



SHADOWCLAD®
STRUCTURAL
Natural
GROOVE

SHADOWCLAD®
STRUCTURAL
Natural
TEXTURE

SHADOWCLAD®
STRUCTURAL
Ultra
GROOVE

SHADOWCLAD®
STRUCTURAL
Ultra
TEXTURE

SHADOWCLAD®
FLASHINGS

SHADOWCLAD® SPECIFICATION & INSTALLATION GUIDE

FOR CAVITY WALL CONSTRUCTION

SEPTEMBER 2018



shadowclad®

CAVITY WALL CONSTRUCTION

Contents

1.0	Shadowclad® Product Range.....	3
1.1	Technical Information & CAD Details	3
1.2	Product Description & Range.....	4
1.3	Building Materials For Use With Shadowclad® (Exterior cladding)	10
1.4	Preservative Treatment.....	10
1.5	Sustainability	10
1.6	Product Identification.....	11
2.0	Design Considerations.....	11
2.1	Design Responsibility	11
2.2	Literature Scope	11
2.3	Code Compliance	11
2.4	Site & Foundations	12
2.5	Ground Clearances	12
2.6	Moisture Management	12
2.7	Wind Loading	12
2.8	Durability	12
2.9	Textured vs. Smooth Finished Plywood as Exterior Cladding.....	13
2.10	Health & Safety.....	13
2.11	Storage & Handling	13
3.0	Installation – Exterior Cladding	14
3.1	Framing – Construction	14
3.2	Preparation – Building Underlay & Rigid Air Barrier.....	14
3.3	Preparation – Cavity Construction	14
3.4	Sheet Layout	17
3.5	Fixings – Fastener Durability	17
3.6	Fixings – Fastener Size & Layout	17
3.7	Installation Tools for Shadowclad®	18
3.8	Shadowclad® Key Installation & Design Points..	19
3.9	Vertical Sheet Joints	20
3.10	Horizontal Sheet Joints	24
3.11	External Corners.....	26
3.12	Internal Corners.....	27
3.13	Shadowclad® Flashings Junction Points	28
3.14	Window Penetrations	30
3.15	Wall Penetrations	33
3.16	Sheet Clearances.....	36
3.17	Other Details.....	38
4.0	Coating & Application – Exterior Cladding	44
4.1	Surface Preparation.....	44
4.2	Coating Application	44
4.3	Coating Selection	44
4.4	Coating Requirements if run off is used for drinking water.....	45
5.0	Maintenance	46
6.0	Frequently Asked Questions	47
7.0	References & Sources of Information.....	47
8.0	Glossary of Terms.....	48
9.0	Limitations	48

I.0 SHADOWCLAD® PRODUCT RANGE

Manufactured by Carter Holt Harvey, Shadowclad® is a range of H3 LOSP treated plywood panels suitable for exterior cladding applications.

Shadowclad is manufactured under a third party audited quality control programme to monitor compliance with AS/NZS 2269 Plywood Structural. All Shadowclad products carry Engineered Wood Products Association of Australasia (EWPAA) Joint Accreditation System – Australia and New Zealand (EWPAA/JAS-ANZ) certification.

For information relating to Ecoply® structural plywood and applications other than exterior cladding, please contact Carter Holt Harvey Plywood Pty Ltd (CHH Plywood) on 1800 338 463.

Shadowclad products must be competently installed in accordance with good building practice and sound design principles to satisfy the requirements of the Building Code of Australia published as part of the National Construction Code Series 2016, Volume Two, (NCC 2016, Building Code of Australia - Volume Two). This is the responsibility of building owners and the design professionals and builders that they engage. This document contains information, limitations, and cautions regarding the storage, handling, installation, usage, and the maintenance of Shadowclad. However, CHH Plywood assumes no legal liability to you in relation to this information.

I.1 TECHNICAL INFORMATION & CAD DETAILS

When specifying or installing any Shadowclad product visit www.shadowclad.com.au to ensure you have current specification material.

Having trouble installing Shadowclad®? Visit www.shadowclad.com.au or download the Shadowclad APP to view the installation animations of common Shadowclad junctions.

Important Notice & Warning

While the products in this document possess the characteristics described, no representation is made that the products will be effective in all locations and circumstances. Much depends upon building design, construction practices and the environment in which the products are used. Statements about the attributes and performance characteristics of the products are made on the assumption that the products are properly stored, handled, installed, used and maintained in their relevant application.

You should not rely solely on this document when using the products. CHH Plywood recommends obtaining professional building advice which takes into account your particular circumstances and site conditions. CHH Plywood is not involved in, and does not assume responsibility for, the selection, installation or maintenance of our products in situ.

Failure to install CHH Plywood in accordance with applicable building regulation requirements and instructions may lead to personal injury, loss or damage, and may adversely affect the performance of the products.

1.2 PRODUCT DESCRIPTION & RANGE

Shadowclad® structural plywood panels are manufactured from radiata pine wood veneers. The veneers are placed at right angles to each other for maximum strength and stability then bonded together with synthetic phenolic (PF) resin to form a strong and permanent Type A bond.

Shadowclad is available in panel sizes 2440/2745 x 1216mm (to provide 1200mm cover) and features a unique textured (bandsawn) appearance which also helps to diffuse UV rays for increased aesthetic performance when exposed to weather.

Shadowclad is available as a Textured or Grooved profile and in either Natural or Ultra finishes.

Shadowclad® Natural

Shadowclad Natural is an uncoated panel suitable for use with penetrating stains, film forming stains and paint systems. If Shadowclad is left uncoated or is clear coated in exterior applications the long term aesthetics of the board will be significantly reduced. While the product may meet durability and weathertightness requirements for cladding, a high visual appearance will not be achieved in the long term.

Shadowclad Ultra

Shadowclad Ultra features a factory applied exterior grade performance coating suitable for use with most paint and film forming stain systems. Using a unique powder coating process on the panel face and edges means Ultra panels can be immediately

top coated on site, eliminating (in most cases) the need for expensive and time consuming wet primers.

CHH Plywood recommends the use of Shadowclad Ultra where suitable paint or film forming stains are being used.

Shadowclad Ultra features:

- High 60-80 microns film build, can be up to 2-3 times thicker than traditional wet primers.
- Continuous powder coated surface forms an effective moisture barrier for a dryer more consistent painting surface.
- Saves time and money as traditional wet primers are not normally required.
- Panel surface, edges and bottom 150mm of sheet factory primed for increased panel durability.
- Once installed Shadowclad® Ultra can be exposed to weather for up to 3 months prior to application of finishing coats.
- Low volatile organic compound (VOC) coating.

Shadowclad Ultra is only available H3 LOSP treated for use as an exterior cladding. For information on untreated panels for interior wall or ceiling linings, contact CHH Plywood on 1800 338 463.

Shadowclad Ultra is not suitable for use with penetrating stains. The selection, application and maintenance of coatings is the responsibility of the building owners and the professionals that they engage. For advice on specific coating systems and their suitability for use with Shadowclad Ultra, always refer to the coating manufacturer.

Table 1: Surface Finishes



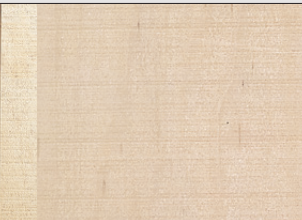

Natural		Ultra	
Texture	Groove	Texture	Groove
			
Shadowclad® Natural is an uncoated panel suitable for staining and painting.		Shadowclad Ultra features a performance coated surface ready for top coating with paints and film forming stains. Shadowclad Ultra is suitable for use in exterior applications only.	

Table 2: Shadowclad® Product Range

	Texture	Groove
Finish	Natural or Ultra	Natural or Ultra
Sheet Length	2440 and 2745mm	2440 and 2745mm
Width (overall)	1216mm	1216mm
Width (effective)	1200mm	1200mm
Cover/Width Tolerance	+/- 1mm	+/- 1mm
Nominal Thickness	12mm	12mm
Weight (kg/m²)	6.6	6.6
R-value (m².C/W)	0.104	0.104
Groove Profile	N/A	9mm wide, 5mm deep at 150mm centres
Edge Profile	Ship lap with weather groove	Ship lap with weather groove
Treatment Available	H3 LOSP (Azole)	H3 LOSP (Azole)

Shadowclad® Exterior Flashing Range

Manufactured from extruded aluminium or folded from stainless steel, the Shadowclad® flashings range is purpose designed to complement Shadowclad panels used in exterior applications.

Independently tested for weathertightness and compliant with AS/NZS 4284 "Testing of Building Facades". The range includes internal and external angles, horizontal and inter-storey 'Z' flashings and a cavity base closure.

Note: Stainless steel fasteners should not have contact with or pierce aluminium flashings. Where stainless steel fasteners are to pierce flashings, stainless steel flashings should be used.

Aluminium horizontally installed flashings come in 3600mm lengths and vertically installed angles are available in 3000mm lengths - refer Table 3. Stainless Steel flashings are available in 3000m lengths - refer Table 4.

The information, details and performance statements provided in this guide are based on Shadowclad plywood panels and Shadowclad flashings being used together as a system. CHH Plywood does not recommend that Shadowclad plywood panels be installed with non-CHH Plywood flashings. Flashings not supplied by CHH Plywood must, as a minimum, comply with the performance requirements of the NCC 2016, Building

Code of Australia - Volume Two and be compatible for use with H3 treated plywood. It is the designer's responsibility to ensure that any non-CHH Plywood flashings are fit for purpose and compatible with Shadowclad products and any other building materials or components of the exterior wall.

Aluminium Flashing Finishes

Shadowclad aluminium flashings are available in either natural anodised finish (silver colour) for immediate installation or mill finished allowing customers to powder coat flashings to any desired colour finish.

Please refer to your local powder coating supplier for information.

Sea Spray Exposure

For coastal areas with high risk of wind blown sea spray salt deposits CHH Plywood recommends the use of stainless steel flashings (and fasteners). Coastal areas with high risk of wind blown sea spray salt deposits are further defined for high or very high environments as defined in notes 3 and 4 of Table 3.5.1.1a Acceptable Corrosion Protection for Sheet Roofing of the NCC 2016, Building Code of Australia - Volume Two.

See important notice and warning on page 3.

Table 3

Aluminium

Shadowclad® Flashings Range

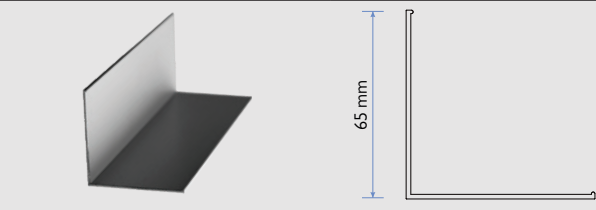
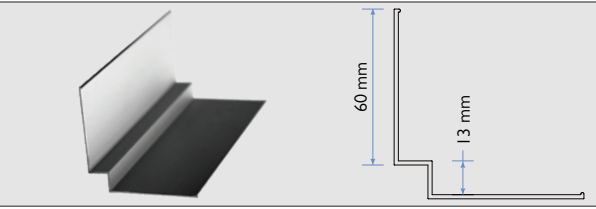
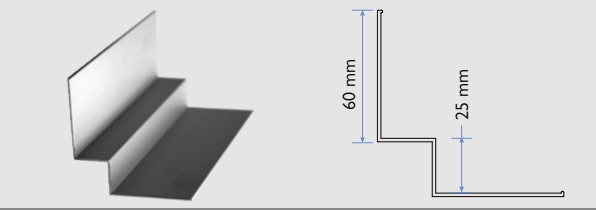
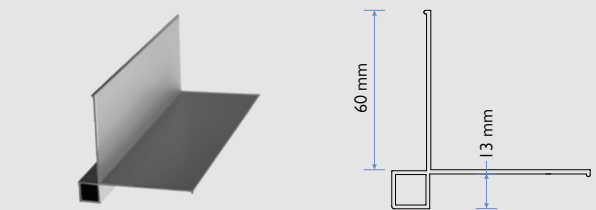
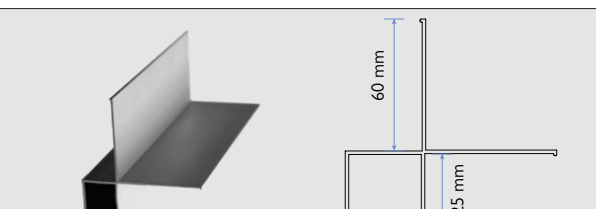
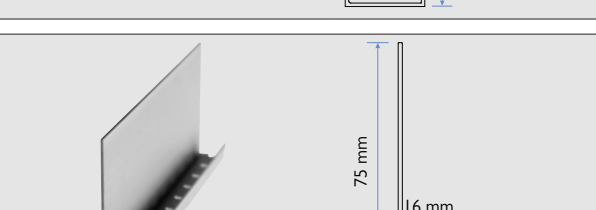
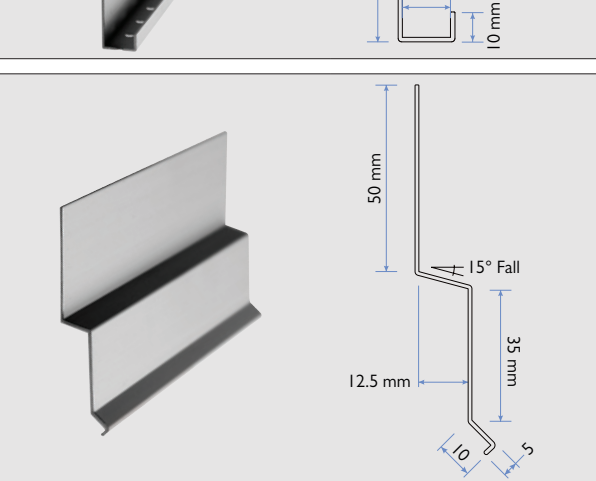
Flashing	Line Drawing	Description	Finish Available	Length (mm)
Internal 90° Angle		Back flashing for internal corners	Natural Anodised	3000
Internal 'W' Angle		'W' back flashing for internal corners providing a flush finish with panels (13mm x 13mm)	Natural Anodised or Mill	3000
Large Internal 'W' Angle		'W' back flashing for internal corners (25mm x 25mm) Design Tip: Use a Large 'W' where a flush junction between the Horizontal 'Z' flashing and corner flashing is desired	Natural Anodised, or Mill	3000
External Box Angle		Box corner for external corners providing a flush finish with panels	Natural Anodised or Mill	3000
Large External Box Angle		Box corner for external corners (25mm x 25mm) Design Tip: Use Large External Box where a flush junction between the Horizontal 'Z' flashing and corner flashing is desired	Natural Anodised, or Mill	3000
Cavity Base Closure		Restricts vermin from accessing the cavity space	Natural Anodised	3600
Horizontal 'Z' Flashing		Horizontal 'Z' flashing for horizontal joints between panels	Natural Anodised or Mill	3600

Table 3

Aluminium

Shadowclad® Flashings Range

Flashing	Line Drawing	Description	Finish Available	Length (mm)
Inter-Storey 'Z' Flashing		Horizontal 'Z' flashing for horizontal joints between panels when limiting continuous cavities to a height of two storeys or 7 meters	Natural Anodised or Mill	3600
Horizontal 'Z' Back Flashing		Back flashing for junction of butt jointed Horizontal 'Z' flashing.	Mill	300
Inter-storey 'Z' Back Flashing		Back flashing for junction of butt joint 'Z' Flashing inter-storey.	Mill	300

See important notice and warning on page 3.

Table 4

Stainless Steel

Shadowclad® Flashings Range

Flashing	Line Drawing	Description	Finish Available	Length (mm)
Internal 90° Angle		Back flashing for internal corners	Stainless Steel	3000
Large Internal 'W' Angle		'W' back flashing for internal corners (25mm x 25mm)	Stainless Steel	3000
Large External Box Angle		Box corner for external corners (25mm x 25mm)	Stainless Steel	3000
Cavity Base Closure		Restricts vermin from accessing the cavity space	Stainless Steel	3000



Table 4

Stainless Steel

Shadowclad® Flashings Range

Flashing	Line Drawing	Description	Finish Available	Length (mm)
Horizontal 'Z' Flashing		Horizontal 'Z' flashing for horizontal joints between panels	Stainless Steel	3000
Inter-Storey 'Z' Flashing		Horizontal 'Z' flashing for horizontal joints between panels when limiting continuous cavities to a height of two storeys or 7 meters	Stainless Steel	3000

See important notice and warning on page 3.

1.3 BUILDING MATERIALS FOR USE WITH SHADOWCLAD® (EXTERIOR CLADDING)

Building Materials Supplied by Other Manufacturers

- Fasteners (i.e. nails or screws) in accordance with Table 7: Fastener Lengths for Shadowclad®.
- Building underlay in accordance with AS/NZS 4200.2 Pliable Building Membranes and Underlays - Installation and the manufacturers specifications.
- Window/door head flashings supplied by window joinery company.
- Paint in accordance with paint manufacturers recommendations (refer to 4.3 Coating Selection for more details).

1.4 PRESERVATIVE TREATMENT

The standard treatment for Shadowclad panels is H3 LOSP (Azole) for use as exterior cladding. H3 LOSP treated Shadowclad is treated in accordance with AS/NZS 1604.3.

Shadowclad® is envelope preservative treated. Where sheets are cut, cuts must be coated with a brush on timber preservative in accordance with the relevant manufacturer's instructions. Protim® Solignum® XJ Clear Timber Protective (XJ Clear), Arch Lonza Tanalised® Enseal Clear or Tanalised® Ecoséal, is recommended. Failure to properly apply preservative to cut edges will negatively affect the durability of the cut panels.

LOSP treatment is the standard treatment for Shadowclad panels as it does not discolour the panel surface and does not use water in the treatment process allowing panels to remain at uniform dimensions.

When coating H3 LOSP treated plywood some residual solvent may be present on the sheet surface from the treatment process. Sheets feeling greasy to touch should be placed in a well ventilated area and allowed to flash off to ensure proper adhesion of paints and stains to the sheet surface.

Mechanical fasteners are required to fix Shadowclad to framing. Do not glue Shadowclad to frames.

Table 5: Preservative Treatment

H3 LOSP (Azole)	
Preservative Carrier	Light organic oil (white spirits)
Colour	Natural
Fungicide	Propiconazole and Tebuconazole
Insecticide	Permethrin
Other Chemicals	Butyl Oxitol (co-solvent to assist active stability)
Mouldicide	IPBC
Notes	Solvent does not affect dimensions. Solvent smell disappears when exposed to air flow
Applications	Exterior (service performance subject to detailing)

1.5 SUSTAINABILITY

Shadowclad is manufactured from radiata pine. It is grown on tree farms which are tended and harvested to provide wood for plywood manufacture. The crop is managed on a sustainable basis to yield millable trees.

New Zealand plantations are managed in compliance with the New Zealand Forest Accord.

Shadowclad is manufactured in New Zealand at the CHH Plywood Tokoroa mill.

Available Forest Stewardship Council® (FSC®) certified (FSC® C012019) upon request.

1.6 PRODUCT IDENTIFICATION

In accordance with AS/NZS 2269, every sheet of Shadowclad® plywood has the following information marked on the back:

- Brand name: e.g. SHADOWCLAD®.
- Intended application: e.g. STRUCTURAL.
- Glue bond: e.g. A BOND.
- Formaldehyde emission class: e.g. E0.
- Australasian Standard: e.g. AS/NZS 2269:2012.
- Treatment Standard (if applicable) e.g. AS/NZS 1604.3:2012.
- Date and time of manufacture: e.g. 01/12/15 12:34:56.
- The Engineered Wood Products Association of Australasia (EWPPAA) brand and mill number: e.g. 911 (Tokoroa mill).

Treated Example:

SHADOWCLAD® STRUCTURAL A BOND
E0 AS/NZS 2269.0:2012
AS/NZS 1604.3:2012 400 64 H3 E LO SP
RETREAT CUTS PAT 01/12/15 12:23:45



2.0 DESIGN CONSIDERATIONS

2.1 DESIGN RESPONSIBILITY

Design responsibility lies with the building owner and the professionals that they engage. The specifier for the project must ensure that the details in the specification for their individual projects are appropriate for the intended application. The specifier must also ensure that additional detailing is provided for specific design or any areas that fall outside the scope and specifications of this literature. It is the specifier's responsibility to ensure that non-CHH Plywood products are fit for purpose, and compatible with Shadowclad products.

Good detailing which avoids moisture or dust accumulation on the sheet surface can help increase durability and aesthetics. Roof overhangs contribute to performance as they offer shade and will protect walls from rain and dust. Trims should be bevelled to shed moisture and flashings should be detailed with gaps that do not trap water at the panel edges.

2.2 LITERATURE SCOPE

The information and details within this guide are for cavity wall construction only, and may not be suitable for construction of buildings in bush fire prone areas.

Shadowclad can be used for those structures which fall within the scope of the NCC 2016, Building Code of Australia - Volume Two. Shadowclad is recommended for a drained and ventilated cavity, where the cladding is fixed onto timber battens fixed over the timber frame and wall underlay.

Shadowclad is not recommended where a risk score >20 in accordance with Table V2.2.1a Risk Factors of NCC 2016, Building Code of Australia, Volume Two is established.

- Specific design is required for buildings subject to design classifications exceeding N3/C1.
- Windows to comply with the requirements of AS 2047.

2.3 CODE COMPLIANCE

Shadowclad on cavity wall construction is manufactured to the requirements of AS/NZS 2269:2012 Plywood: Structural Specifications as per section 3.5.3.4 (C) (i) of the NCC 2016, Building Code of Australia - Volume Two and treated to H3 level via AS/NZS 1604.3 Specification of Preservative Treatment: Plywood. Further to this, Shadowclad for cavity wall construction is tested in accordance with AS/NZS 4284 "Testing of Building Facades" incorporating vertical and horizontal control joints, wall junctions and window openings.

Recommendations made by CHH Plywood are based on good building practice and are not a complete statement of all relevant data. As the design and installation of Shadowclad is influenced by and relies on factors outside the control of CHH Plywood, CHH Plywood assumes no responsibility for works/systems used in connection with the installation of Shadowclad and its suitability to satisfy relevant Building Codes and Regulations, Standards and Council/Authority/Regulator requirements.

See important notice and warning on page 3.

2.4 SITE & FOUNDATIONS

Foundation design must comply with AS 2870 "Residential Slabs and Footings - Construction" and the NCC 2016, Building Code of Australia – Volume Two. The grade of adjacent finished ground

must slope away from the building to avoid the possibility of water accumulating.

2.5 GROUND CLEARANCES

The bottom edge of the Shadowclad® sheet must be a minimum of 50mm above decks and verandahs, 100mm above paved ground and a minimum of 175mm above unprotected ground.

Shadowclad must overhang the bottom plate on a concrete slab by a minimum of 50mm. The maximum distance from the bottom of the sheet to the fixing shall not exceed 75mm.

2.6 MOISTURE MANAGEMENT

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

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

Where a deck is attached to the building and the Shadowclad extends below the deck to cover the framing, keep decking clear of the Shadowclad surface and detail to avoid moisture entrapment.

All wall openings, penetrations, junctions, connections, window sills, heads and jambs must incorporate Shadowclad flashings for waterproofing. Materials, components and the installation used to manage moisture in framed wall construction must, at a minimum, comply with the requirements of relevant Sections and Clauses of the NCC 2016, Building Code of Australia - Volume Two.

2.7 WIND LOADING

Shadowclad on cavity wall construction is suitable for use in all wind classifications up to and including C2 or N4 as defined

by AS 1684 and specific design wind pressures up to design differential ultimate limit state (ULS) of 2.5kPa.

2.8 DURABILITY

The durability level applicable to Shadowclad is dependent upon the application and coating applied. Detailing, treatment and installation methods need careful consideration to satisfy the requirements of the Australian Building Codes Board (ABCB) guidelines document, Durability in Building.

CHH Plywood does not recommend Shadowclad® is left uncoated when used as an exterior cladding.

The ABCB guideline document, Durability in Building, requires cladding to achieve a minimum structural durability level of 15 years.

Shadowclad coated with stains or paints (regardless of colour choice) will meet this requirement. If using dark colours (colours with an LRV of less than 50%) homeowners should expect an increased level of coating maintenance over the life of the cladding than would normally be expected where lighter colours are used.

Using dark colours with an LRV of less than 50% and failure to adequately maintain the surface coating of the cladding increases the risk of aesthetic related issues such as face checking.

Additional Notes:

For further advice on coatings refer to section 4.0: Coating and Application – Exterior Cladding.

2.9 TEXTURED VS. SMOOTH FINISHED PLYWOOD AS EXTERIOR CLADDING

Structurally, some smooth faced plywood products may meet the requirements of NCC 2016, Building Code of Australia – Volume Two however in CHH Plywood opinion smooth faced plywood does not retain a high visual appearance when directly exposed to weathering.

Where a high visual appearance is desired (such as exterior cladding) CHH Plywood recommends the use of Shadowclad® rather than smooth faced plywood.

Shadowclad features a textured (bandsawn) face which reduces the visibility of natural face checking which can occur in any wood based product which has been exposed to weather for a prolonged period.

Face checks are not considered a manufacturing fault as they are part of a natural process and are merely an indication that it is time to re-apply the surface coating on the product.

2.10 HEALTH & SAFETY

Shadowclad should be installed and used as per the Safety Data Sheet (SDS) which can be downloaded from www.shadowclad.com.au.

Always wear safety glasses or non-fogging goggles when cutting Shadowclad panels and flashings.

If wood dust exposures are not controlled when machining (sawing, routing, planing, drilling etc.) a class P1 or P2 replaceable filter or disposable face piece respirator should be worn.

Wear comfortable work gloves to avoid skin irritation and the risk of splinters. Wash hands with mild soap and water after handling panels.

2.11 STORAGE & HANDLING

Shadowclad® Panels:

- Keep Shadowclad panels dry.
- Store under cover.
- Handle and stack with care to avoid damage.
- Stack flat; clear of ground, on at least three evenly spaced bearers.
- Store in well-ventilated areas away from sources of heat, flames or sparks.

Shadowclad Flashings:

- Keep dry. Should a shipment of Shadowclad flashings arrive in a wet condition, they should be immediately dried before storing.
- When storing flashings avoid contact with other metals which may cause scratches or marks. The use of shelving or racks faced with dry wood is recommended.
- Keep away from caustics, nitrates and acids.

See important notice and warning on page 3.

3.0 INSTALLATION – EXTERIOR CLADDING

3.1 FRAMING – CONSTRUCTION

Use kiln dried framing in accordance with timber framing manufacturer's specifications.

Timber frame sizes and set out must comply with AS 1684.2 (or specifically designed to AS 1720.1) and with stud and nog centres and timber width required by this specification.

- All Shadowclad® sheet edges must be fully supported by framing.
- Studs must not exceed 600mm centres.
- Nogs must be provided at a maximum of 800mm centres
- An extra stud is required at internal corners for ventilated cavities.
- Framing must be kept as dry as possible at all times.
- Single spans of Shadowclad should not exceed 600mm (e.g. below windows or balustrades).

3.2 PREPARATION – BUILDING UNDERLAY & RIGID AIR BARRIER

The use of building underlay compliant with AS/NZS 4200.2 "Pliable Building Membranes and Underlays - Installation" and the manufacturers recommendations or an alternative solution rigid air barrier must be provided over framing prior to cladding installation.

Barriers to air flow are required regardless of direct or cavity construction.

3.3 PREPARATION – CAVITY CONSTRUCTION

Cavity Construction

A Shadowclad® cavity base closure must be installed at the bottom of all walls and above window heads, this provides vermin proofing to ventilation openings. The holes in the cavity base closure must be kept clear to enable ongoing drainage and ventilation of the cavity.

Cavity Battens

Cavity battens provide an air space between the frame and the sheet and are considered a "packer".

The battens must be fixed over the building underlay or a rigid air barrier.

All timber battens must: be nominal 20mm thick (between limits of 18mm and 25mm in thickness); at least the same width as the stud; and minimum H3 LOSP treated.

Polystyrene battens **must not** be used with H3 LOSP treated Shadowclad panels, as they may melt in contact with solvents.

Battens must be fixed over the building underlay/rigid air barrier to all studs, as follows.

If studs are at 600mm centres:

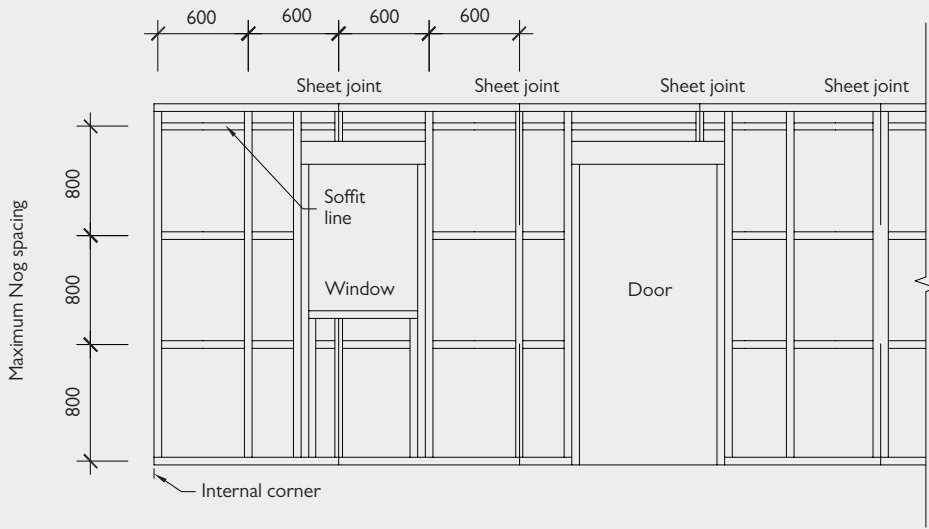
- Battens must be fixed vertically at 300mm centres (i.e. a batten on studs and one in between the two studs fixed to top and bottom plates and nogs).
- Battens fixed between studs are to restrain the building underlay and insulation from bulging into the drained cavity.
- The Shadowclad must not be fixed to these cavity battens where there is no framing behind them.

If studs are at 400mm centres battens may be fixed on studs only.

Horizontal battens must be used at the top of the wall to block the top of the cavity from venting into the roof space.

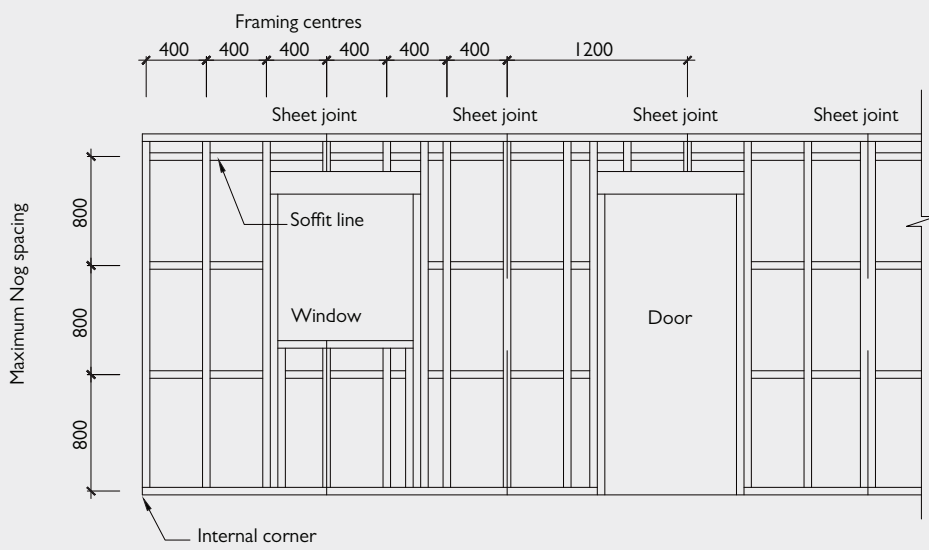
Cavity spacers (i.e. short pieces of cavity batten) may be used to support the bottom sheet edge (or provide intermediate support where required e.g. above window openings) but must allow water drainage to the outside. The cavity spacers must be fixed at a 5° minimum slope with a 50mm minimum air gap at either side.

SC001: Typical Framing Setout (without Battens) Studs at 600 Centres



Note:
 1. Single spans of Shadowclad® must not exceed 600 mm (e.g. below windows or on balustrades)

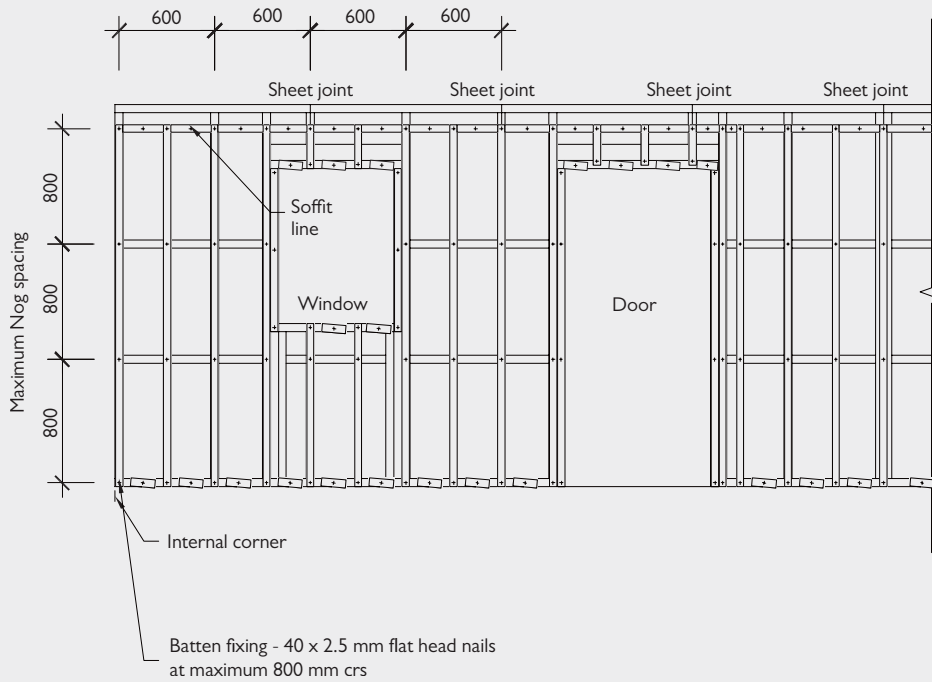
SC001A: Typical Framing Setout (without Battens) Studs at 400 Centres



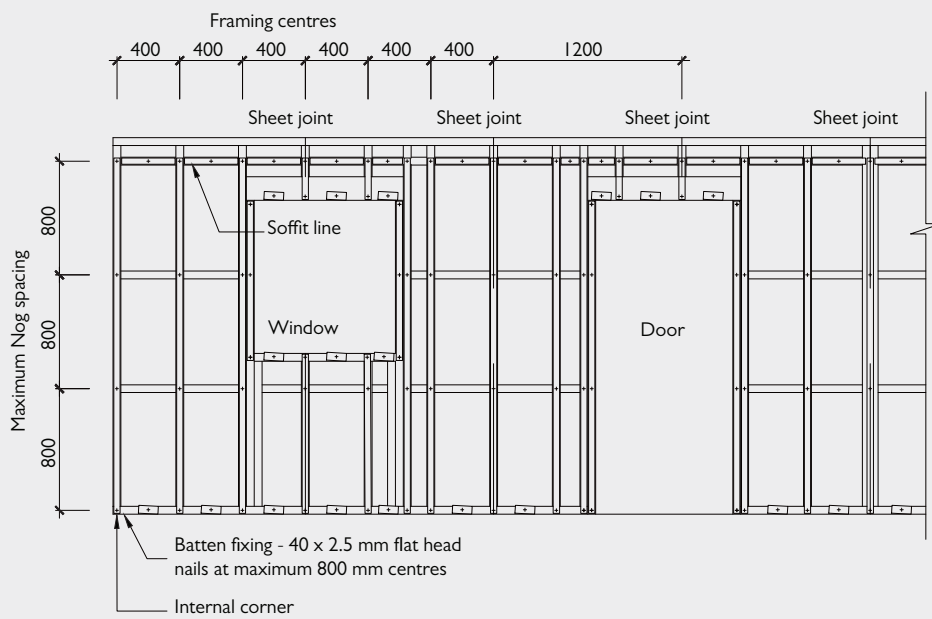
Note:
 1. Single spans of Shadowclad® must not exceed 600 mm (e.g. below windows or on balustrades)

See important notice and warning on page 3.

SC002: Typical Framing Setout (with Battens) Studs at 600 Centres



SC002A: Typical Framing Setout (with Battens) Studs at 400 Centres



3.4 SHEET LAYOUT

A sheet layout should form part of architectural drawings and be used from the basis of stud/framing layout:

- Sheet edges must be supported by the framing.
- Sheets are designed to be vertically fixed. **Do not fix sheets horizontally.**
- When laying up on to framing, start at framing corners and work across the wall.

- All treated Shadowclad® panels are envelope preservative treated. Where sheets are cut, edges **must** be coated with a brush on timber preservative.
- Cut edges must be placed at the top of the sheet to avoid rain drips soaking in to cut end grains.
- Priming of bottom edges and the back (rear) of the sheets to a height of 150mm is required.
 - Shadowclad Ultra sheets are coated on the rear to a height of 150mm to meet this requirement.

3.5 FIXINGS – FASTENER DURABILITY

Table 6: Fastener Durability for Shadowclad®

Finish	Treatment	Exposure Zone	Material Required
Shadowclad® Natural/Ultra	H3 LOSP	Normal	Minimum hot dipped galvanised or better
		Sea Spray*	Stainless Steel

* As defined in Section 1.2, Sea Spray Exposure

3.6 FIXINGS – FASTENER SIZE & LAYOUT

Table 7: Fastener Lengths for Shadowclad

Minimum Fastener Length and Size (Cavity Fix)	
Nails in Timber	60 x 2.8mm
Screws in Timber	8g x 65mm

Shadowclad must be nailed or screwed to timber as per below:

- Use flat head (full round head) nails with timber framing
- Standard fixing pattern: fasten sheet edges at 150mm centres and within the panel on all supports at 300mm centres.
- When fixing over a ventilated cavity do not fix to battens that are not installed over studs as the nails will puncture the building wrap.
- Fasten no closer than 7mm to sheet edges except on edge with top lap (weather groove lap), **do not nail through top lap**
- Fasten ship lap joints independently to ensure natural sheet expansion is not restricted.
- When using a rigid air barrier the Shadowclad fastener lengths should be increased by the thickness of the panel to ensure required fastener pull out loadings are achieved.
- Drive nails and screws flush.
- Do not nail through the grooves in Shadowclad Groove panels.

Power Driven Fastening

- Best practice is to hand drive nails as better control of nail depth is achieved.
- Fasteners must be of diameters and length not less than that identified in Table 7.
- Power driven nailers may be used to fire power driven nails.
- Do not overdrive nails into the sheet.

Fixing at Vertical Sheet Join

Shadowclad Sheets must be fastened off independently to each other. SC006A and SC008A show specific fastener locations to accommodate the Ship lap joint. For Shadowclad Texture and Shadowclad Groove respectively fasten underlap 13mm from sheet edge with overlap fasten 23mm from sheet edge as detailed.

See important notice and warning on page 3.

3.7 INSTALLATION TOOLS FOR SHADOWCLAD®

Correct installation and maintenance of Shadowclad® is necessary to ensure that compliance with the NCC 2016 Building Code of Australia - Volume Two, durability, structural integrity and weathertightness are maintained. CHH Plywood are proud to introduce two installation tools to compliment the Shadowclad Specification and Installation Guides. These products are an extension of the Specification and Installation Guides and are available by contacting CHH Plywood directly via www.shadowclad.com.au or by calling 1800 338 463.

Shadowclad® sITe APP

The Shadowclad sITe APP is a tool for all building practitioners to aid in the installation of Shadowclad in accordance with the CHH Plywood Specification and Installation Guides. The APP includes a context sensitive Key Design Points and Installation Checklist, access to all current literature, installation details, maintenance and other key installation requirements.

Shadowclad Stick

The Shadowclad Stick is an installation tool for Shadowclad. This tool removes the need for builders to develop their own 'jigs' to aid in ensuring that critical clearances, nail spacings, etc. are applied during the installation of Shadowclad sheets.

3.8 SHADOWCLAD® KEY INSTALLATION & DESIGN POINTS

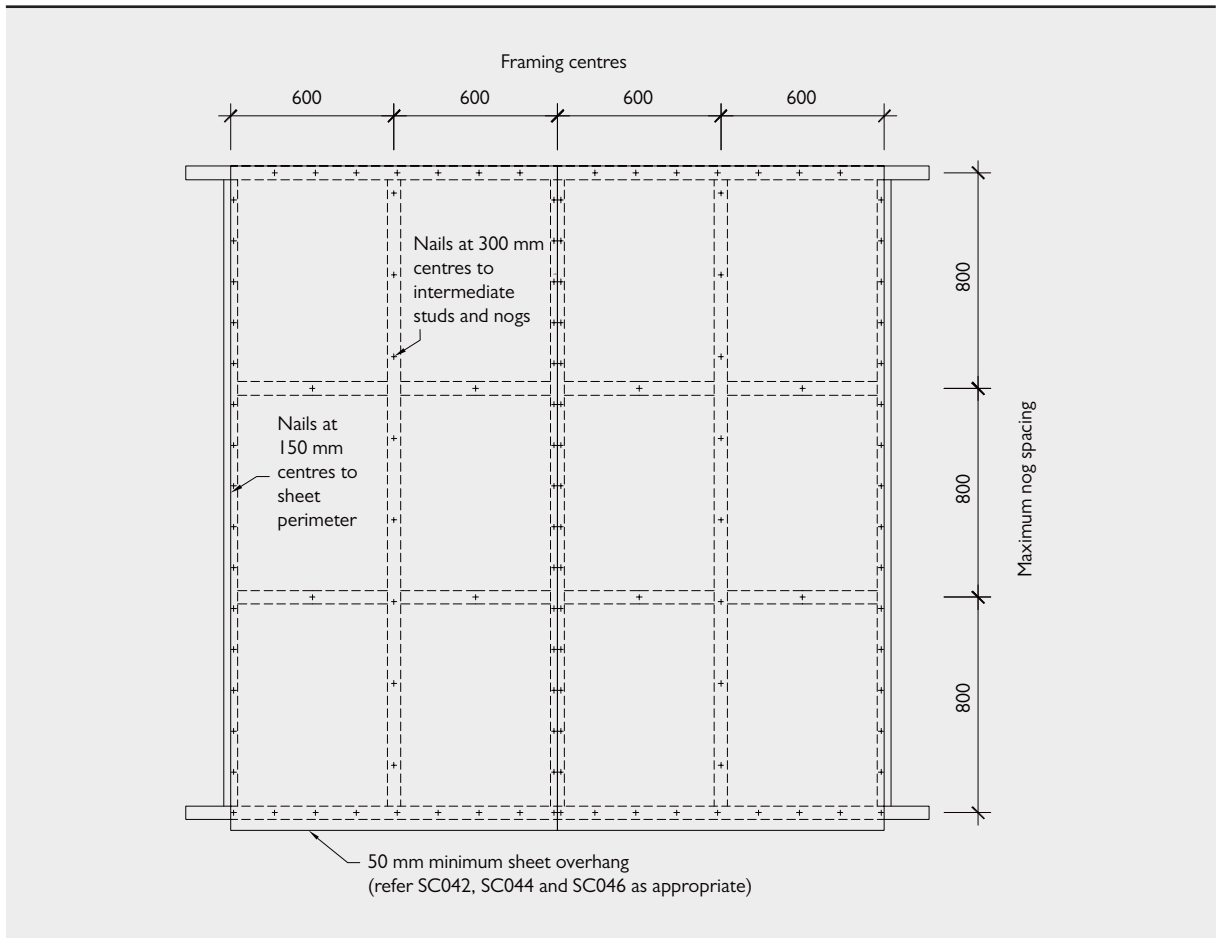
The following tasks are provided to installers to point out key installation and design factors when used as an exterior cladding. These do not detract from the requirements to read and understand this literature as a whole.

Task	Tick when checked
Prior to Specification and Installation	
Read the Shadowclad® Specification and Installation Guide in its entirety	<input type="checkbox"/>
Framing Plan	
Framing setout drawings to suit Shadowclad fixing and installation guidelines	<input type="checkbox"/>
Sheet Cuts	
Coat all sheet cuts with a preservative timber treatment such as XJ Clear, or similar	<input type="checkbox"/>
After applying the timber preservative treatment, apply the surface coating (e.g. paint or stain) to cut edges	<input type="checkbox"/>
Place uncut edge to bottom	<input type="checkbox"/>
Fastener Material Type	
Galvanised fasteners or better used (Stainless steel annular groove nails required in sea spray zones)	<input type="checkbox"/>
Sheet Fastener Pattern	
Around sheet edge – maximum 150mm centre spacing	<input type="checkbox"/>
Within sheet body – maximum 300mm centre spacing	<input type="checkbox"/>
Horizontal Sheet Joints	
Minimum 9mm separation gap between sheets above all Horizontal 'Z' flashings	<input type="checkbox"/>
Prime the bottom of the sheet edge and 150mm up the back (rear) of the sheets	<input type="checkbox"/>
50mm strip of neutral cure silicon sealant or stop ends at all 'Z' flashing terminations excluding terminations at Shadowclad metal corner flashings	<input type="checkbox"/>
Back flashings or 150mm overlap to all flashing butt joints	<input type="checkbox"/>
Expansion Gaps Between Sheets (Vertical Sheet Joints)	
Texture Profile Sheets - 2mm gap between vertical edges of sheets	<input type="checkbox"/>
Groove Profile Sheets - 9mm gap (i.e. full groove space) between vertical edges of sheets	<input type="checkbox"/>
Note: Expansion gaps required between vertical edges of sheets to accommodate natural expansion and contraction of sheets	
Ground Clearances	
Paved/Sealed Ground - minimum 100mm distance from the ground to sheet bottom	<input type="checkbox"/>
Broken Ground - minimum 175mm distance from the ground to sheet bottom	<input type="checkbox"/>
Prime the bottom of the sheet 150mm up the back (rear) of the sheet	<input type="checkbox"/>

Refer to the current Shadowclad® Specification and Installation Guide for full installation specifications and suggested details.

See important notice and warning on page 3.

SC003: Shadowclad® Fastener Layout (Studs at 600 Centres Shown)



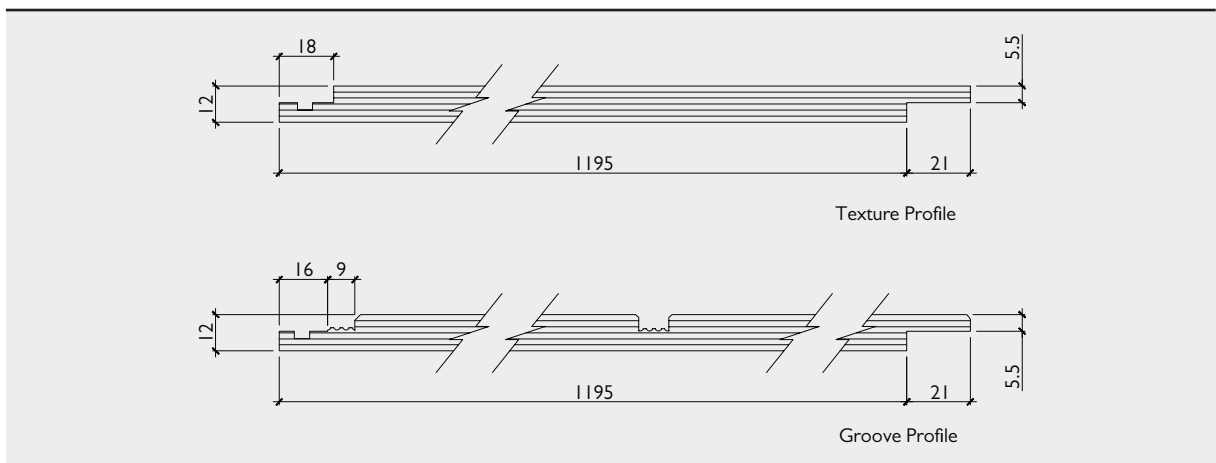
3.9 VERTICAL SHEET JOINTS

Shadowclad® sheets have a built-in ship lap joint and weather groove on the long edges of all sheets.

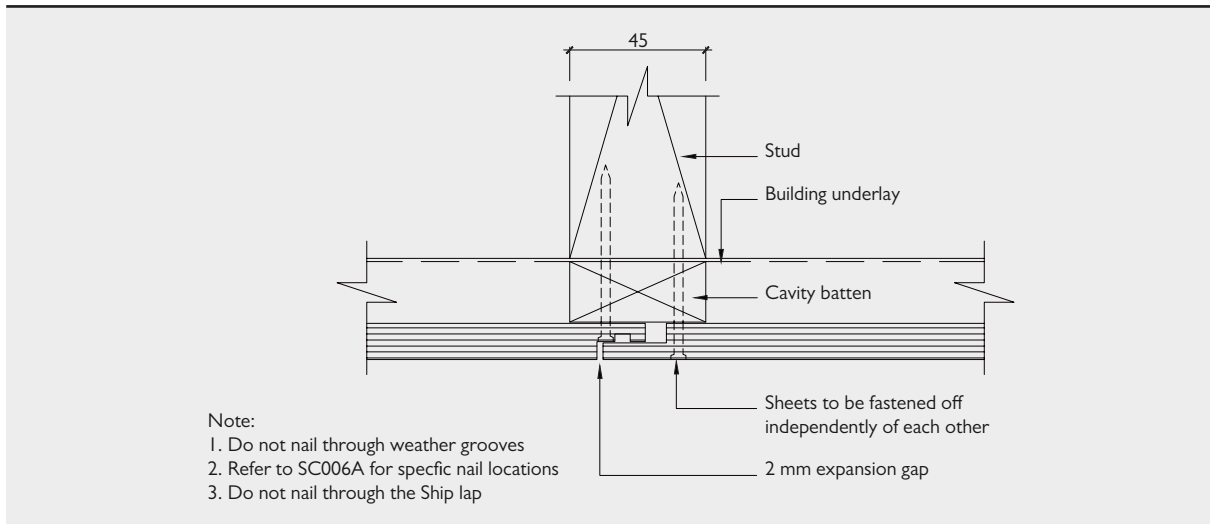
When installing Shadowclad Groove profile sheets, use a 9mm temporary spacer in the groove alongside ship lap joint to establish correct expansion gap.

Shadowclad® is envelope preservative treated. Where sheets are cut, ends must be coated with a brush on timber preservative in accordance with the relevant manufacturer's instructions. XJ Clear, Arch Lonza Tanalised® enseal Clear or Tanised® Ecoseal is recommended. Failure to properly apply preservative to cut edges will negatively affect the durability of cut panels.

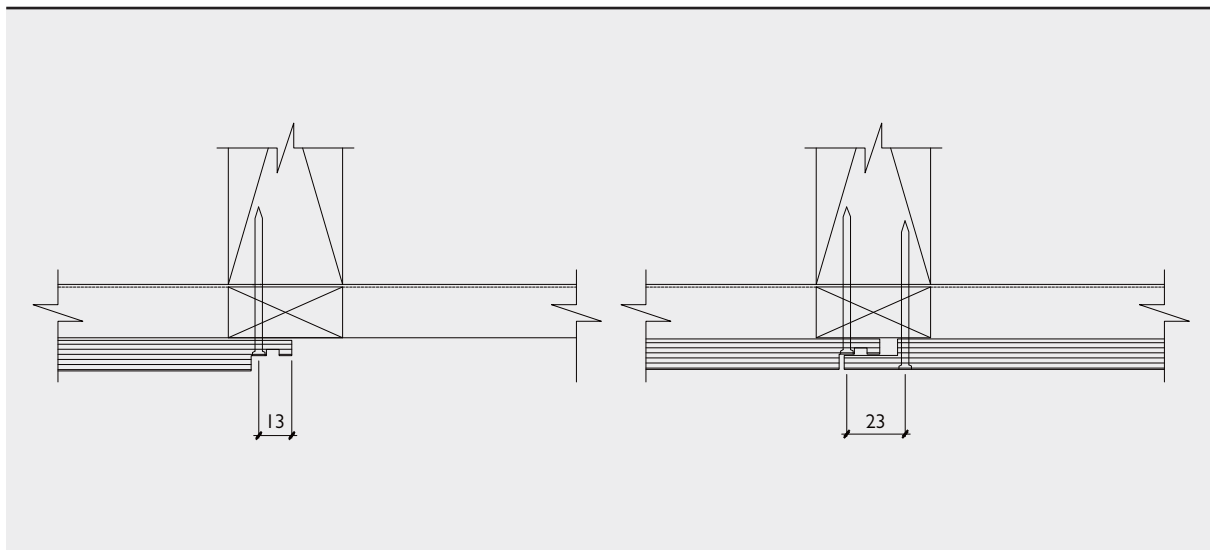
SC004: Shadowclad Texture and Groove Sheet Dimensions



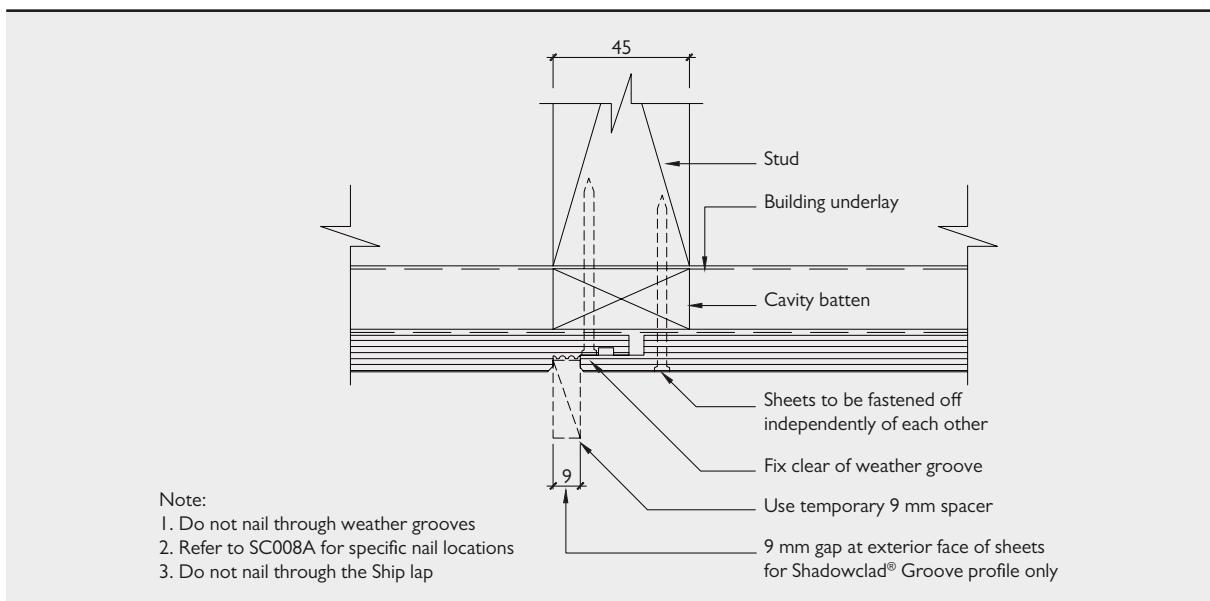
SC006: Shadowclad® Texture Vertical Joint (Cavity)



SC006A: Shadowclad Texture Vertical Joint Fastener Locations (Cavity)

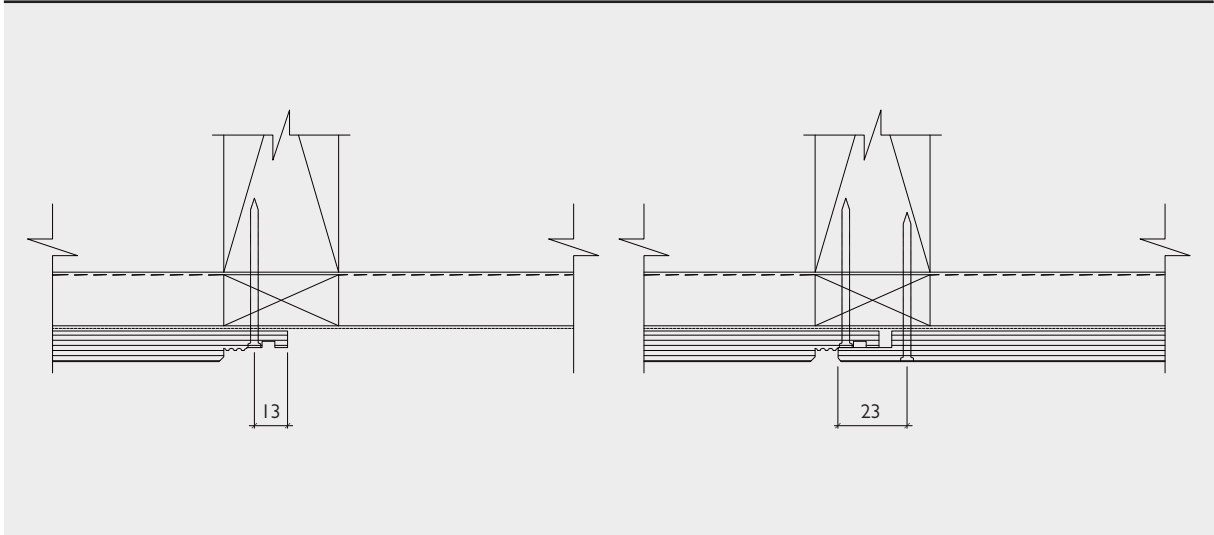


SC008: Shadowclad Groove Vertical Joint (Cavity)

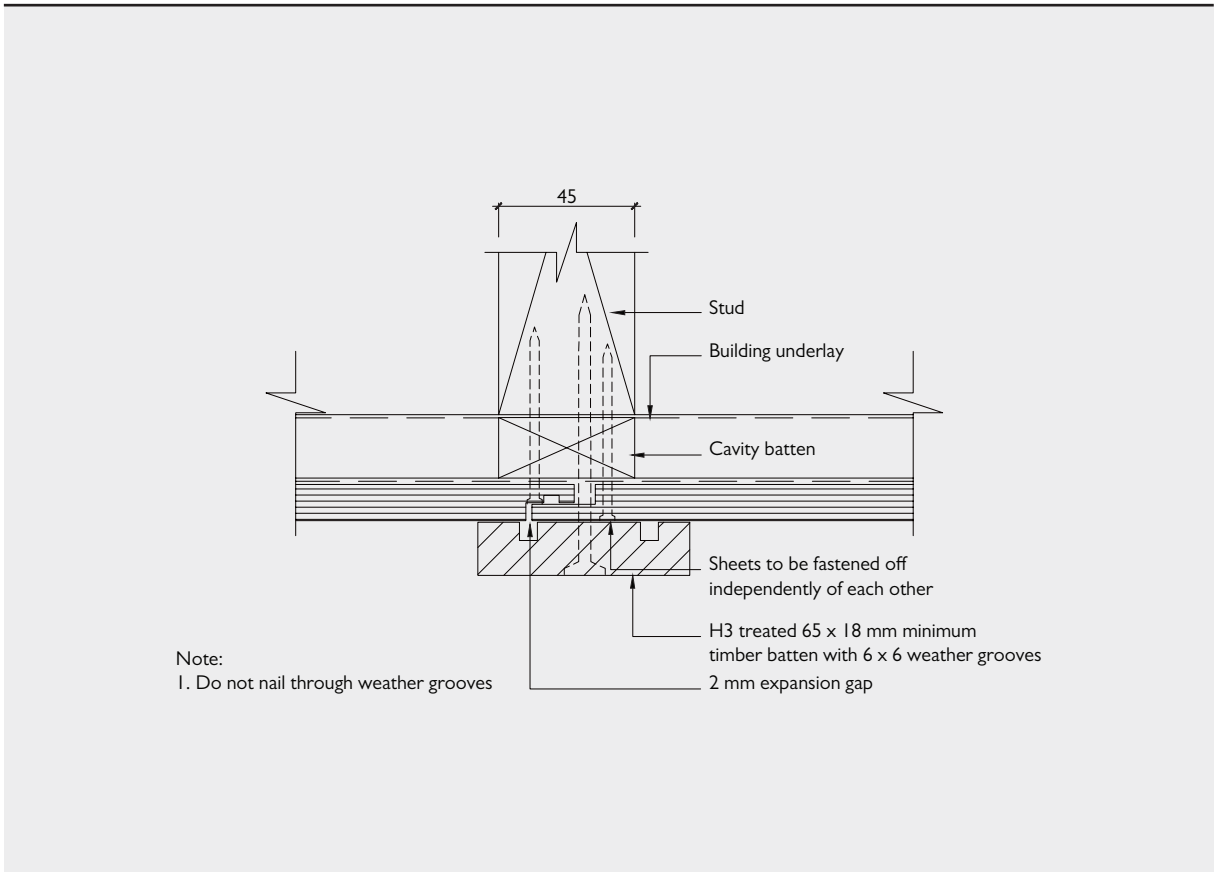


See important notice and warning on page 3.

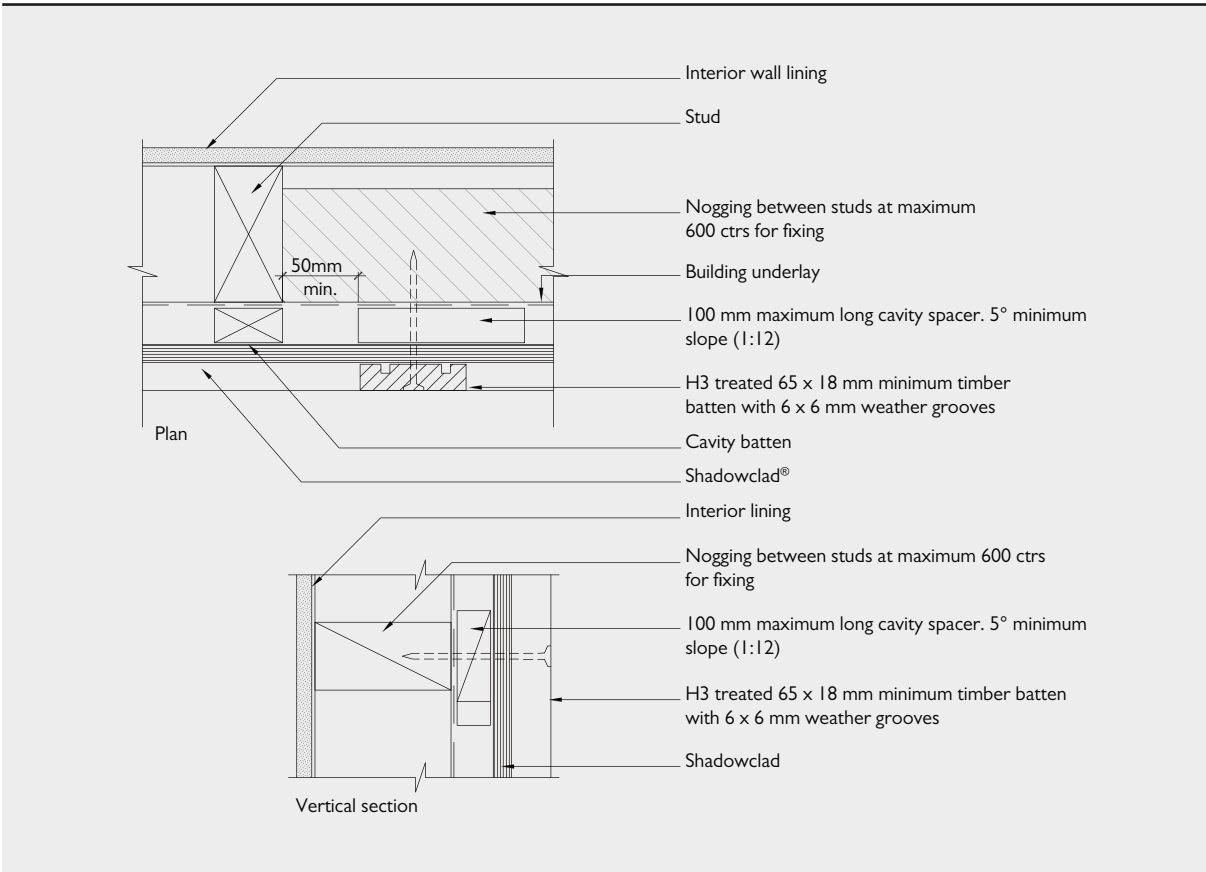
SC008A: Shadowclad® Groove Vertical Joint Fastener Locations (Cavity)



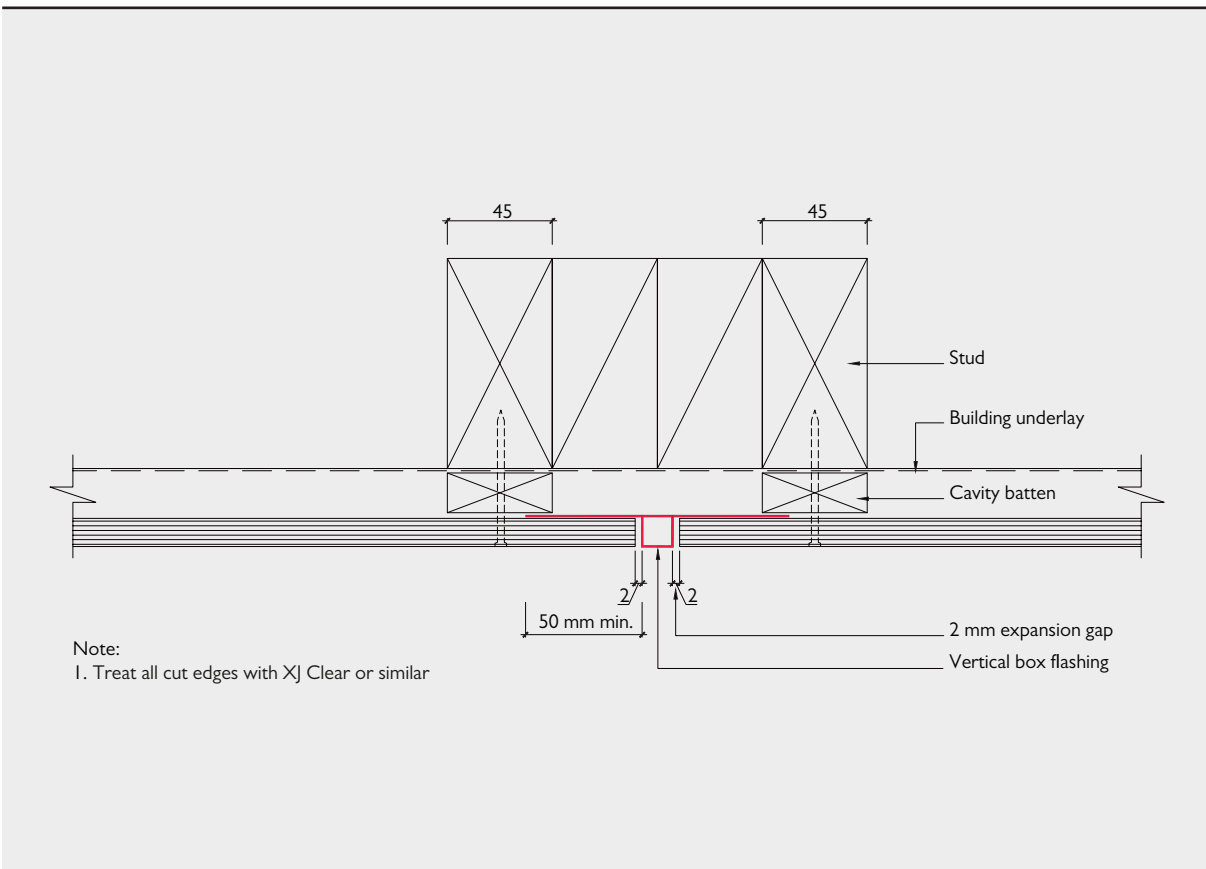
SC010: Shadowclad Vertical Joint with Optional Cover Batten (Cavity)



SC012: Shadowclad® Nogging for Vertical Cover Batten Between Studs (Cavity)



SC014: Shadowclad Vertical Joint with Top Hat Flashing (Cavity)



See important notice and warning on page 3.

3.10 HORIZONTAL SHEET JOINTS

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

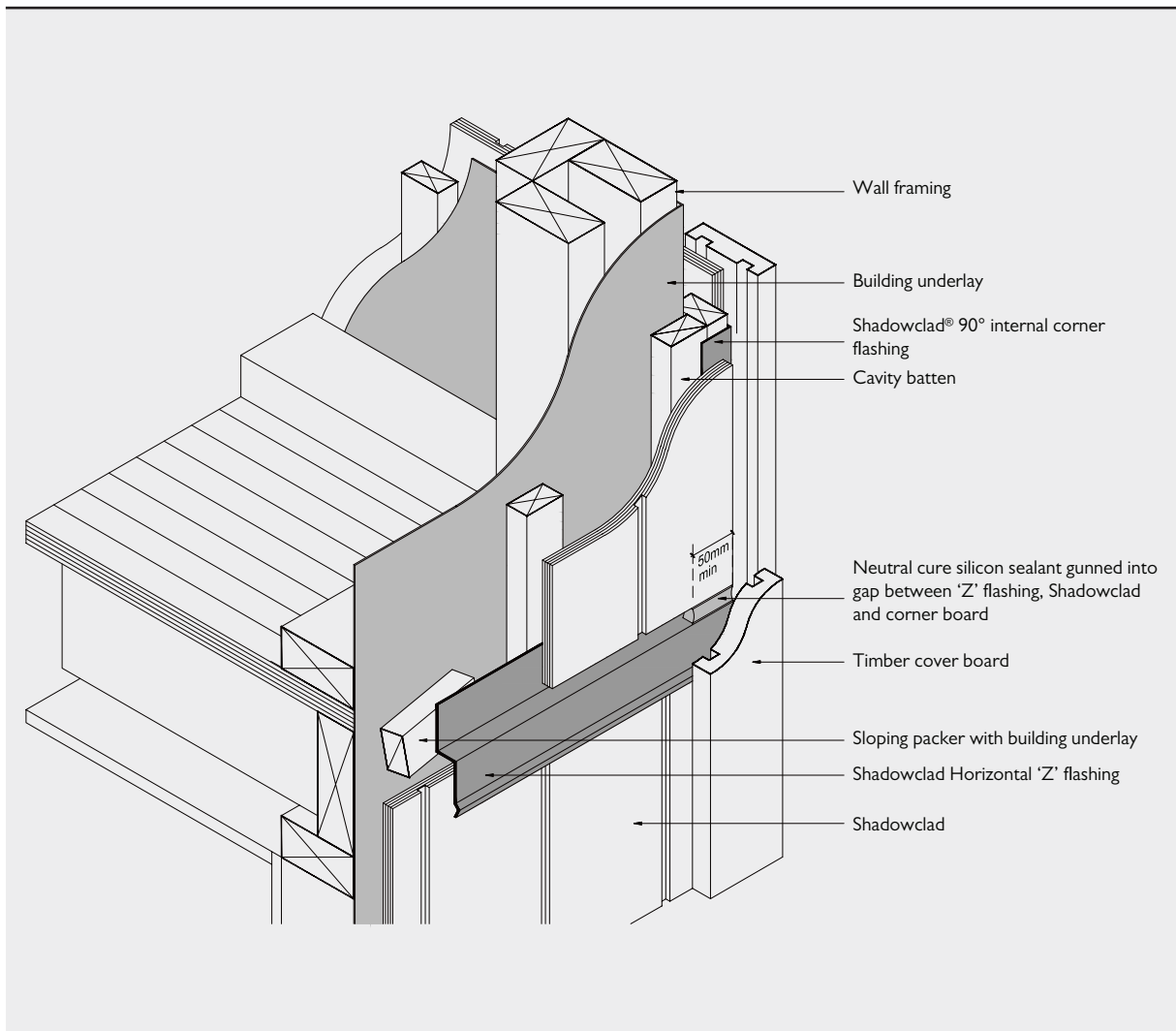
A Shadowclad® Horizontal 'Z' flashing should be used for horizontal sheet joints.

CHH Plywood requires drained cavities to be limited to a height of two storeys.

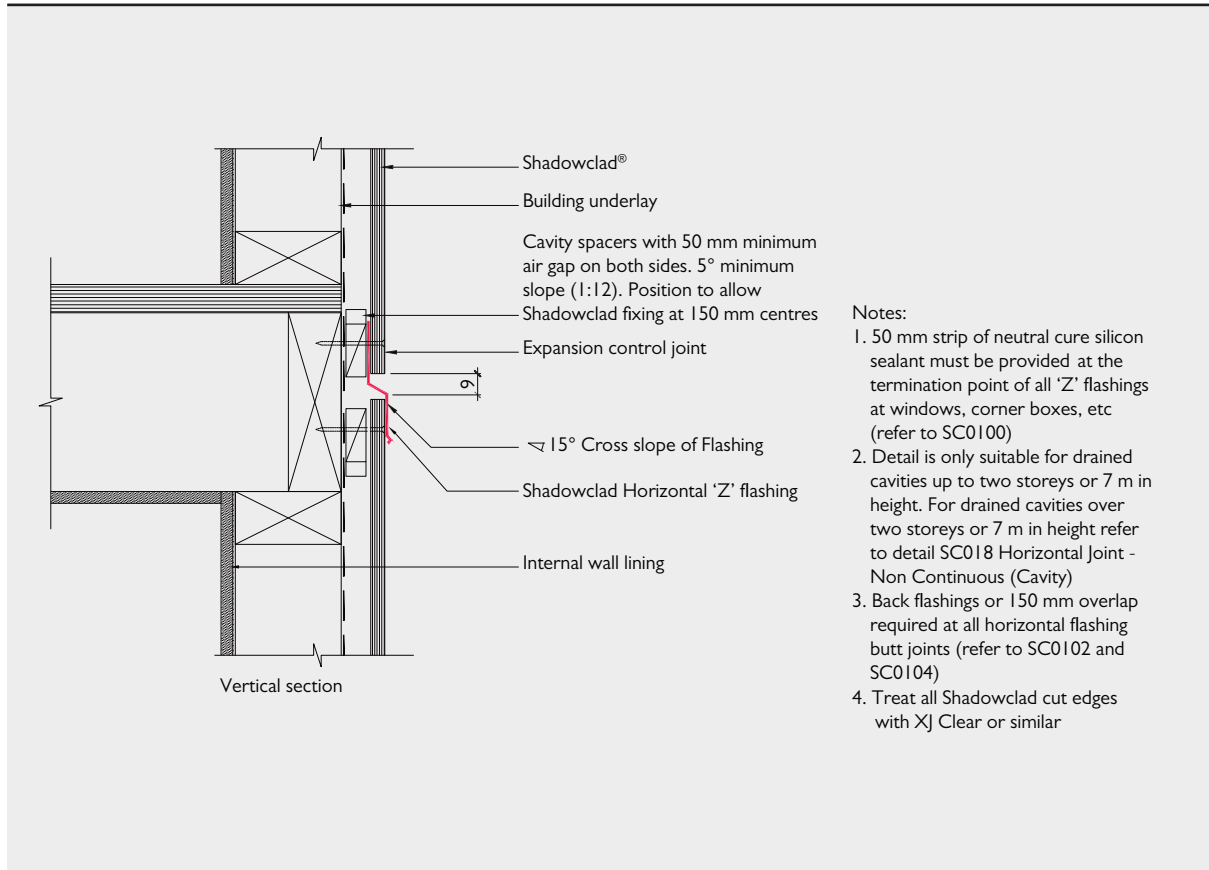
If aluminium 'Z' flashings are being used, all butt joints must include proprietary back flashings. Stainless steel flashings should be lapped by a minimum 150mm at joints.

A 50mm strip of neutral cure silicon (refer SC0100 General Silicon Sealing of Horizontal 'Z' Flashings) or stop ends (as applicable) is required at all 'Z' flashing terminations excluding terminations at Shadowclad metal corner flashings.

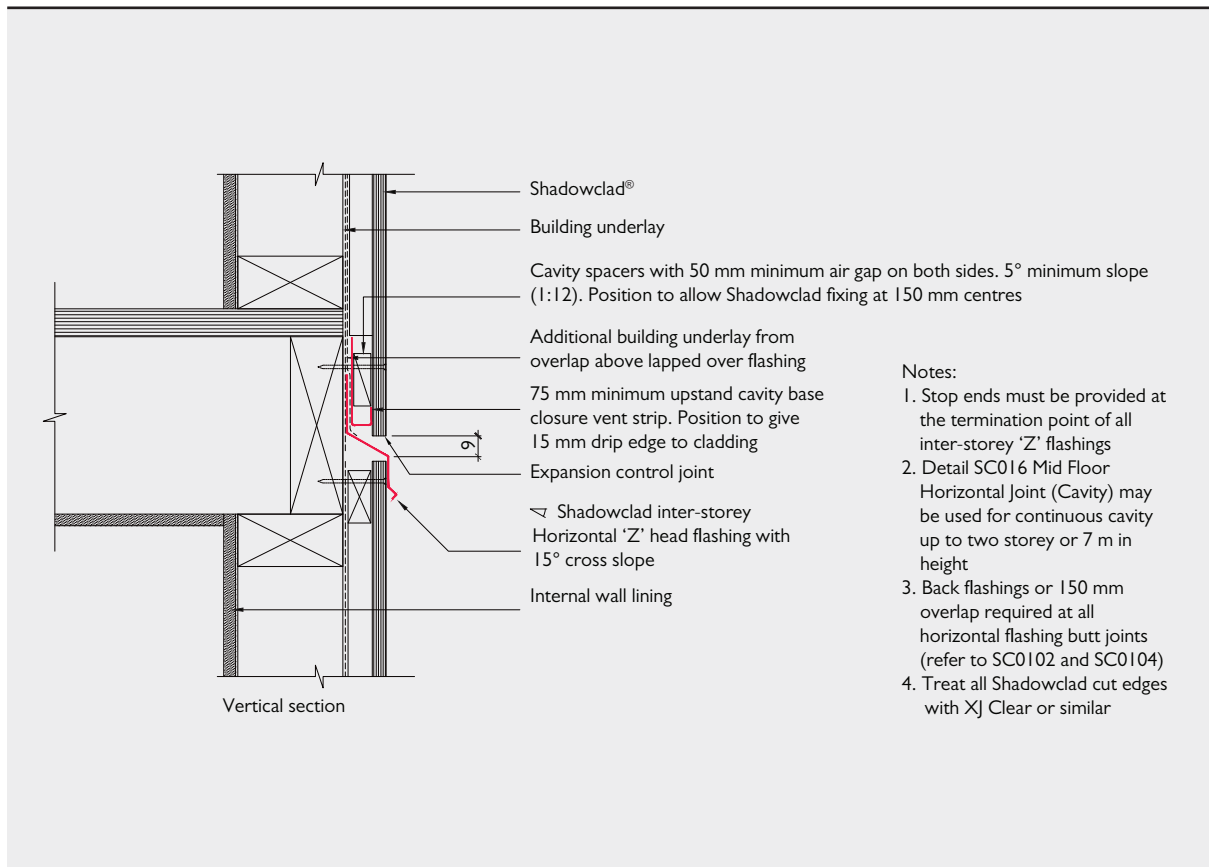
SC0100: Shadowclad® General Silicon Sealing of Horizontal 'Z' Flashings



SC016: Shadowclad® Mid Floor Horizontal Joint (Cavity)



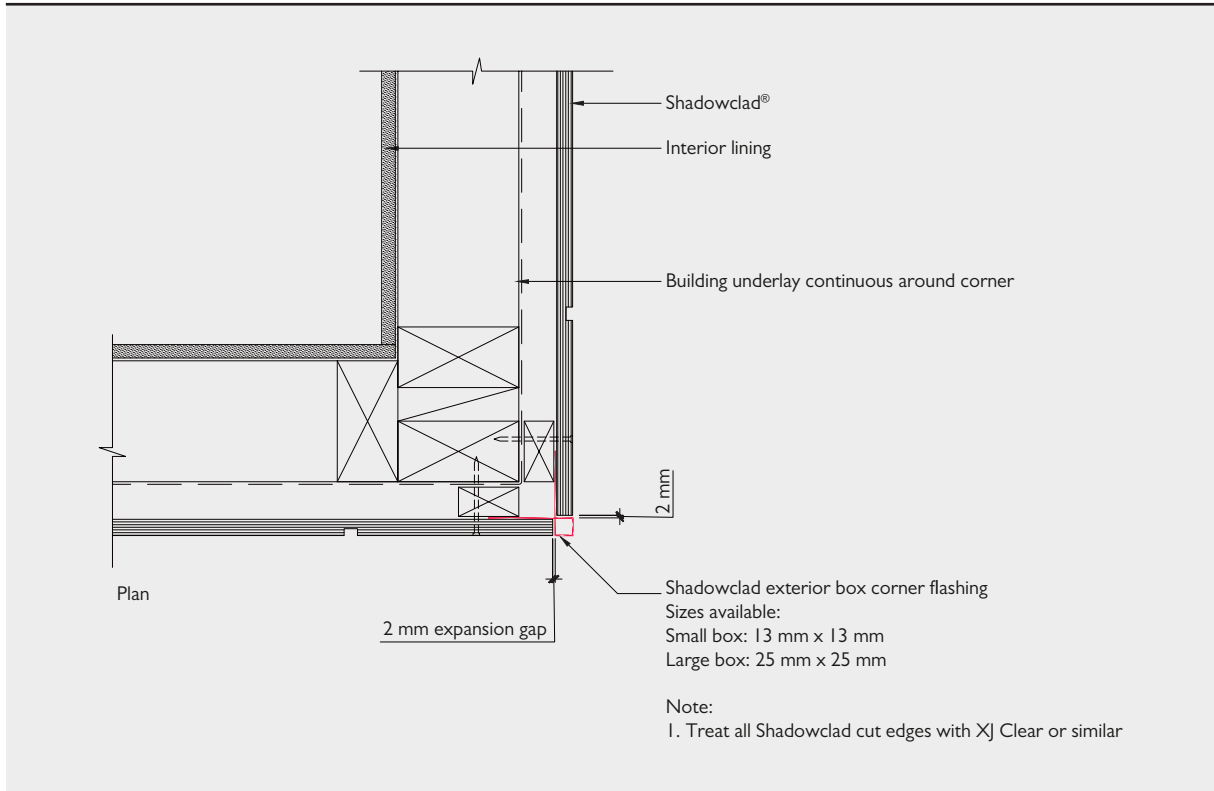
SC018: Shadowclad Mid Floor Horizontal Joint – Non Continuous (Cavity)



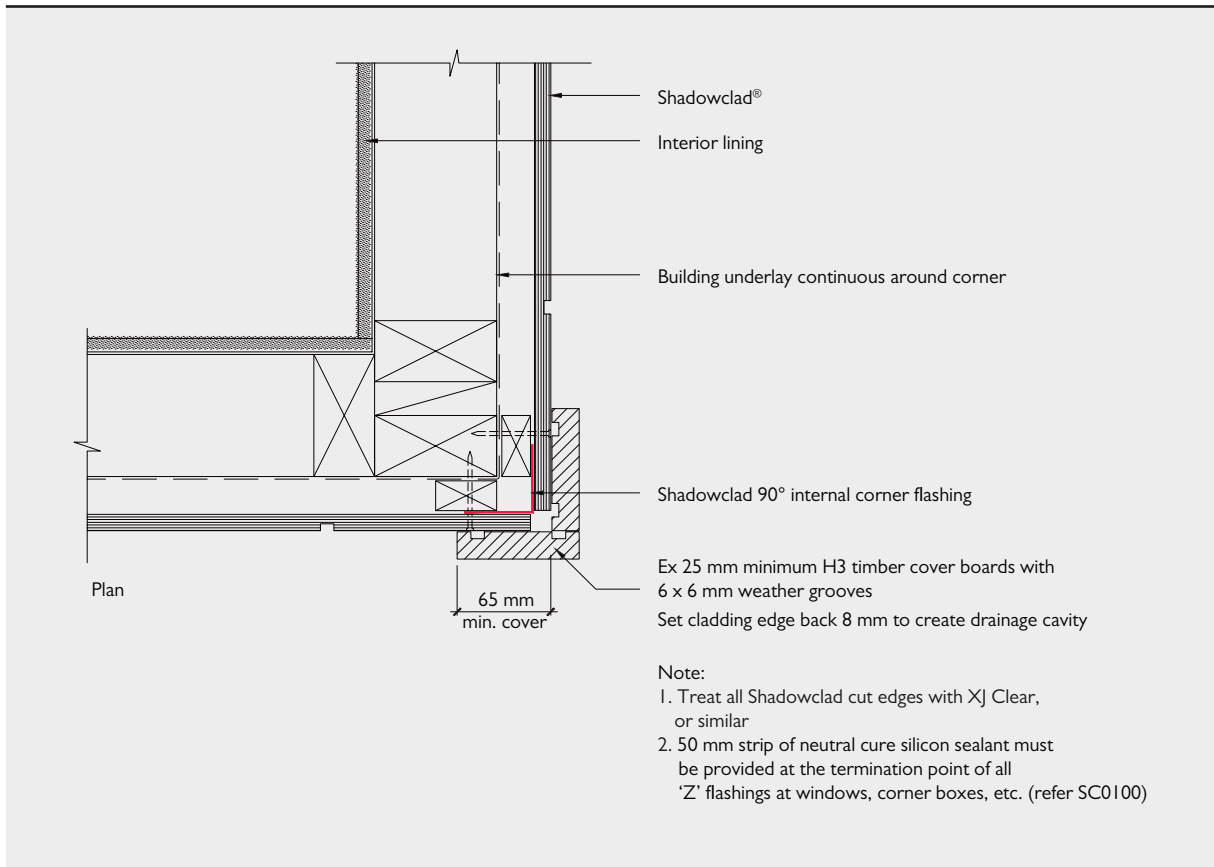
See important notice and warning on page 3.

3.11 EXTERNAL CORNERS

SC020: Shadowclad® External Corner with External Box Flashing (Cavity)



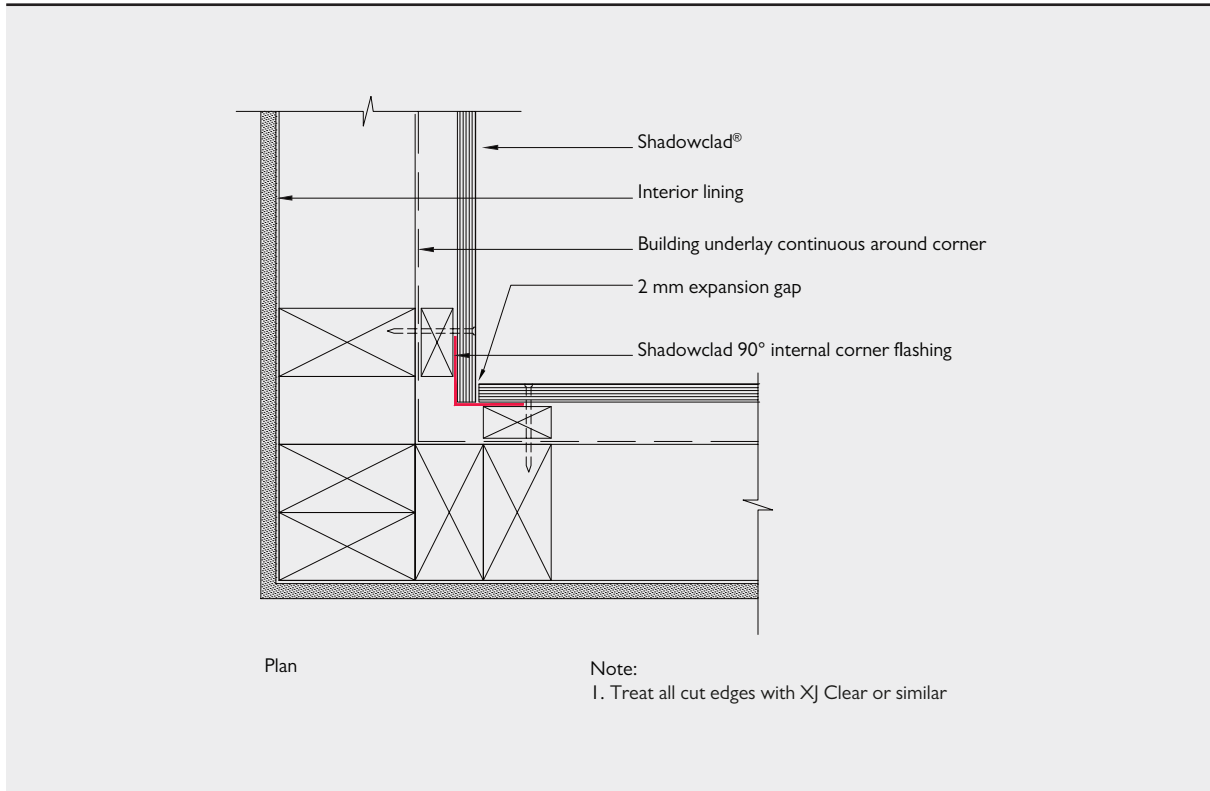
SC022: Shadowclad External Corner with Cover Boards (Cavity)



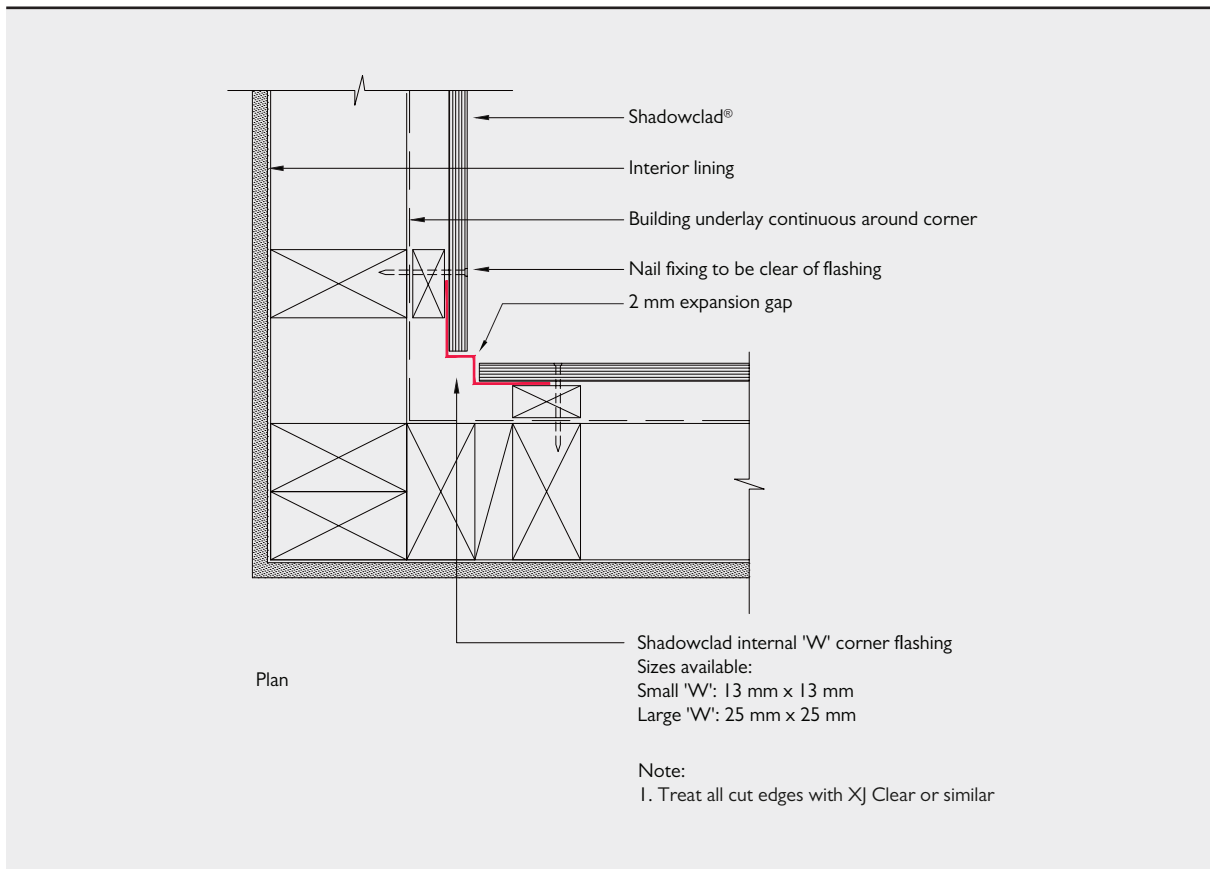


3.12 INTERNAL CORNERS

SC024: Shadowclad® Internal Corner with 90° Flashing (Cavity)



SC026: Shadowclad Internal Corner with 'W' Flashing (Cavity)



See important notice and warning on page 3.

3.13 SHADOWCLAD® FLASHINGS JUNCTION POINTS

Flashings should have expansion joints where necessary to provide adequate allowance for thermal expansion as set out below.

- Expansion joints to be provided for joined flashings when their combined length exceeds 8 metres.
- Even if less than 8 metres in length, where both ends of a flashing are constrained and fixed allowance should be made for expansion.

Cavity Base Closure

Fix Shadowclad® cavity base closures to bottom plates through the upstand with 40 x 2.5mm, hot dipped galvanised, or stainless steel (as appropriate) flat head nails at 300mm centres.

The cavity base closure should be positioned to allow a minimum drip edge to the wall cladding of 15mm at the base of walls, and 15mm above window head flashings.

Internal & External Flashings

Internal and external angles and 'Z' flashings can be nominally fixed with hot dipped galvanised, or stainless steel (as appropriate) flat head nails and then permanently fixed with the Shadowclad fasteners penetrating the flashing wings/upstands.

Horizontal 'Z' Flashings

Horizontal aluminium 'Z' flashings should be butted together with a back flashing to create a weathertight joint (refer to SC0102).

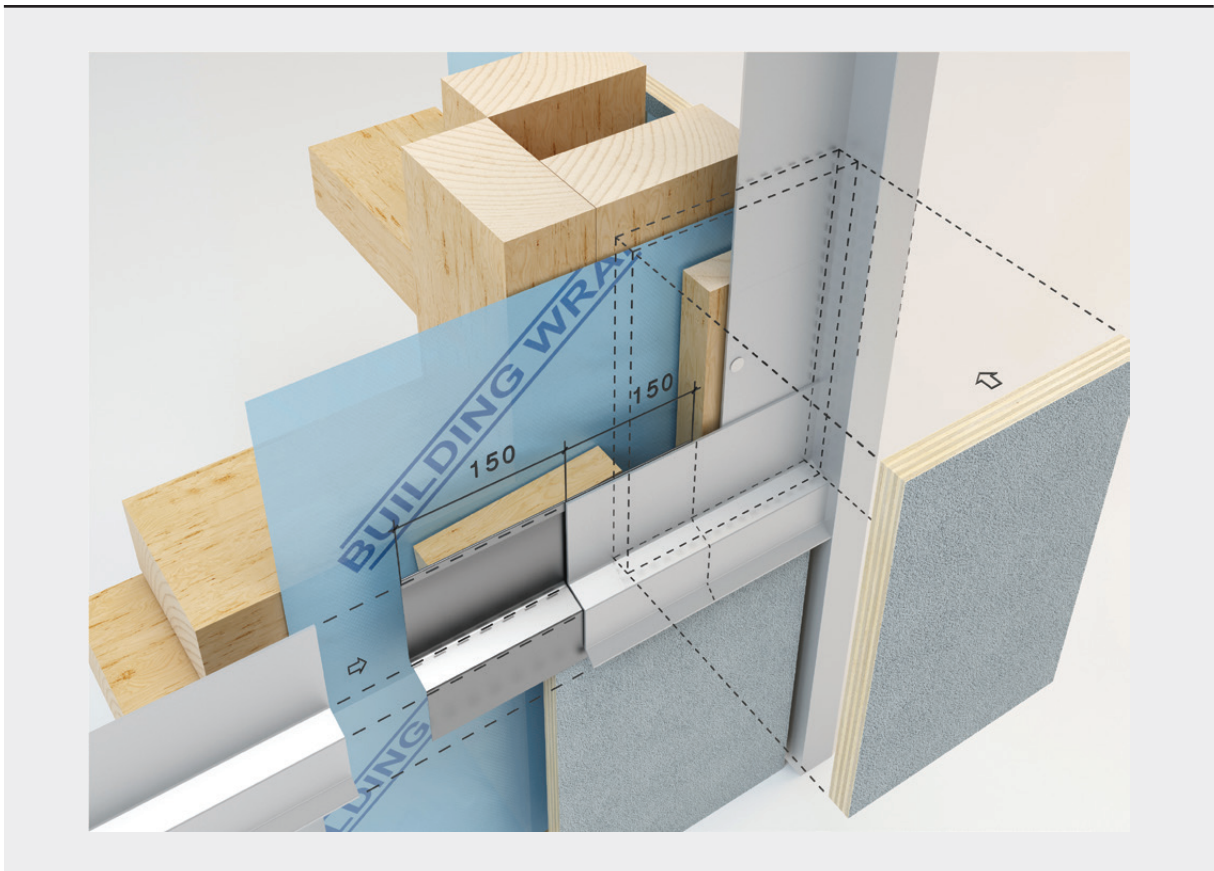
Stainless steel flashings should overlap by a minimum of 150mm at joints to create weathertight joints where horizontal flashings meet. (Refer SC0104).

'Z' Flashings Terminations

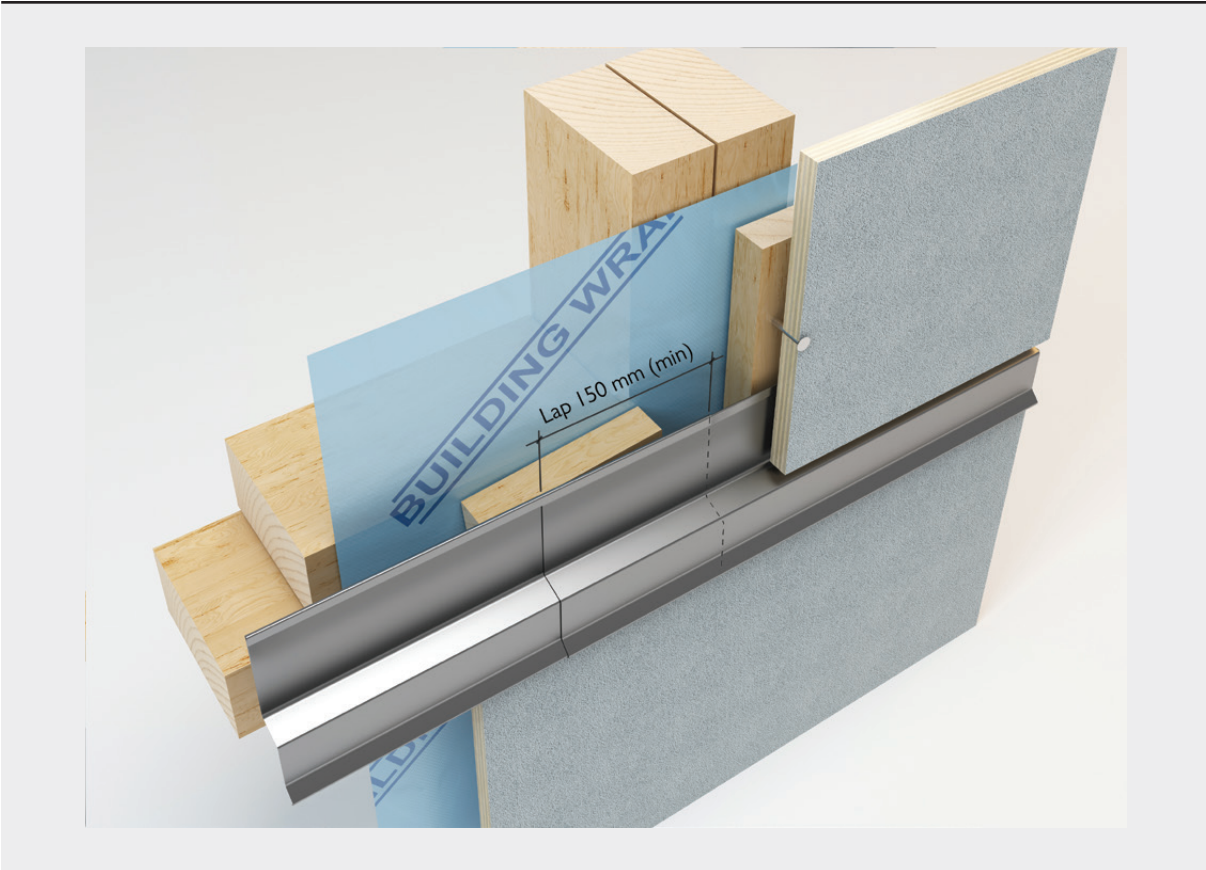
Where inter-storey 'Z' flashings terminate, an end cap must be installed.

A 50mm strip of neutral cure silicon (refer SC0100 General Silicon Sealing of Horizontal 'Z' Flashings) or stop ends (as applicable) is required at all 'Z' flashing terminations excluding terminations at Shadowclad metal corner flashings.

SC0102: Shadowclad® Aluminium Flashing Junctions and Connections (Cavity)



SC0104: Shadowclad® Stainless Steel 'Z' Flashing Joins (Cavity)



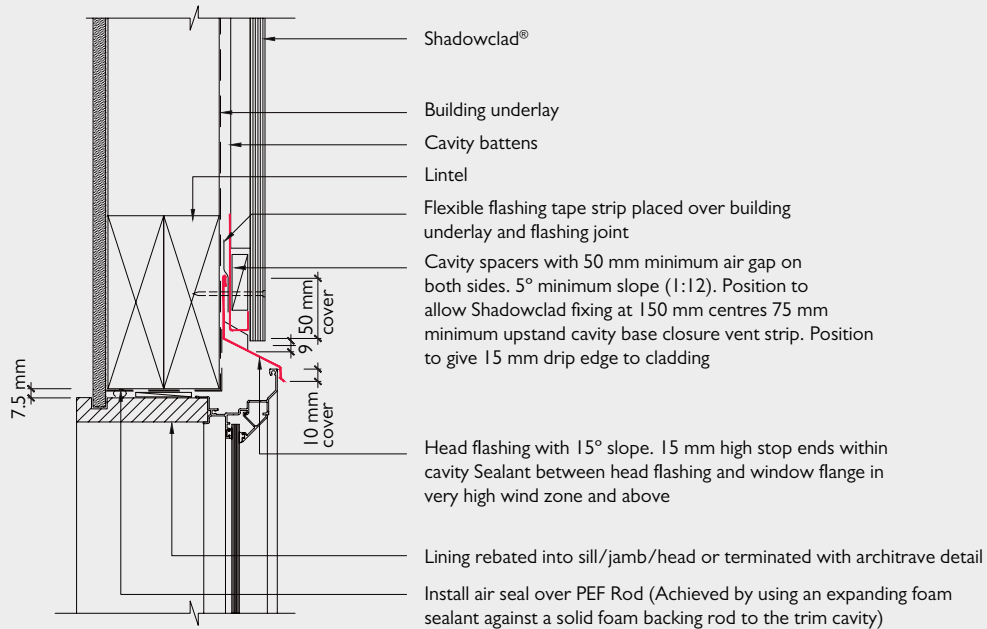
See important notice and warning on page 3.

3.14 WINDOW PENETRATIONS

Window joinery flashings (i.e. head and sill flashings) should be sourced from the joinery fabricator to meet the requirements of NCC 2016, Building Code of Australia - Volume Two or an

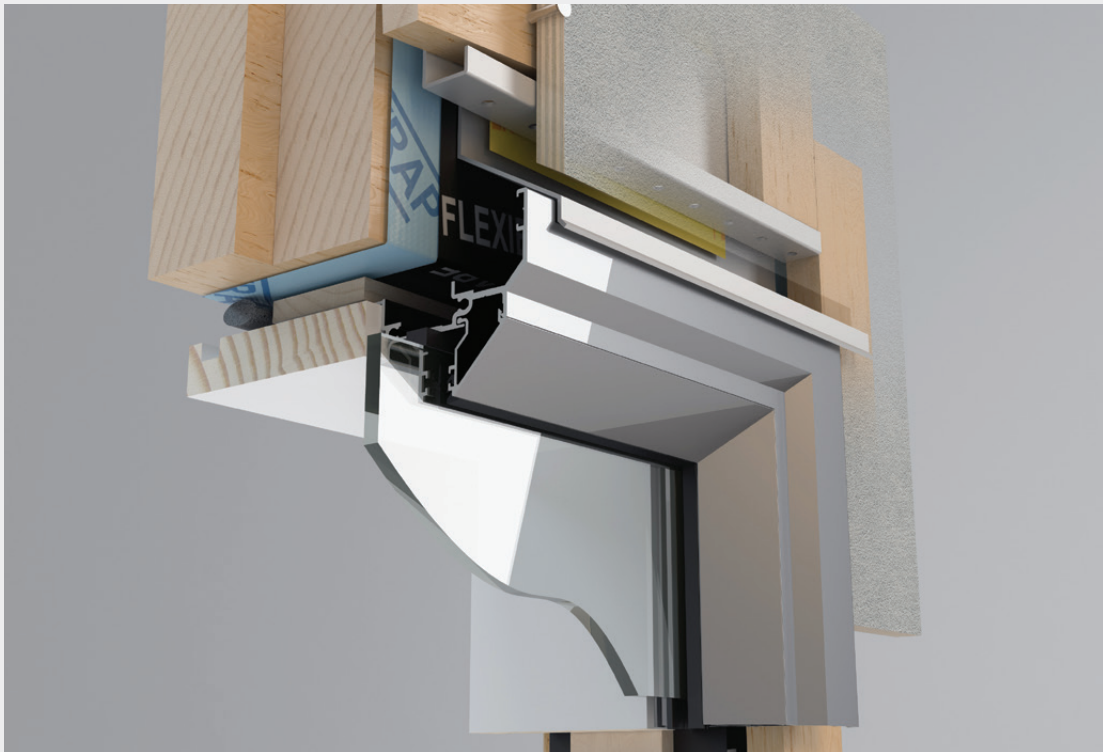
Alternative Solution such as the Australian Window Association Installation System (AWA).

SC028: Shadowclad® Cavity Construction Window Head Detail

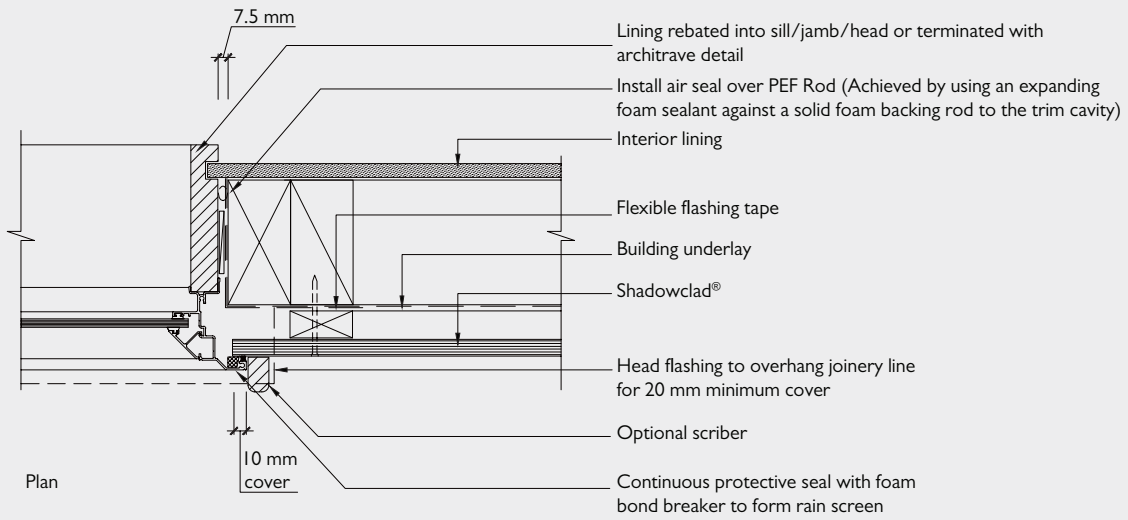


Note:

1. Treat all cut edges with XJ Clear or similar
2. Stop ends to head flashing terminations
3. Priming the bottom edge and back (rear) of the sheets to a height 150 mm is required

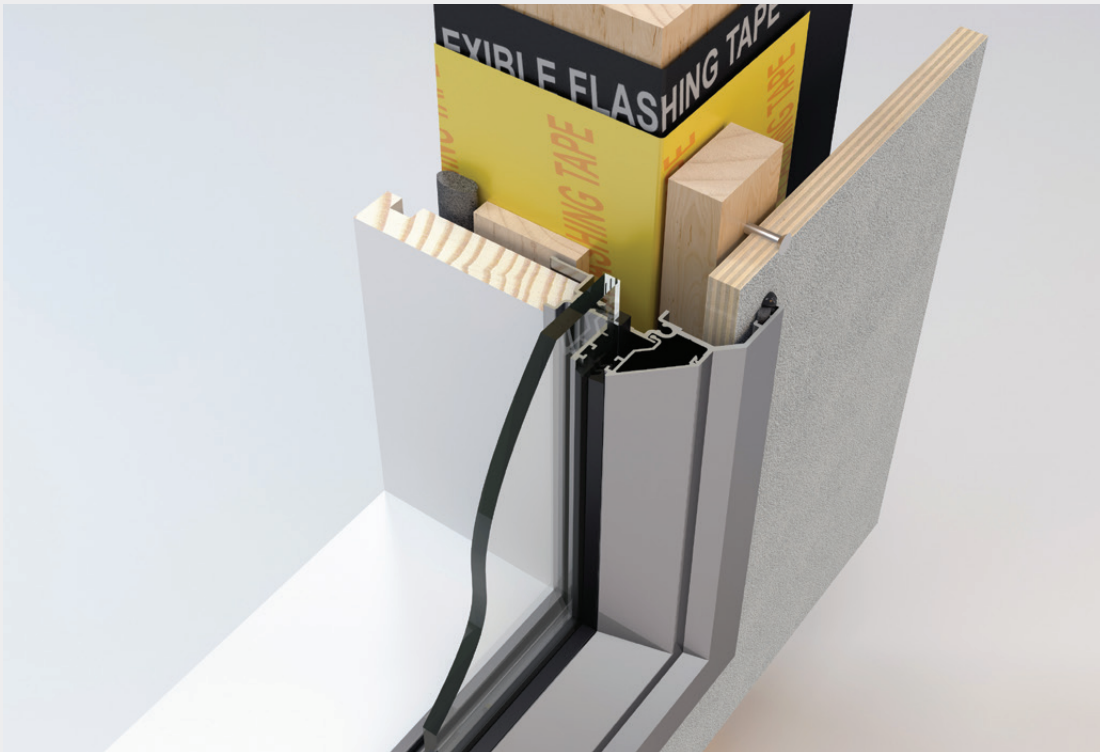


SC030: Shadowclad® Jamb Detail (Cavity)



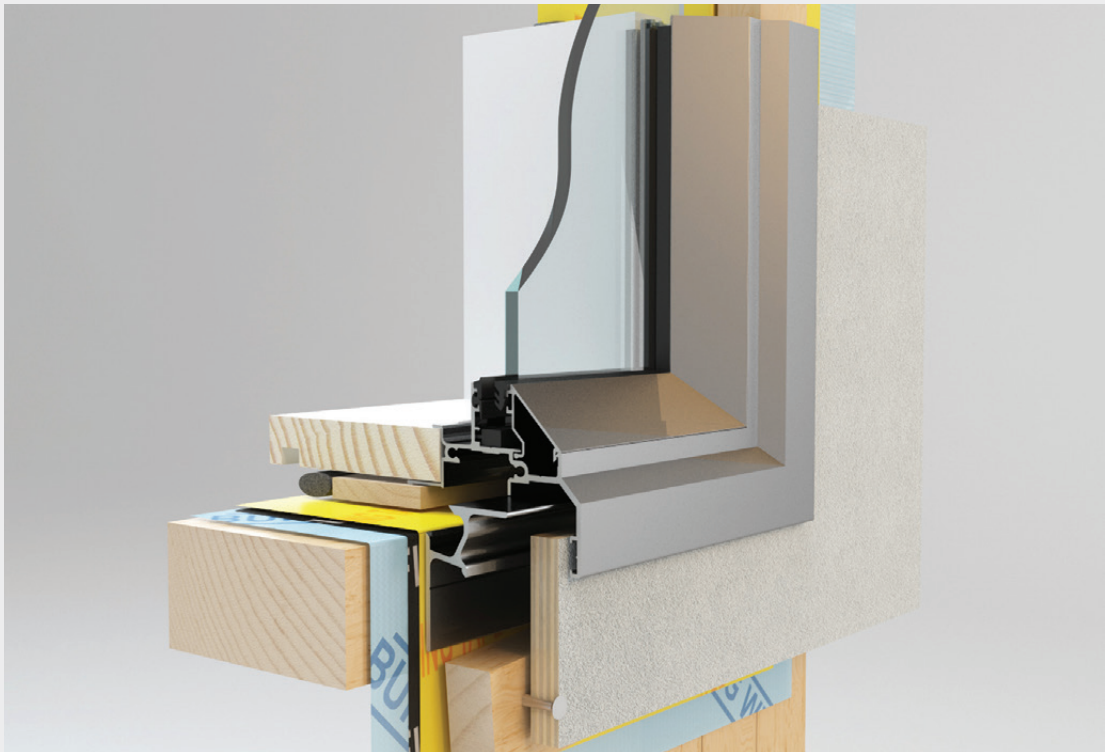
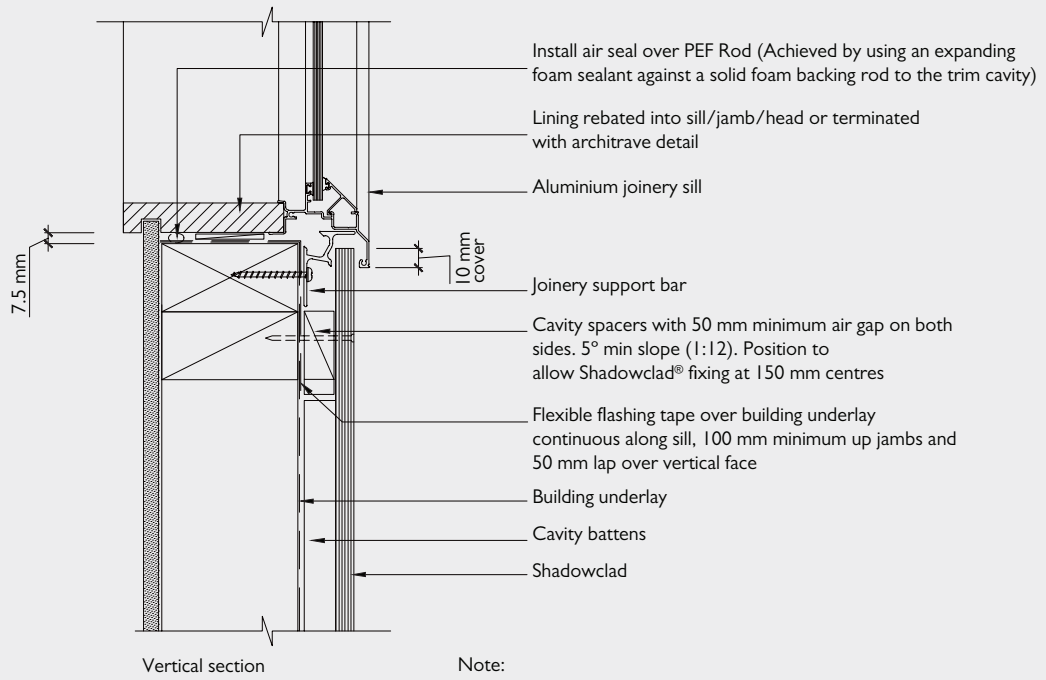
Note:

1. Treat all cut edges with XJ Clear or similar
2. 50 mm strip of neutral cure silicon sealant must be provided at the termination point of all 'Z' flashings at windows, corner boxes, etc.

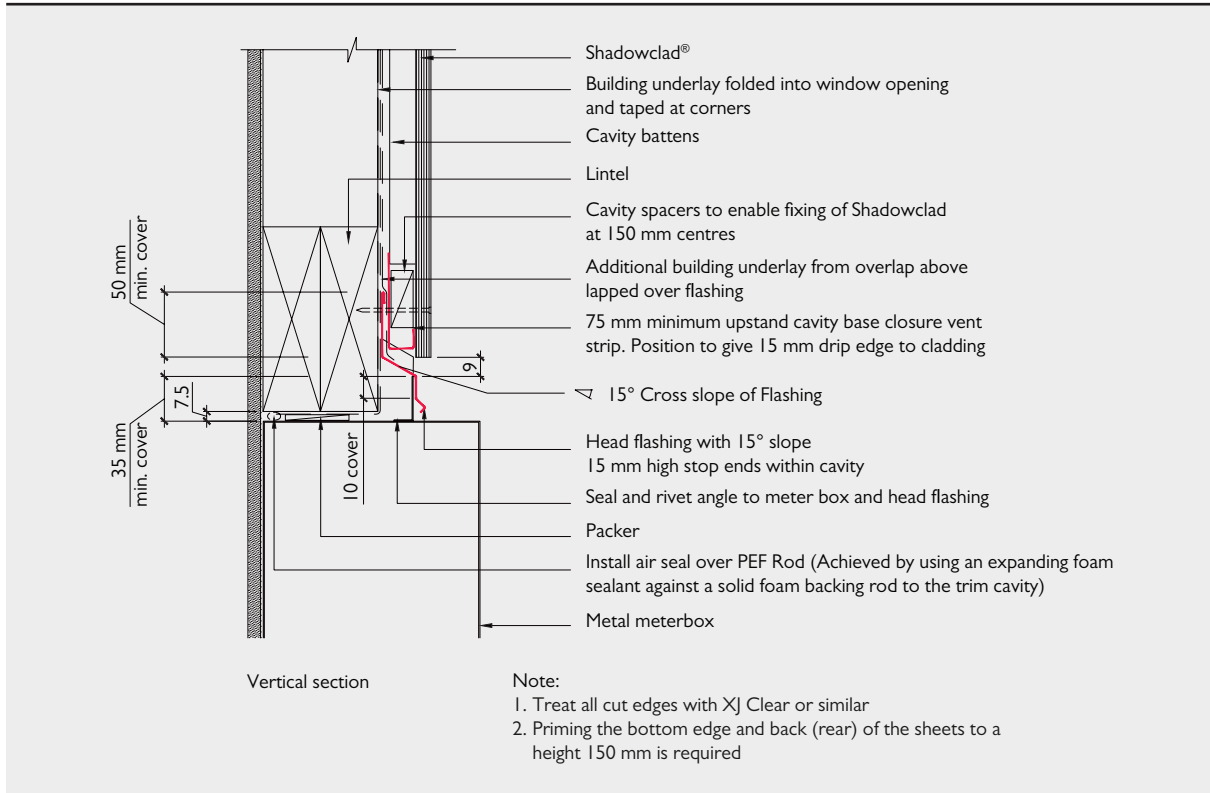


See important notice and warning on page 3.

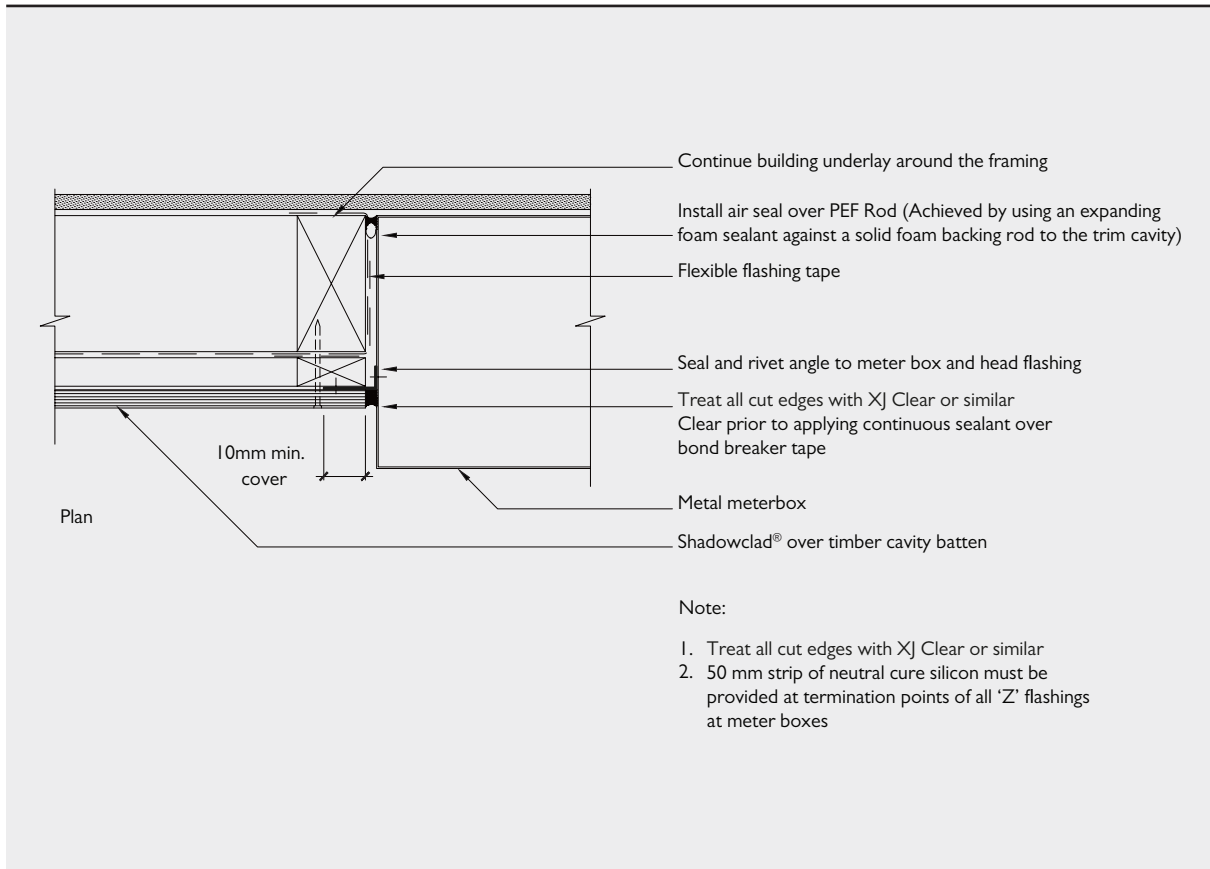
SC032: Shadowclad® Window Sill Detail (Cavity)



SC034A: Shadowclad® Meterbox Vertical Cross Section (Cavity)

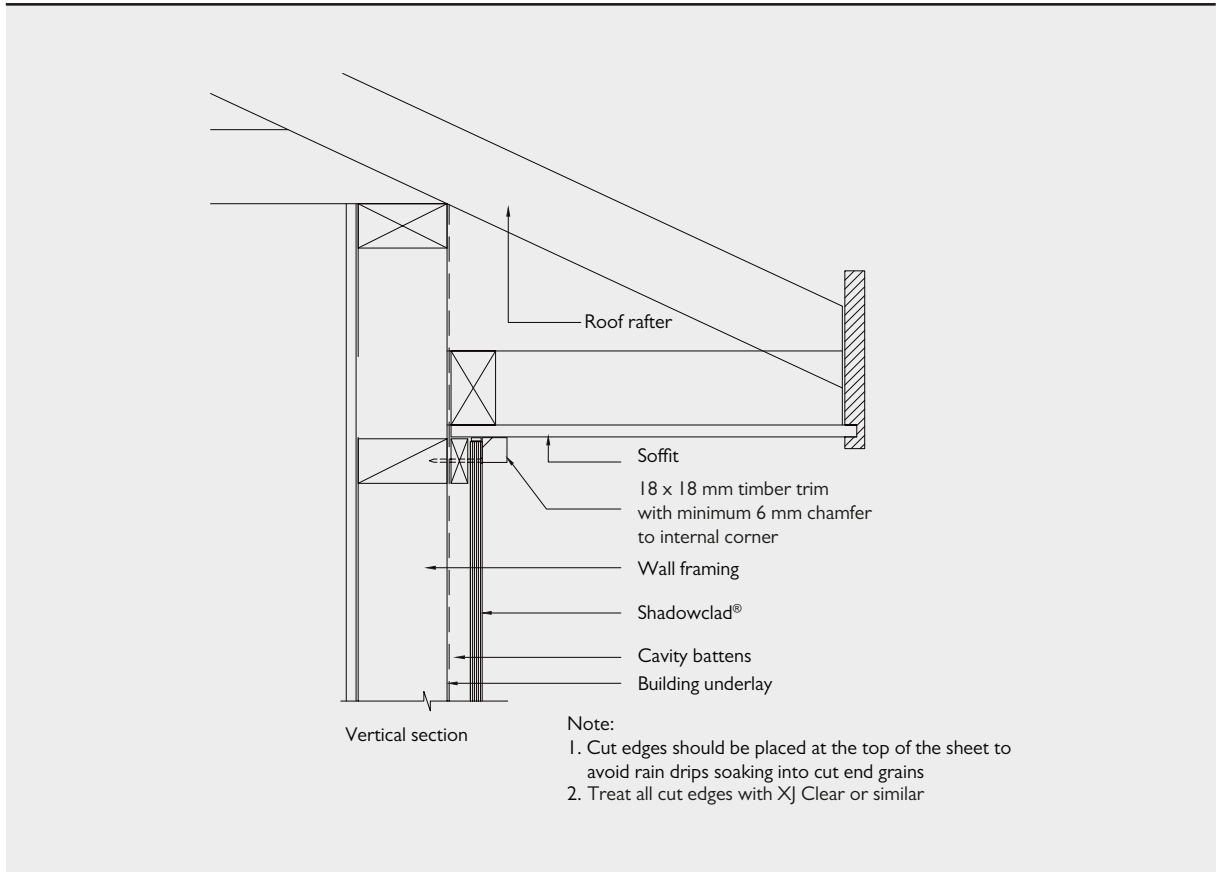


SC034B: Shadowclad Meterbox Horizontal Cross Section (Cavity)

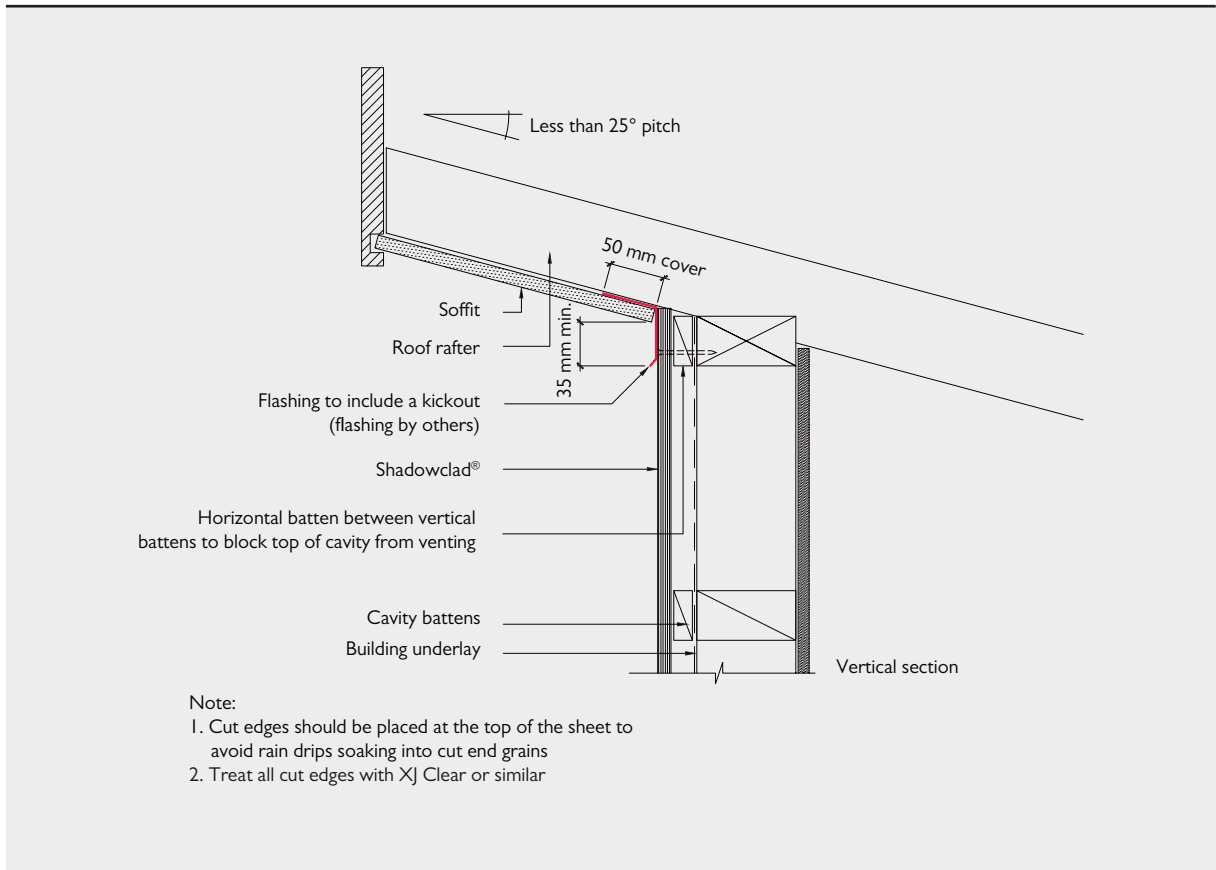


See important notice and warning on page 3.

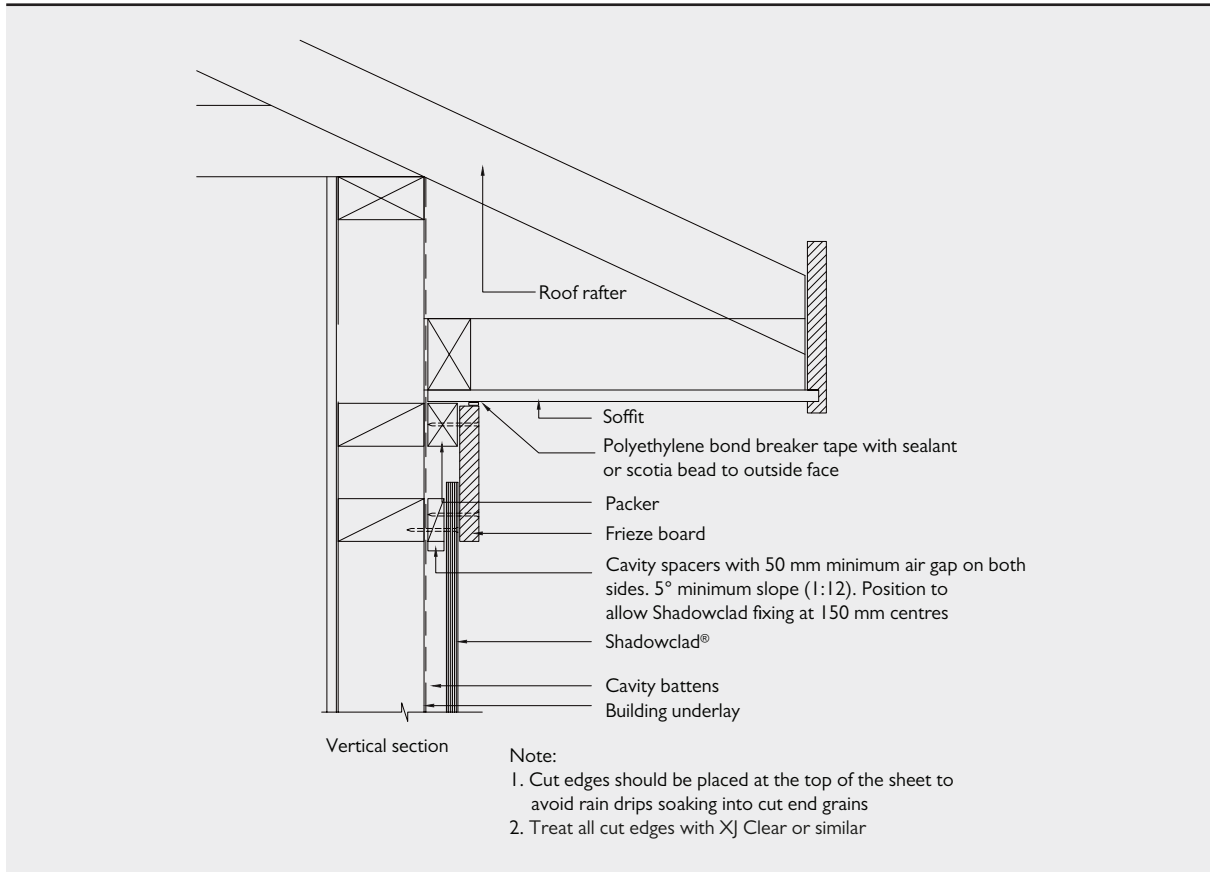
SC036: Shadowclad® Soffit Detail (Cavity)



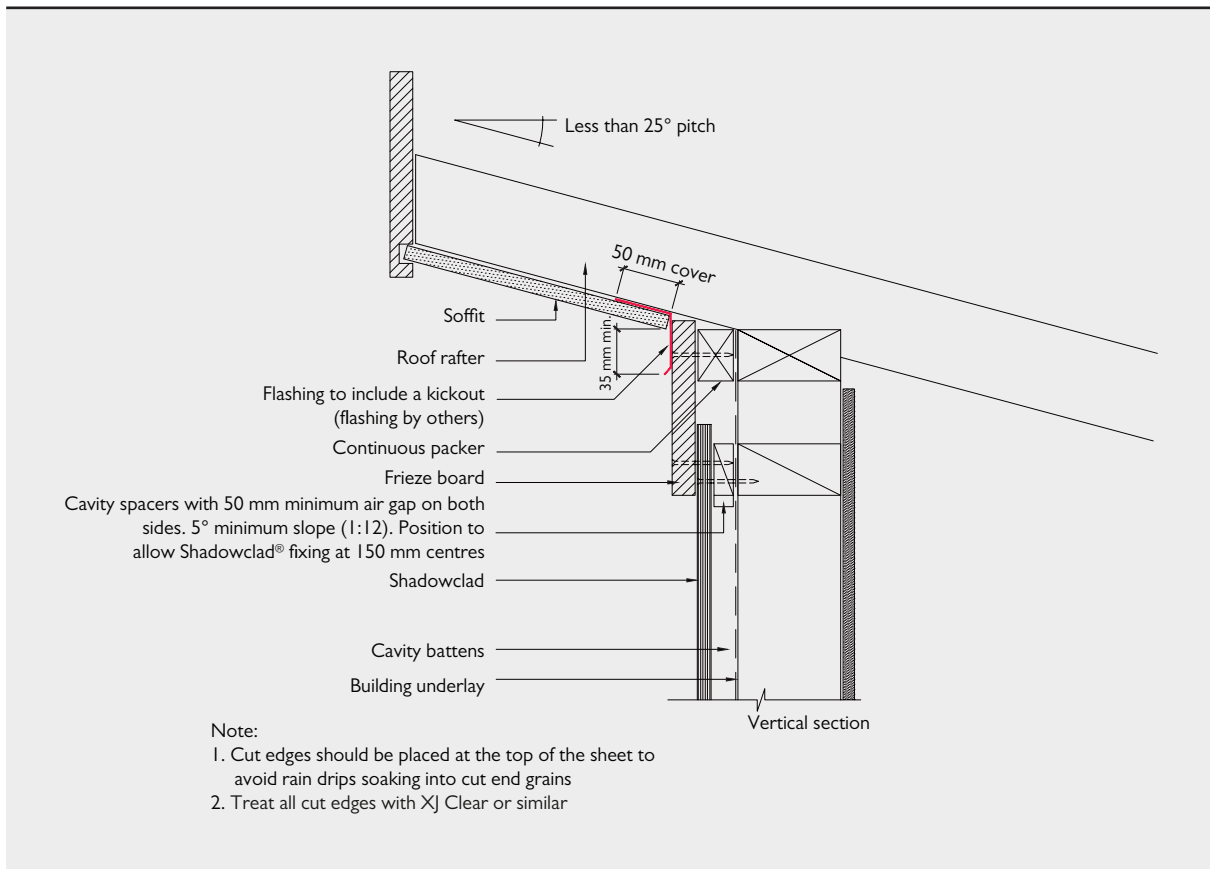
SC036A: Shadowclad Alternative Soffit Detail (Cavity)



SC038: Shadowclad® Soffit Alternative Detail (Cavity)

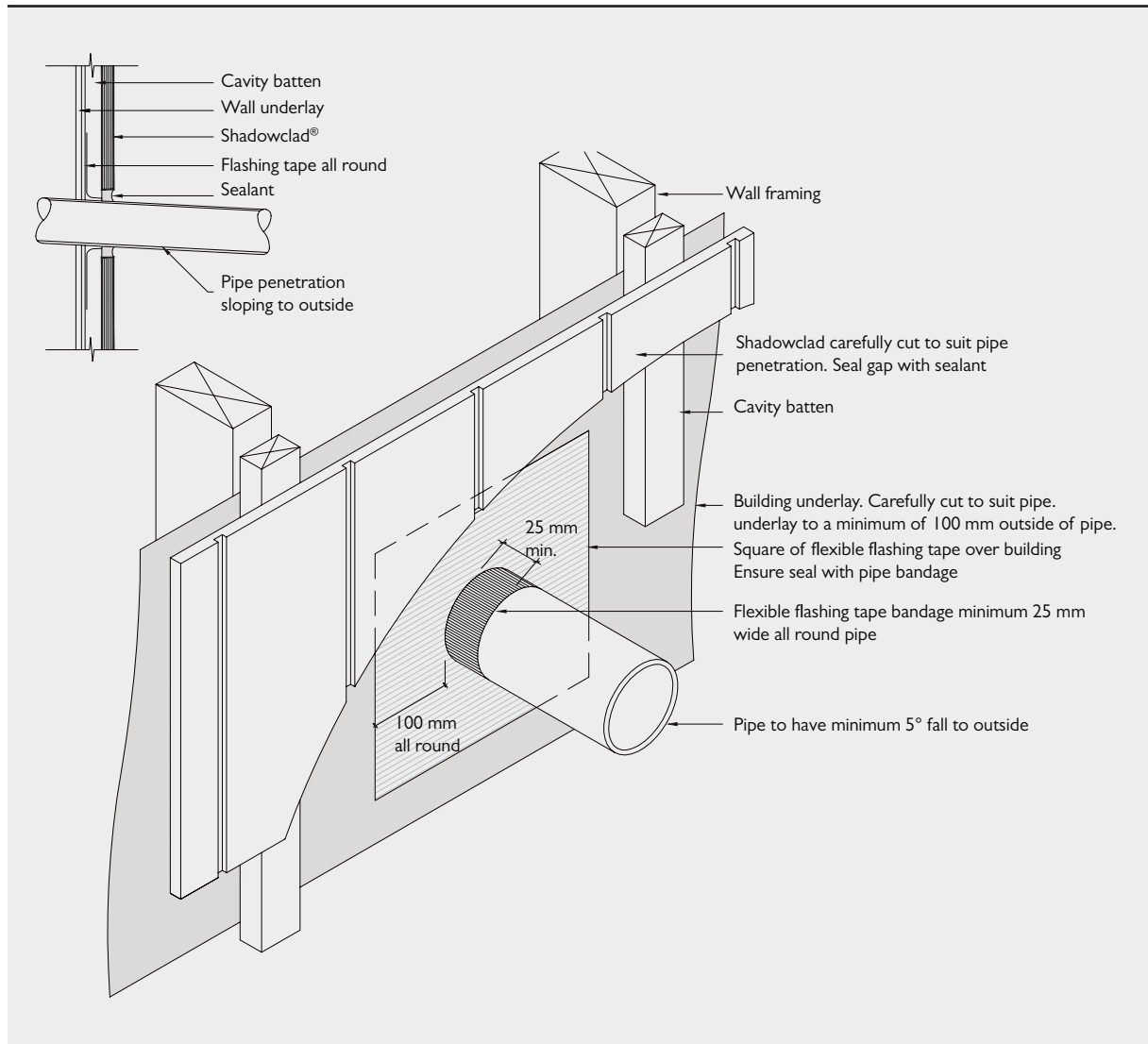


SC038A: Shadowclad Alternative Soffit Detail (Cavity)



See important notice and warning on page 3.

SC040: Shadowclad® Pipe Penetration (Cavity)



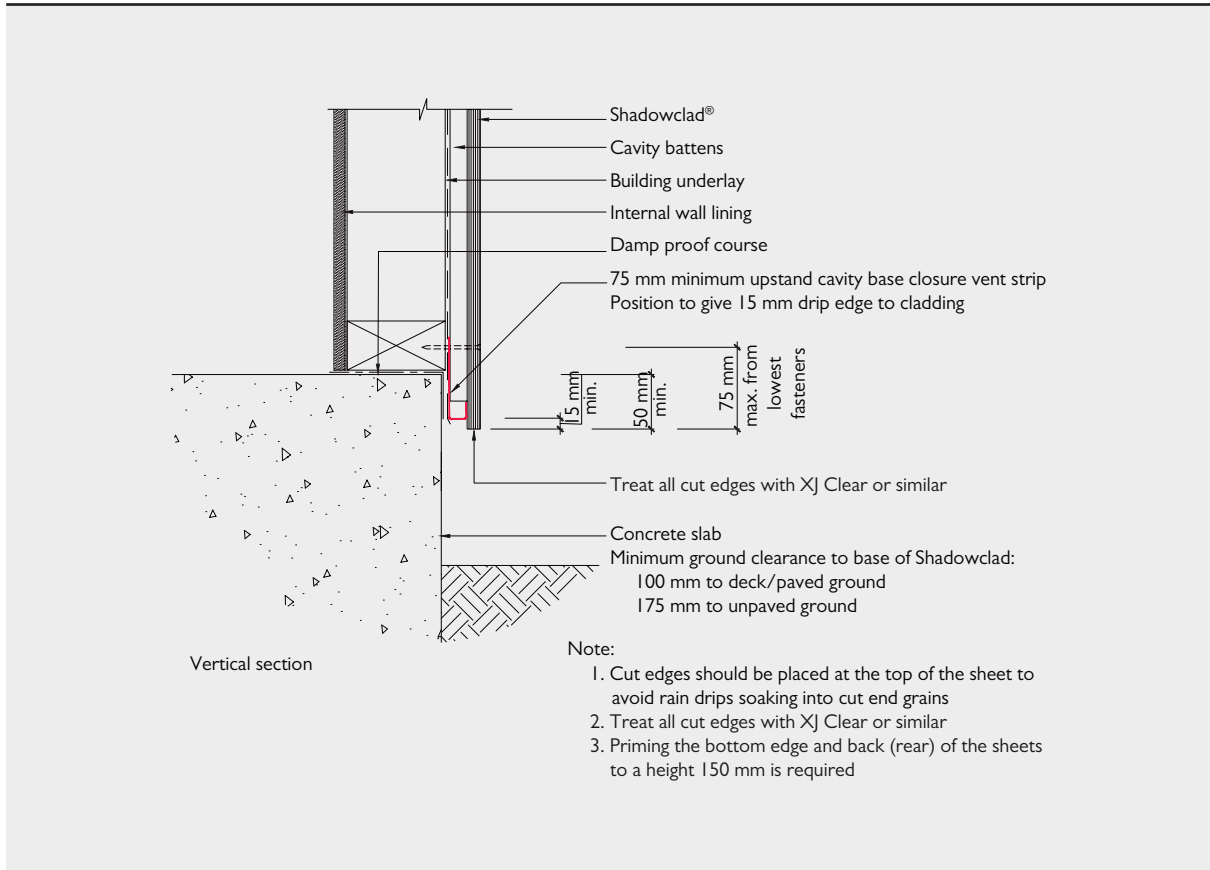
3.16 SHEET CLEARANCES

Ground Clearances

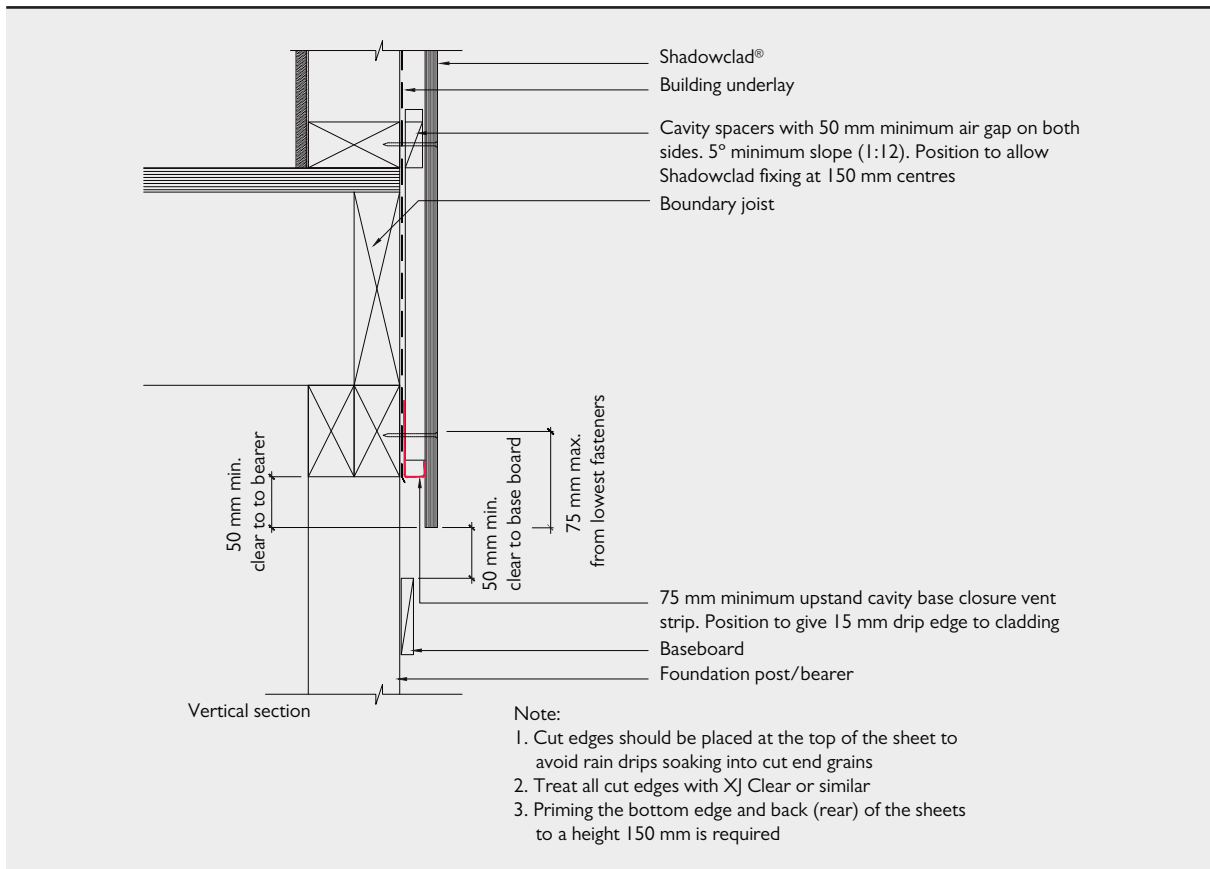
Shadowclad® must overhang the bottom plate on a concrete slab by a minimum of 50mm. The maximum distance from the bottom of the sheet to the fixing shall not exceed 75mm.

The bottom edge of the Shadowclad sheet must be a minimum of 50mm above decks and verandahs, 100mm above paved ground and a minimum of 175mm above unprotected ground.

SC042: Shadowclad® Overhangs and Ground Clearances (Cavity)

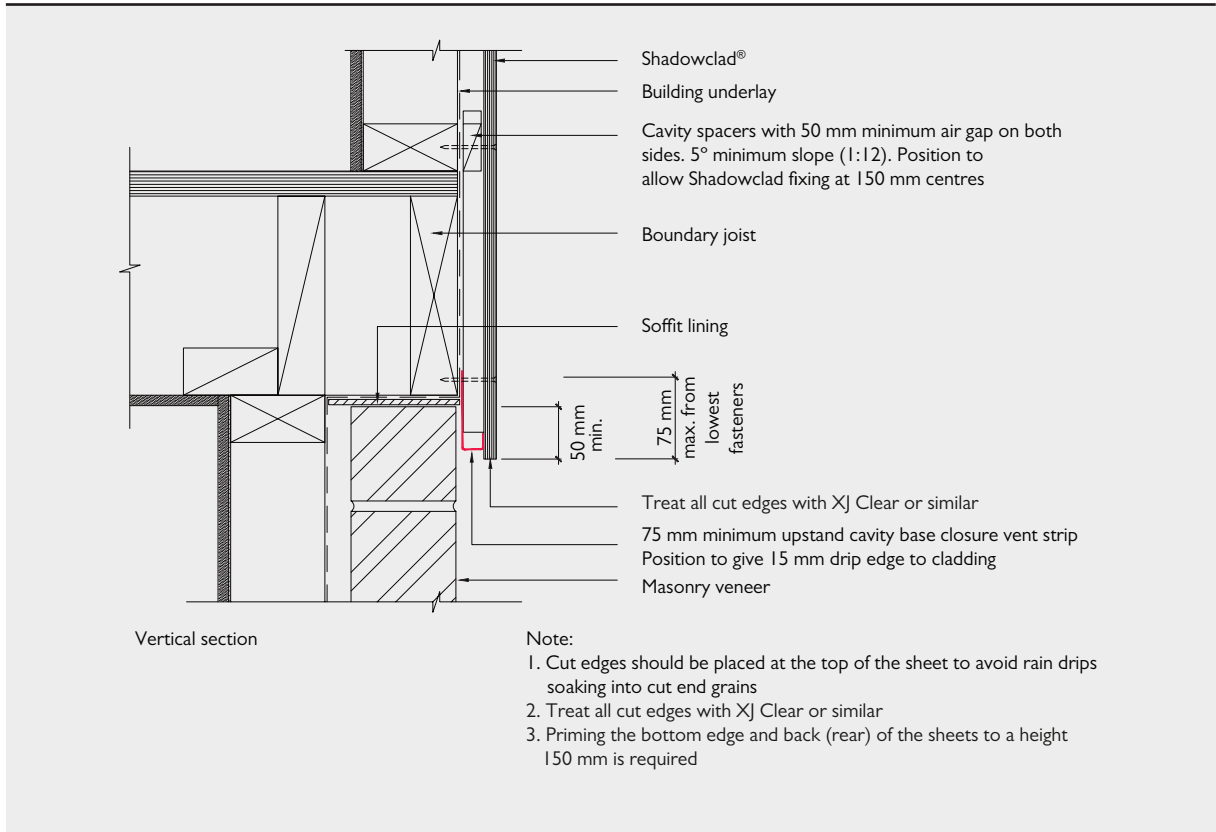


SC042A: Shadowclad® Overhang for Timber Ground Floor to Non-Cantilevered Wall



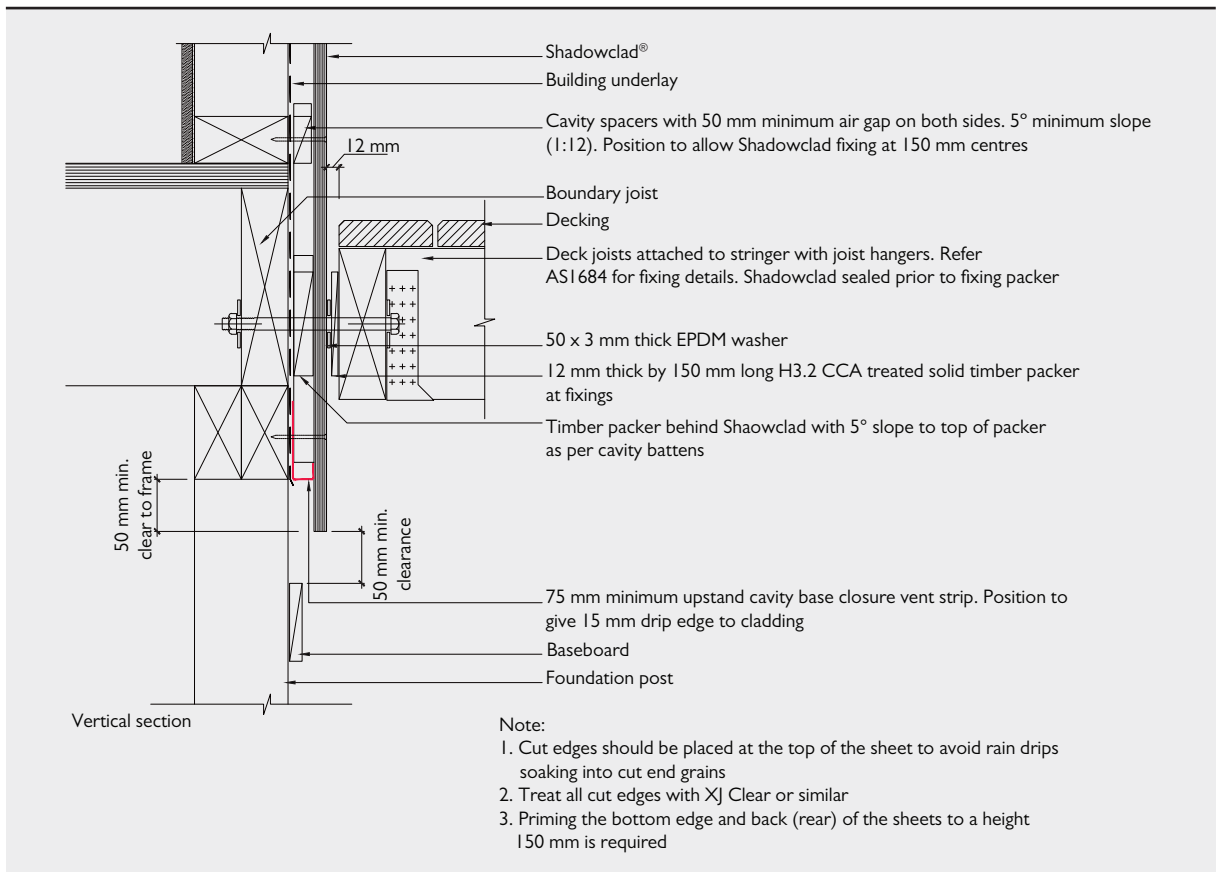
See important notice and warning on page 3.

SC044: Shadowclad Upper Storey to Masonry Lower Storey (Cavity)

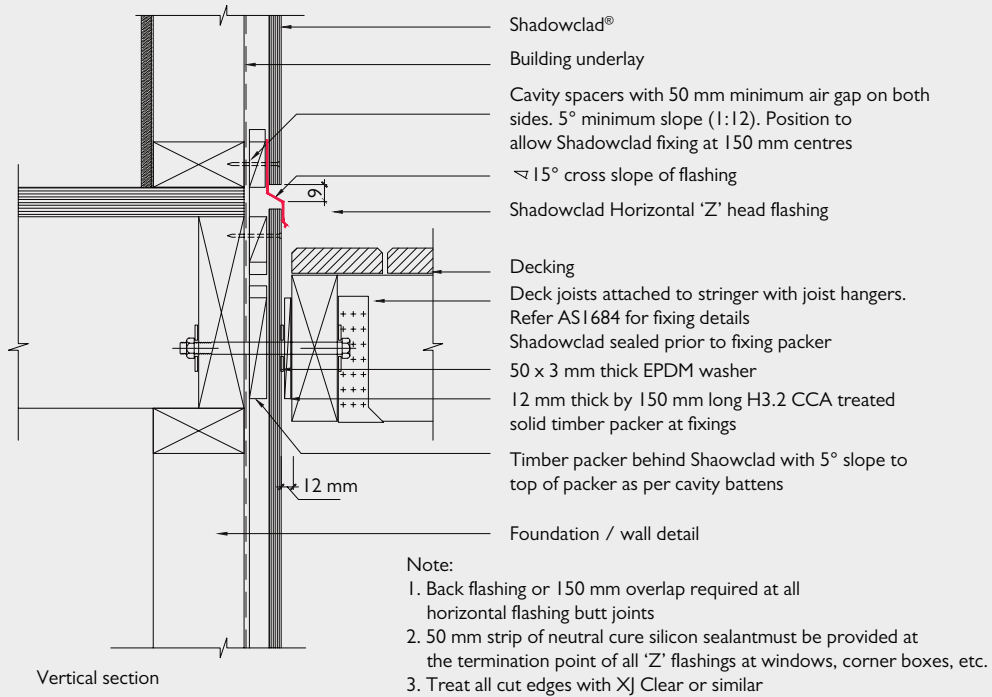


3.17 OTHER DETAILS

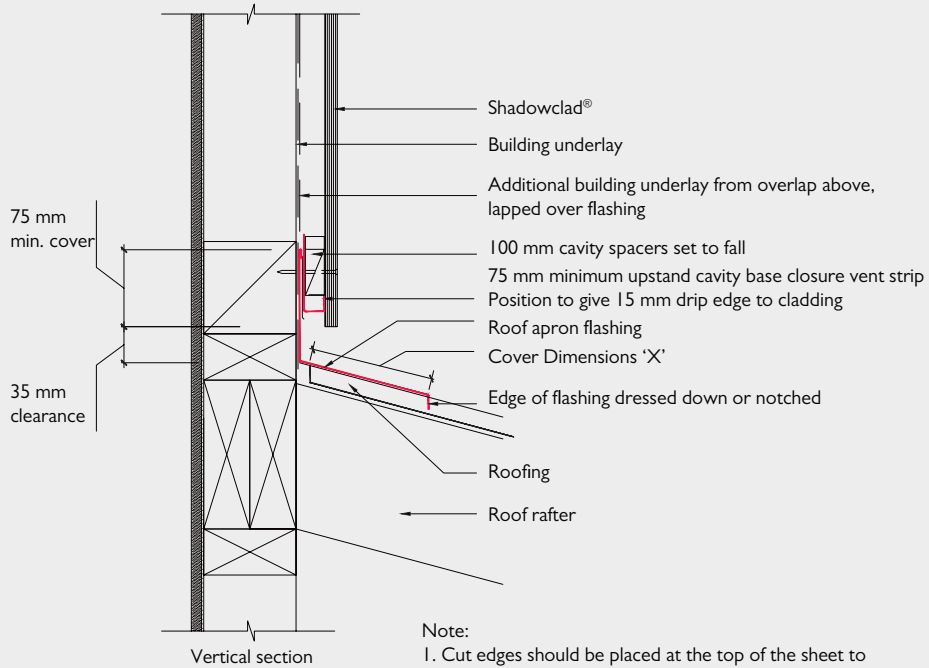
SC046: Shadowclad® Timber Ground Floor to Non-Cantilevered Deck (Cavity)



SC048: Shadowclad Mid Floor to Non-Cantilevered Deck (Cavity)



SC050: Shadowclad® Basic Apron Flashing (Cavity)

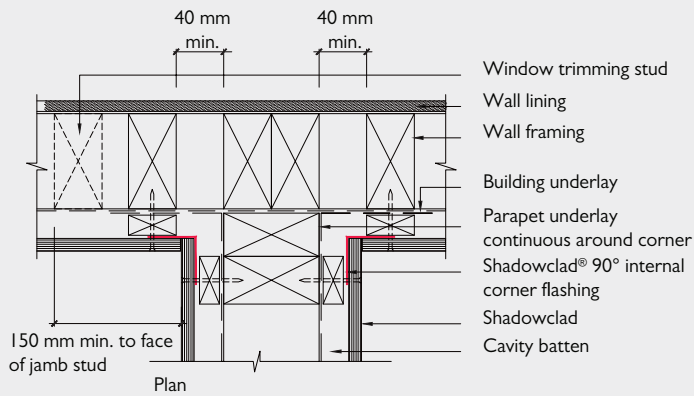
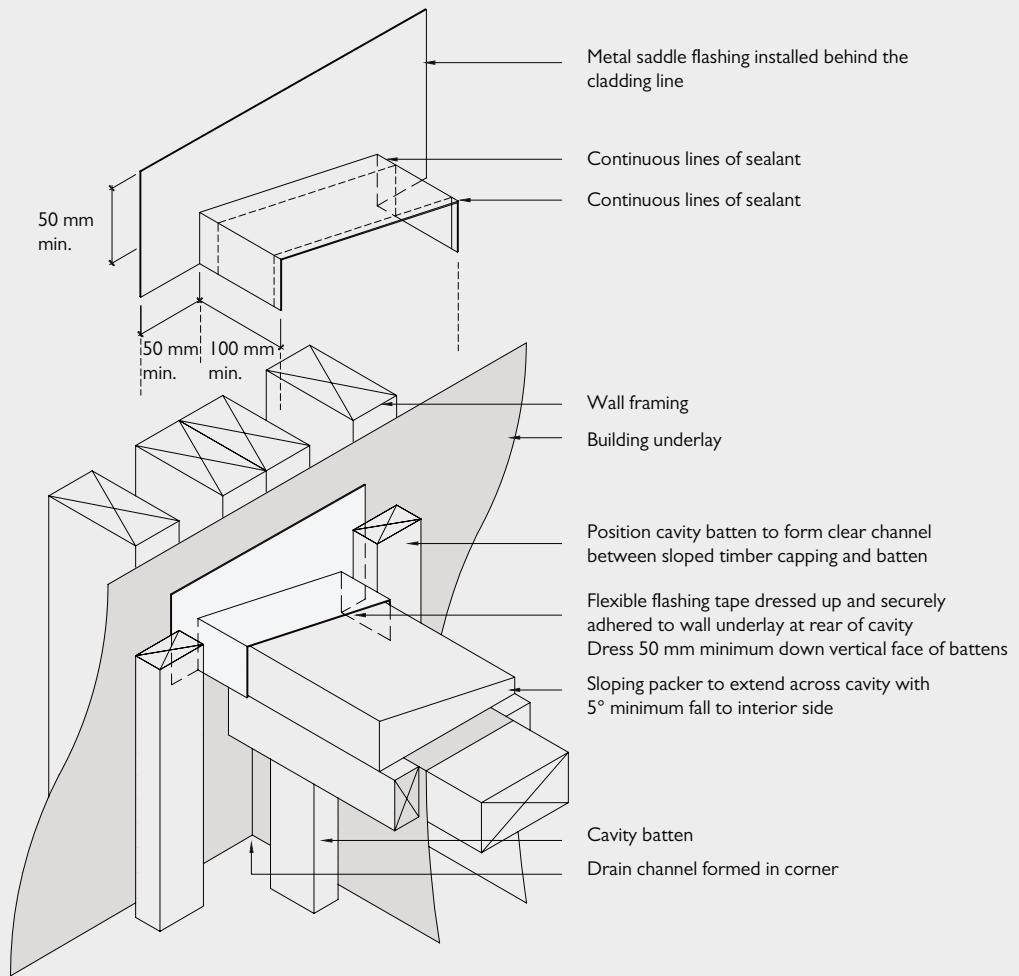


- Note:
 1. Cut edges should be placed at the top of the sheet to avoid rain drips soaking into cut end grains
 2. Treat all cut edges with XJ Clear or similar
 3. Stop ends to profiled roof sheeting
 4. Priming the bottom edge and back (rear) of the sheets to height 150 mm as required

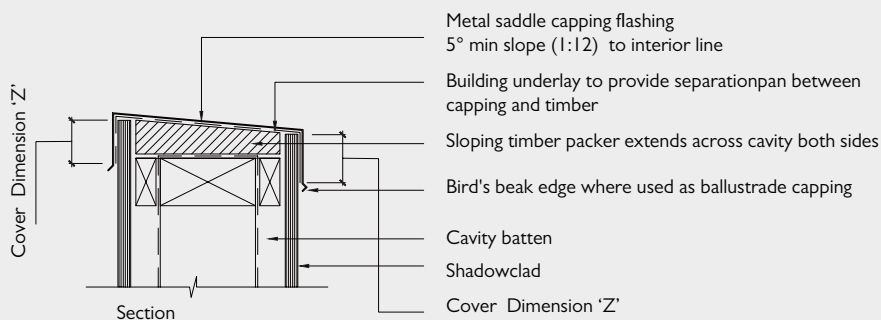
Cover Dimension 'X'	Roof Pitch	Wind Classification
130 mm	≥ 10	N1, N2
200 mm	All	N3, C1

See important notice and warning on page 3.

SC052: Shadowclad® Balustrade to Wall Junction (Cavity)

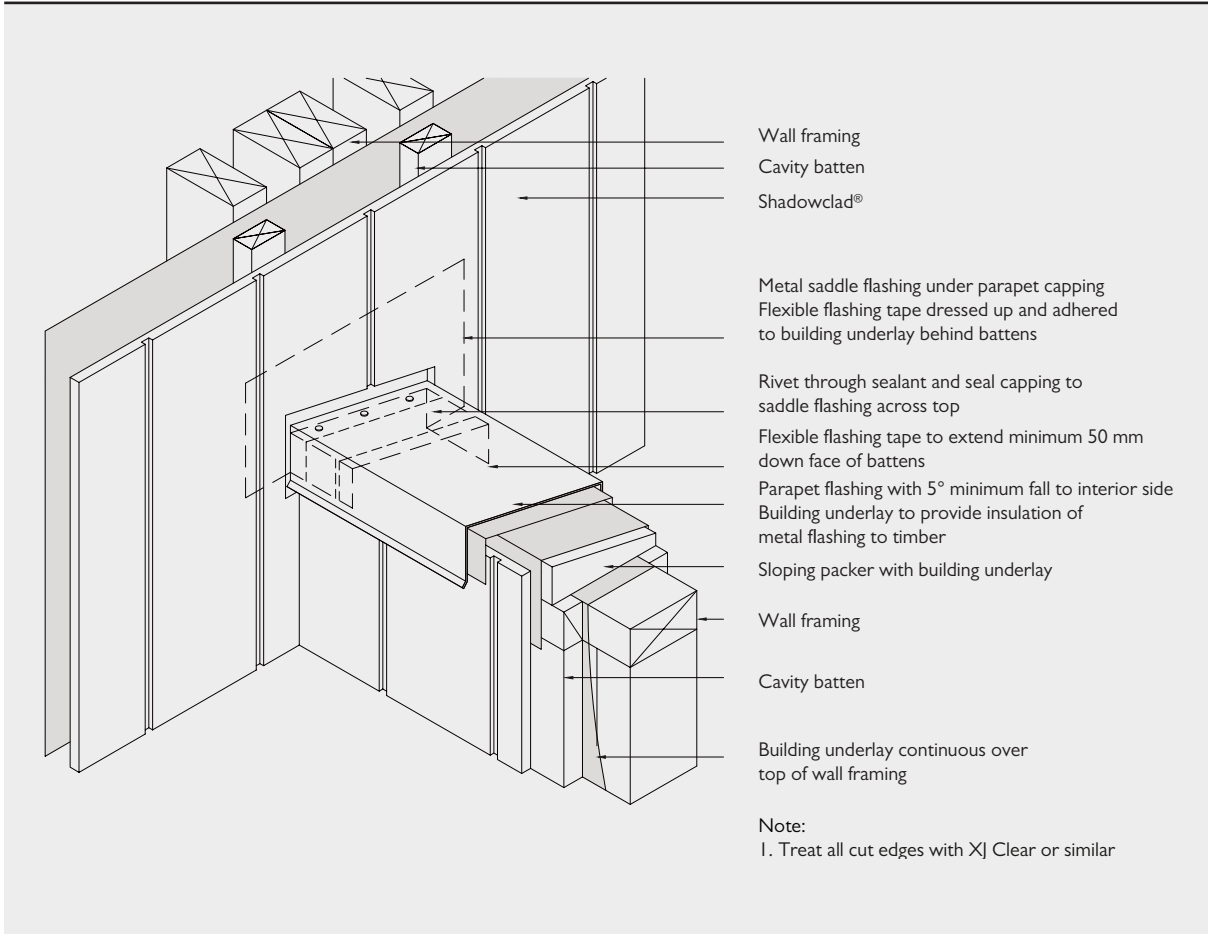


Cover Dimension 'Z'	Wind Classification
50 mm	N1, N2
70 mm	N3, C1



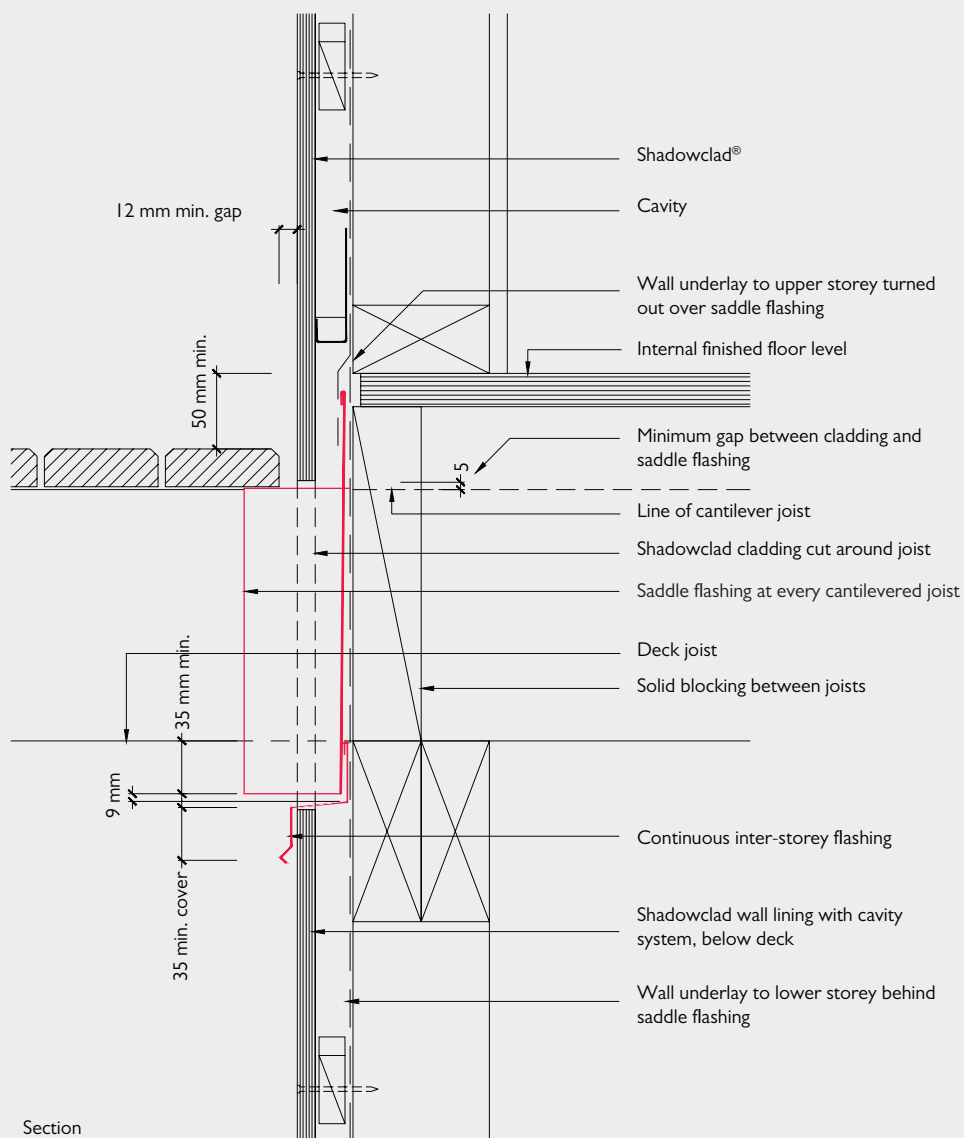
Note:
1. Treat all cut edges with XJ Clear or similar

SC054: Shadowclad® Balustrade to Wall Junction (Cavity)

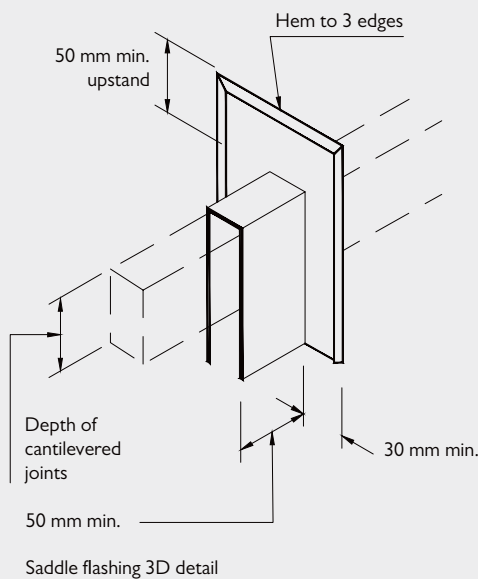


See important notice and warning on page 3.

SC056: Shadowclad® Junction with Wall for Cantilevered Deck (Cavity)



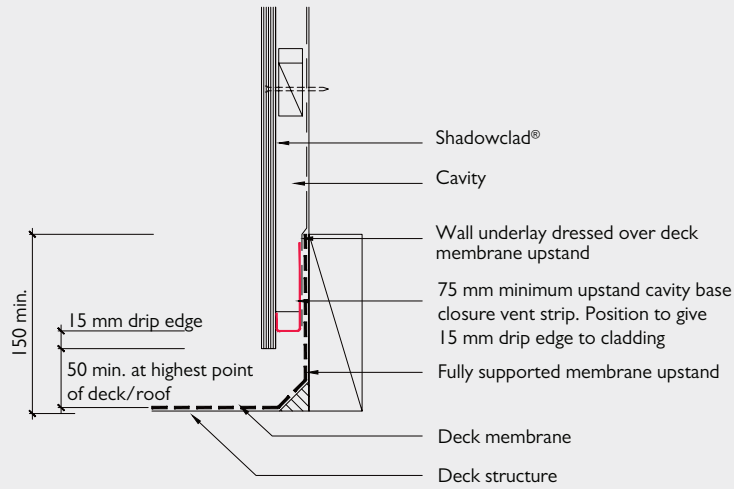
Section



Note:

1. Building wrap at back of cavity shall be taped around joist penetration
2. The back of the saddle flashing shall be positioned behind the cladding
3. Saddle flashing terminates over inter-storey flashing
4. Treat all cut edges with XJ Clear or similar

SC058: Shadowclad® Detailing for Enclosed Balustrade (Cavity)



Note:

1. Cut edges should be placed at the top of the sheet to avoid rain drips soaking into cut end grains
2. Treat all cut edges with XJ Clear or similar
3. Priming the bottom edge and back (rear) of the sheets to height 150 mm as required

See important notice and warning on page 3.

4.0 COATING & APPLICATION – EXTERIOR CLADDING

4.1 SURFACE PREPARATION

- Shadowclad® is manufactured, treated and stored in dry conditions at CHH Plywood manufacturing facilities. The H3 LOSP treatment provides temporary repellence to mould prior to on site coating, however it remains the applicator's responsibility to ensure the surface is dry and free from dust and mould prior to coating.
- If Shadowclad has been exposed to external weathering for over 3 months wash surfaces with a mild detergent solution to remove any dirt, dust, mould or sea spray prior to coating.
- If recoating, remove loose, flaking or unsound coatings and wash walls prior to recoating.
- The Shadowclad surface must be dry prior to applying any surface coating.

4.2 COATING APPLICATION

- If sheets feel greasy to touch, separate and place in a dry, well ventilated area to allow any residual solvents from the treatment process to flash off prior to applying coatings.
- **Shadowclad® is envelope preservative treated. Where sheets are cut, cut edges must be coated with a brush on timber preservative in accordance with the relevant manufacturer's instructions. (XJ Clear), Arch Lonza Tanalised® Enseal Clear or Tanalised® Ecosal is recommended. Failure to properly apply preservative to cut edges will negatively affect the durability of cut panels.**
- Coatings should be applied by brush to ensure adequate coating film build is achieved. Application via roller or spray is not recommended.
- Shadowclad Natural panels should be coated within 3 months of installation.
- Priming of sheet edges and on the rear of the sheet to a depth of 150mm is considered good practice, and required at the base of all sheets.
 - Shadowclad Ultra sheets are coated on the rear to a height of 150mm (min.) to meet this requirement.
- A minimum total coating system film build of 90 microns is recommended when painting or using film forming stains, including a minimum 30 micron thickness per coat.
- For detailed advice on surface preparation, coating product suitability and general coating practice always refer to the coating manufacturer prior to application.

4.3 COATING SELECTION

The following coating information should be treated as a generic guide to coating systems typically used with Shadowclad® exterior cladding. The selection, application and maintenance of coatings is the responsibility of building owners and the professionals that they engage. For advice on specific coating products and their suitability for use on Shadowclad always refer to the coating manufacturer.

It is important to note regardless of the cladding materials selected there will always be a level of coating maintenance required to ensure the cladding material is sufficiently protected from the elements and maintains the desired appearance.

Paints & Film Forming Stains

Three coats (1 undercoat, 2 top coats) of a good quality, 100% acrylic paint system with a light reflectance value (LRV) of 50% or greater (i.e. light colours) which is regularly maintained will provide the highest level of protection and durability for Shadowclad and is likely to require the least amount of coating maintenance over the life of the cladding.

Dark colours (LRV of below 50%) may still be used however they are likely to increase heat and stress on the panel surface, reducing the panels overall lifespan and increasing the level of coating maintenance required to maintain an acceptable visual appearance.

Some film forming stains (i.e. coatings with the consistency of paint but with an appearance similar to penetrating stains) may offer similar protection qualities to paints however advice and assurance should be sought from the coating manufacturer as to their suitability for use with Shadowclad prior to application.

Where paints or film forming stains are to be used, the use of Shadowclad Ultra is recommended. Shadowclad Ultra features a factory applied primer which in most cases eliminates the use of time consuming wet primers. (Refer Table 8).

Shadowclad Natural can also be used with paint however a conventional wet primer is required as part of the coating manufacturers overall system specification.

Penetrating Stains

Penetrating stains show the natural texture and character of timber and are widely used on Shadowclad® exterior cladding.

Penetrating stains offer less protection for panels from exterior weathering than paints and film forming stains which are considerably thicker in surface film build. Due to their translucency, penetrating stains are likely to require additional coating maintenance during the panel's life to maintain an acceptable visual appearance.

Penetrating stains should only be used on Shadowclad Natural and are not recommended for use on Shadowclad Ultra.

CHH Plywood does not recommend the use of linseed oil based coating which have the potential to promote mould growth in this product.

Clear Coatings & Uncoated Shadowclad®

If Shadowclad is left uncoated or is clear coated in exterior applications the long term aesthetics of the board will be significantly reduced. While the product will meet durability and weathertightness requirements a high visual appearance will not be achieved in the long term.

Face Checking

Face checks are lengthwise separations of wood fibres in the face veneer of the plywood. They result from the normal swelling and shrinking of wood as it gains and loses moisture which is exacerbated by darker colours. It is important to realise that these checks are superficial, being confined to the face veneer. They do not alter the structural integrity of the plywood in any way. If you are the specifier, it is important to discuss these issues with your client before finalising colour choice. If checking occurs, repaint with a good quality, 100% acrylic exterior house paint in accordance with the manufacturer's instructions, thoroughly working paint into the face checks with a paint brush.

Table 8: Coating System for Shadowclad® Ultra

Within 3 Months of Erection	Ensure the panel is clean and dry prior to top coating. Top coat with two coats of premium 100% acrylic exterior house paint.
OR	
Within 3 to 6 Months of Erection	Wash the surface with a mild detergent solution to remove any chalky material prior to top coating. Top coat with two coats of premium 100% acrylic exterior house paint.

Note: For best results.

1. Allow 24 hours between coats.
2. Use a light coloured paint system, LRV above 50%.
3. Recommend panel be washed down prior to painting to remove any sea salt spray or dirt deposits.
4. Minimum total coating film build of 90 microns is recommended, including a minimum 30 microns per coat.

4.4 COATING REQUIREMENTS IF RUN OFF IS USED FOR DRINKING WATER

Chemical manufacturers recommend that any run-off from treated surfaces should not be used for drinking water. Unsealed (e.g. unpainted) plywood claddings should not be used in situations where run-off directly from such claddings

is collected in water tanks for drinking water. Ensure selected coatings act as a sealer and refer to coating manufacturer's Safety Data Sheets to confirm specified coatings are suitable for use in these applications.

See important notice and warning on page 3.

5.0 MAINTENANCE

All cladding materials, including Shadowclad®, require careful and regular product maintenance by the building owner throughout the cladding's normal service life to ensure long term durability and to maintain visual aesthetics.

Claddings:

At a minimum, Shadowclad should be maintained by:

- Regularly washing it down (at least annually) with a mild detergent or solution to remove surface dirt, moss, mould, and sea spray.
- Inspect on at least a yearly basis paying particular attention to sheet joints, corners and bases.
- Keep dirt, soil or leaf build-up at least 150mm away from the base of panels.
- Clean spouting and downpipes as required, so that stormwater is not overflowing onto the cladding.
- Repaint as soon as the first sign of coating deterioration is identified in accordance with the coating manufacturer's specifications (including edges and sheet bottoms).
- Panel recoating requirements may vary depending on climate, orientation to the sun, coating type and coating colour selected.
- Maintain the exterior envelope and connections including joints, penetrations, flashings, heat pumps, and sealants that may provide a means of moisture entry beyond exterior cladding to comply with the performance requirements of the NCC 2016, Building Code of Australia - Volume Two.

- Prune back vegetation which is close to or touching the building as well as ensuring the aforementioned ground clearance requirements are maintained especially where gardens are concerned.
- **Do not** use water blasters to wash down the cladding.

Flashings:

- Flashings should be periodically cleaned on a similar basis to the glass in windows.
- Clean Shadowclad® flashings with a diluted solution of mild liquid detergent avoiding excessively hot solutions. Use a soft bristle brush. **Do not** use abrasive tools or cleaners on the coating.
- After cleaning, rinse thoroughly with fresh water. **Do not** use strong solvent type cleaners. Where the use of solvents is required, such as cleaning paint spills, use nothing other than methylated spirit. Ensure contact time is as short as possible, and rinse the solvent cleaner thoroughly from the surface with copious amounts of quality drinking water.
- Where cavity base closures are installed, ensure drainage holes are kept clear.

6.0 FREQUENTLY ASKED QUESTIONS

Q: Where can Shadowclad® be used?

A: Shadowclad can be used as an exterior cladding and is H3 treated for this purpose. We recommend the use of Shadowply for internal lining applications (moisture free areas only). Shadowply is untreated plywood panels specifically designed for dry internal applications.

Q: Do I have to re-treat cut edges of Shadowclad panels?

A: H3 treated Shadowclad is envelope preservative treated. All cuts made in treated plywood must have a brush on preservative treatment applied fully to the cut area. CHH Plywood recommends the use of Protim® Solignum® XJ Clear Timber Protective (XJ Clear), Arch Lonza Tanalised® Enseal Clear or Tanalised® Ecosol.

Shadowclad® is not recommended to be left uncoated when used as an exterior cladding

Note – durability according to NCC 2016, Building Code of Australia - Volume Two refers to the products ability to continue to perform its primary function as protection for the building structure. Appearance including the performance of the coating product is not covered under NCC 2016, Building Code of Australia - Volume Two durability requirements.

Q: Can Shadowclad, when used as an exterior cladding, be coated in dark colours?

A: Dark colours (coatings with an LRV of below 50%) will achieve a 15 year durability (as required by ABCB guidelines document, Durability in Building) however customers must expect an increased level of recoat and general product maintenance compared to where light coating colours are used.

The greatest level of cladding protection and least amount of coating maintenance can be achieved by using a good quality paint system (applied as per the coating manufacturers specifications) with an LRV of 50% or greater and a minimum total coating system film build of 90 microns, including a minimum 30 micron thickness per coat.

For further information on coatings always refer to the applicable coating manufacturer's specification material.

Q: In the Shadowclad exterior flashing range can I colour the flashings to match the colour of my building?

A: Shadowclad aluminium exterior flashings are available in either anodised or mill finishes. Anodised flashings are silver in colour and can be installed immediately. Mill finished flashings can be powder coated to specific colours by the customer.

Q: Does face checking affect the performance of Shadowclad?

A: Face checks are lengthwise separations of wood fibres in the face veneer of the plywood. They result from the normal swelling and shrinking of wood as it gains and loses moisture which is exacerbated by darker coloured coatings. These checks are superficial, being confined to the face veneer. They do not alter the structural integrity of the plywood in any way.

Q: Where can I download the Shadowclad Installation APP?

A: The Shadowclad Installation APP can be downloaded from www.shadowclad.com.au or the respective device APP procurement marketplace.

Q: Where can I get a Shadowclad Stick from?

A: Shadowclad Sticks may be ordered by contacting CHH Plywood direct by phoning 1800 338 463, ordering via the Shadowclad APP or making a request via the Shadowclad website: www.shadowclad.com.au.

7.0 REFERENCES & SOURCES OF INFORMATION

- National Construction Code series 2016 - Volume two.
- AS/NZS 2269:2012 "Plywood Structural".
- AS/NZS 1604.3:2010 "Specification for Preservative Treatment, Part 3: Plywood".
- AS/NZS 4284:2008 "Testing of Building Facades".
- AS 1720.1:2010 "Timber Structure Standard : Design".
- AS 1684.2:2010 Non Cyclonic Areas.
- AS 3715:2002 "Metal Finishing – Thermoset powder coating for architectural application of aluminium and aluminium alloys".
- Safety Data Sheet.
 - SDS Shadowclad® Azole Treated Plywood.
 - SDS Stainless Steel flashings.
 - SDS Aluminium flashings.
 - SDS Shadowclad Ultra LOSP Pre-primed Treated Plywood.
- APA (www.buildabetterhome.org).
- EWPA (www.ewp.asn.au).

Standards can be purchased online at <https://infostore.saiglobal.com/store/>.

NCC 2016, Building Code of Australia - Volume Two can be downloaded free of charge at www.services.abcb.gov.au/NCCOnline.

Line drawings with this literature can be downloaded from www.shadowclad.com.au.

See important notice and warning on page 3.

8.0 GLOSSARY OF TERMS

Sealant: A flexible neutral cure sealant for filling of spaces/ gaps and weatherproofing that is for exterior use. It is the designers' and builders' responsibility to ensure that sealants are fit for purpose and compatible with Shadowclad® products and any other building materials or components used within the Shadowclad installation.

Air Seal: A continuous seal fitted between a window or door reveal and the surrounding wrap and associated tape enclosing wall framing to prevent the flow of air into the building interior. Air seal must be weathertight so that moisture is not able to access the structure.

Foam Bond Breaker: A tape that is polyethylene backed that prevents "3-Point" adhesion mating surfaces that ensures that the sealant only attaches to two surfaces (and not the third which would create an anchor point preventing the sealant moving as its designed to).

PEF Rod: A foam formed polyethylene "noodle" that is designed to be inserted between two surfaces. Should have a 25-33% larger diameter than the gap/space you are inserting it into.

Protim® Solignum® XJ Clear or Similar: A supplementary preservation treatment that preserves the treatment envelope of timbers with a Class H3 and above.

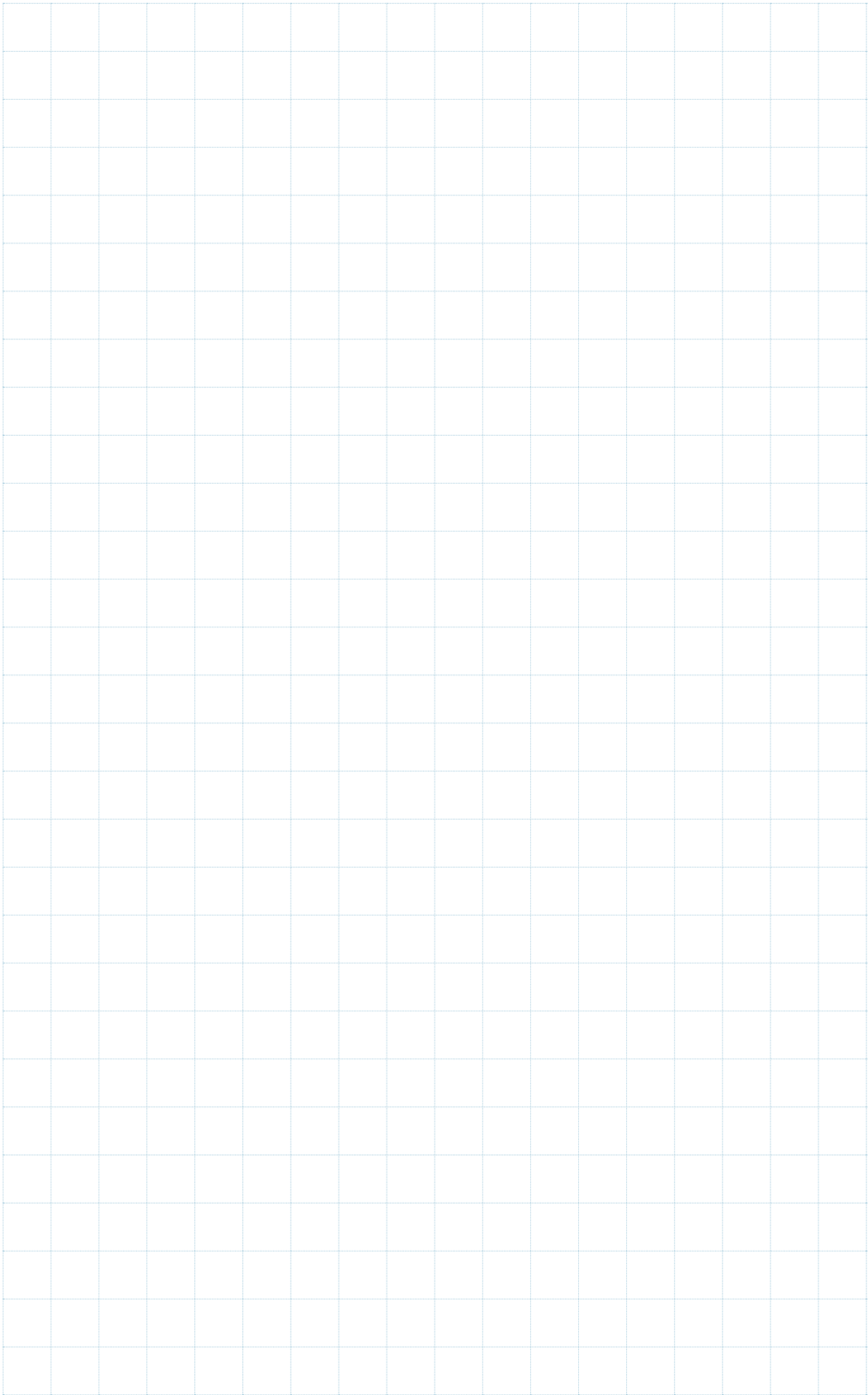
9.0 LIMITATIONS

The information contained in this document is current as at September 2018 and is based on data available to CHH Plywood at the time of going to print.

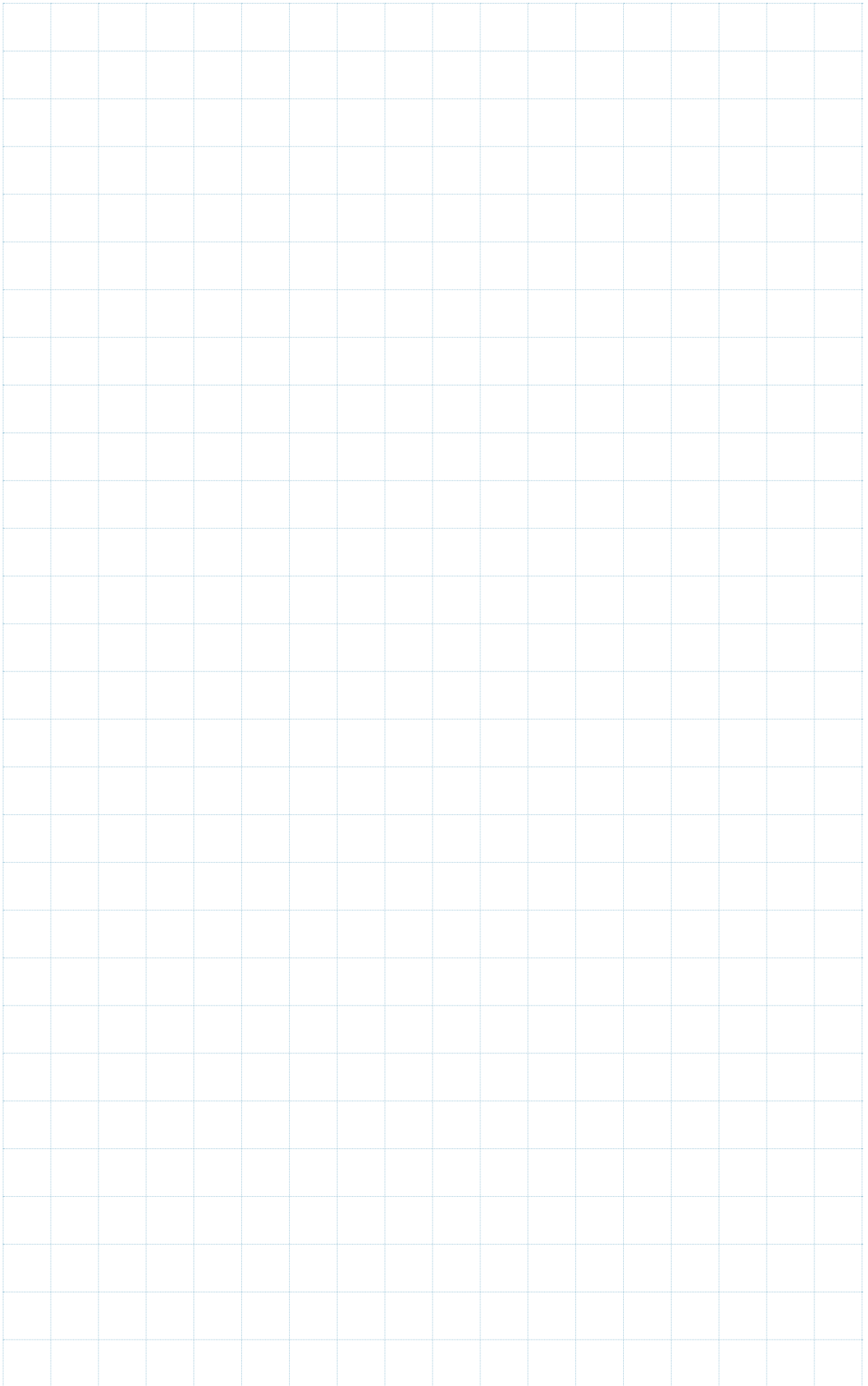
All photographic images are intended to provide a general impression only and should not be relied upon as an accurate example of Shadowclad products installed in accordance with this document or BCA compliance documents.

This publication replaces all previous CHH Plywood design information and literature relating to Shadowclad structural plywood products and flashings. CHH Plywood reserves the right to change the information contained in this document without prior notice. It is your responsibility to ensure that you have the most up to date information available, including at the time of applying for a building consent. You can call 1800 338 463 or visit www.shadowclad.com.au to obtain current information.

CHH Plywood has used all reasonable endeavours to ensure the accuracy and reliability of the information contained in this document. However, to the maximum extent permitted by law, CHH Plywood assumes no responsibility or liability for any inaccuracies, omissions or errors in this information nor for any actions taken in reliance on this information.



See important notice and warning on page 3.



SHADOWCLAD® KEY INSTALLATION & DESIGN POINTS

EXTERIOR CLADDING APPLICATIONS

The following tasks are provided to installers to point out key installation and design factors when used as an exterior cladding. These do not detract from the requirements to read and understand this literature as a whole.

Task	Tick when checked
Prior to Specification and Installation	
Read the Shadowclad® Specification and Installation Guide in its entirety	<input type="checkbox"/>
Framing Plan	
Framing setout drawings to suit Shadowclad fixing and installation guidelines	<input type="checkbox"/>
Sheet Cuts	
Coat all sheet cuts with a preservative timber treatment such as XJ Clear, or similar	<input type="checkbox"/>
After applying the timber preservative treatment, apply the surface coating (e.g. paint or stain) to cut edges	<input type="checkbox"/>
Place uncut edge to bottom	<input type="checkbox"/>
Fastener Material Type	
Galvanised fasteners or better used (Stainless steel annular groove nails required in sea spray zones)	<input type="checkbox"/>
Sheet Fastener Pattern	
Around sheet edge – maximum 150mm centre spacing	<input type="checkbox"/>
Within sheet body – maximum 300mm centre spacing	<input type="checkbox"/>
Horizontal Sheet Joints	
Minimum 8mm separation gap between sheets above all Horizontal 'Z' flashings	<input type="checkbox"/>
Prime the bottom of the sheet edge and 150mm up the back (rear) of the sheets	<input type="checkbox"/>
50mm strip of neutral cure silicon sealant or stop ends at all 'Z' flashing terminations excluding terminations at Shadowclad metal corner flashings	<input type="checkbox"/>
Back flashings or 150mm overlap to all flashing butt joints	<input type="checkbox"/>
Expansion Gaps Between Sheets (Vertical Sheet Joints)	
Texture Profile Sheets - 2mm gap between vertical edges of sheets	<input type="checkbox"/>
Groove Profile Sheets - 9mm gap (i.e. full groove space) between vertical edges of sheets	<input type="checkbox"/>
Note: Expansion gaps required between vertical edges of sheets to accommodate natural expansion and contraction of sheets	
Ground Clearances	
Paved/Sealed Ground - minimum 100mm distance from the ground to sheet bottom	<input type="checkbox"/>
Broken Ground - minimum 175mm distance from the ground to sheet bottom	<input type="checkbox"/>
Prime the bottom of the sheet 150mm up the back (rear) of the sheet	<input type="checkbox"/>

Refer to the current Shadowclad® Specification and Installation Guide for full installation specifications and suggested details.

See important notice and warning on page 3.



NCC 2019 AMENDMENT

TECHNICAL NOTE

Shadowclad® Specification and Installation Guides dated September 2018 and the National Construction Code Series 2019, Volume 2, Amendment 1.

This technical note addresses the changes to the National Construction Code Series 2019 and the September 2018 Shadowclad Literature. Carter Holt Harvey Plywood Ltd (CHH Ply) have reviewed the Shadowclad Specification and Installation Guides in relation to current references to the NCC 2016, Volume 2 and the compliance pathways relative to the National Construction Code Series 2019, Volume 2, Amendment 1 (NCC 2019, Building Code of Australia - Volume Two Amendment 1).

CHH Ply can confirm that where the September 2018 dated Specification and Installation Guides for Shadowclad for cavity wall construction and Shadowclad for direct fix cladding, the references to NCC 2015, Building Code of Australia Volume 2, can be directly replaced with NCC 2019, Building Code of Australia - Volume Two Amendment 1.

Where the Shadowclad product range is installed in accordance with the September 2018 Direct fix or Cavity wall construction Specification and Installation Guides will meet the performance requirements of the NCC 2019 Building Code of Australia – Volume 2 as detailed in section 2.3, code compliance, of the applicable Shadowclad literature.

For further information please contact CHH Ply on 1800 338 463 or visit shadowclad.com.au.

REFERENCES

NCC 2019, Building Code of Australia - Volume Two Amendment 1
Shadowclad for Cavity wall construction – September 2018
Shadowclad for Direct fix cladding – September 2018

shadowclad®

 **CarterHoltHarvey**
Plywood

Phone: 1800 338 463
www.shadowclad.com.au

September 2018

