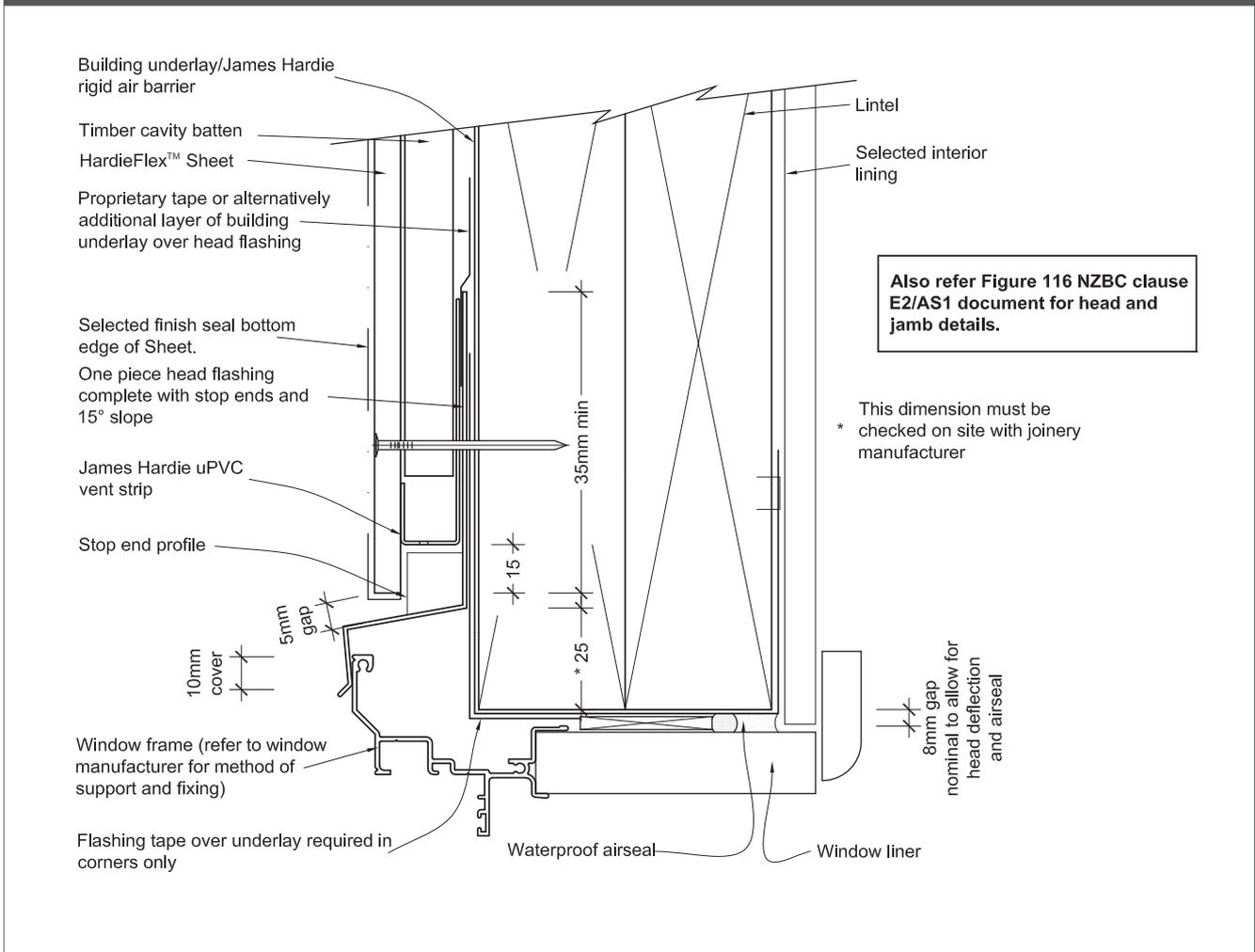


Figure 37: Cavity window jamb

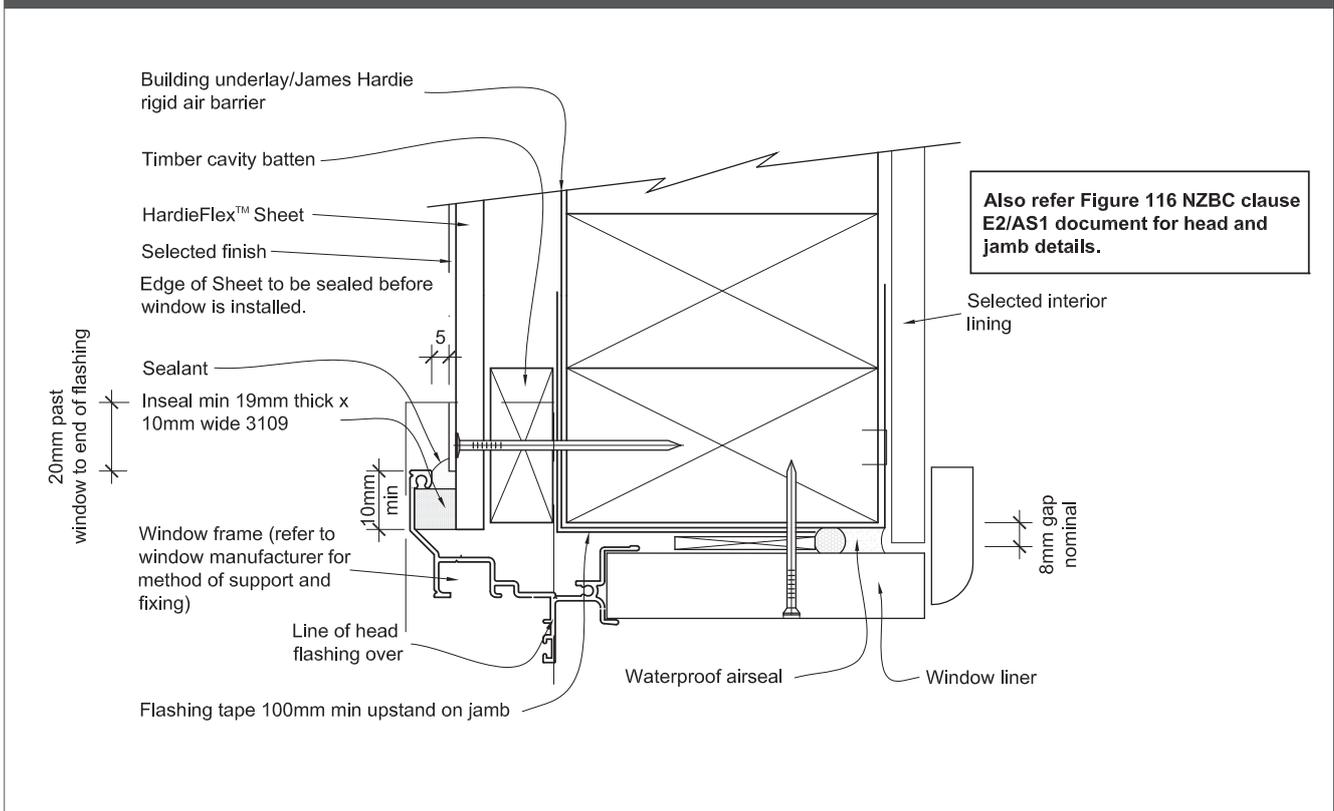


Figure 38: Cavity one piece apron flashing joint

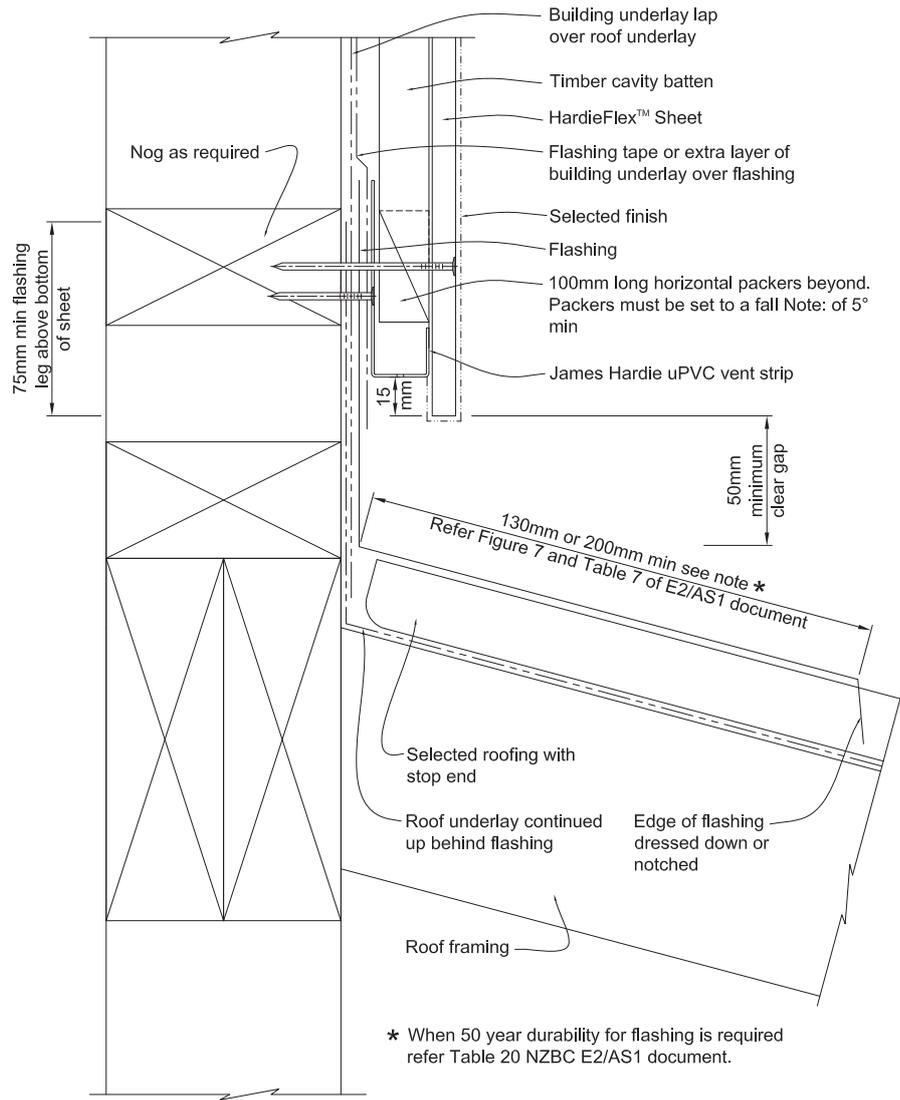


Figure 39: Cavity parapet flashing

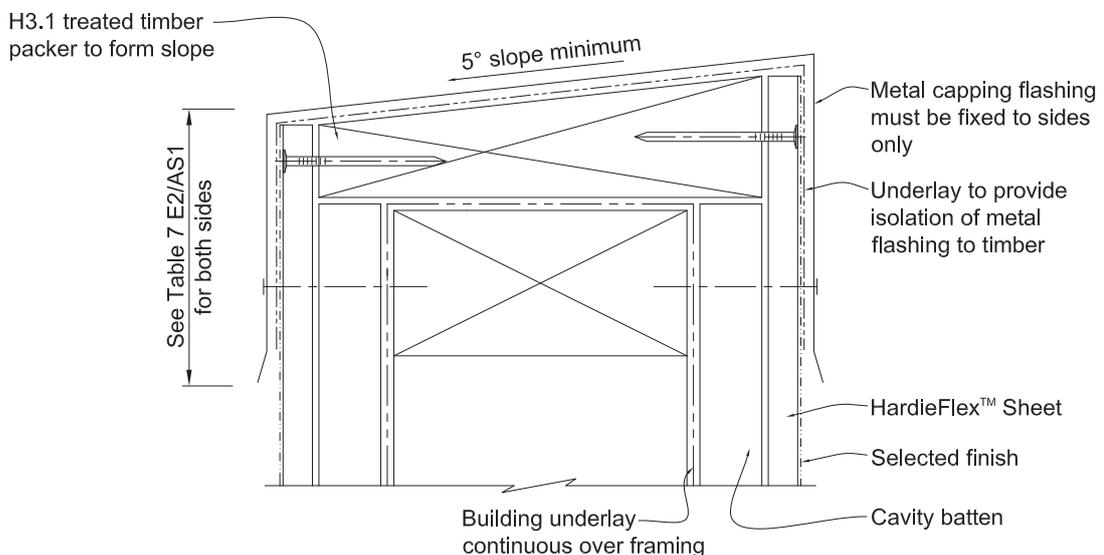
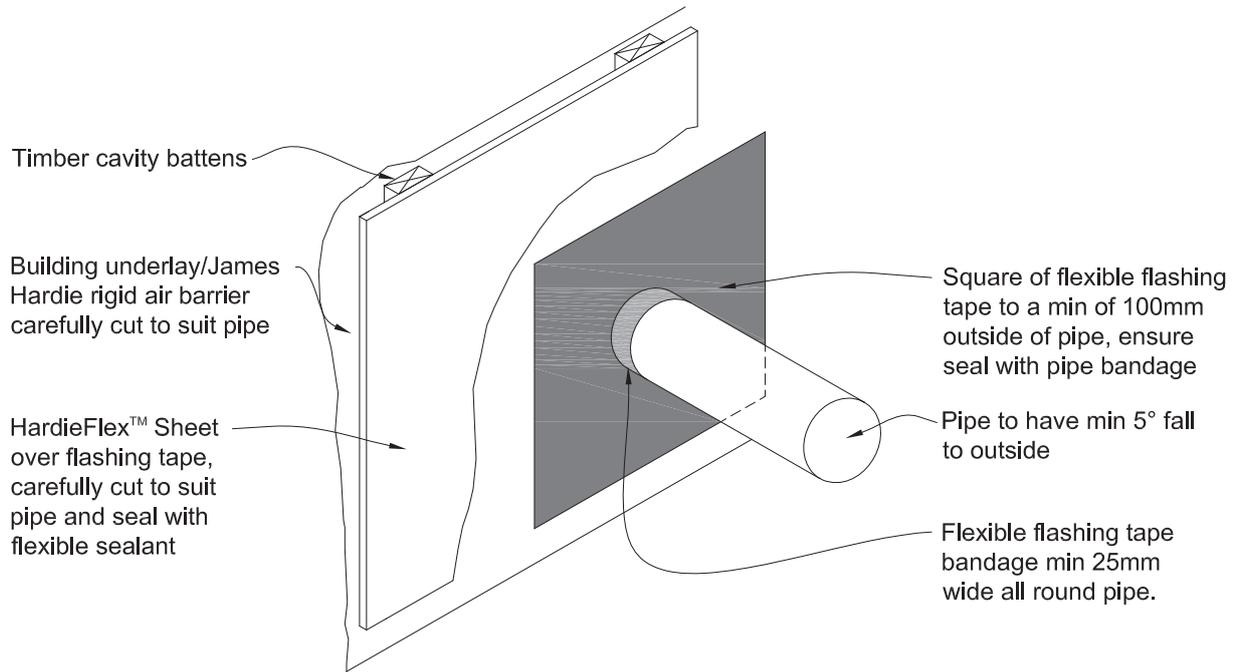


Figure 40: Cavity pipe penetration



Product Warranty

October 2013

James Hardie New Zealand ("James Hardie") warrants for a period of 15 years from the date of purchase that the HardieFlex™ Sheet (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 HardieFlex™ Sheet when installed in accordance with the HardieFlex™ Sheet 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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Ask James Hardie™

Call 0800 808 868

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