JamesHardie™

The information in this supplement and James Hardie's technical literature is ony intended for use in relation to the relevant James Hardie products

Hardie™ Fibre Cement Claddings

Installation to Steel Frame Technical Supplement – APRIL 2025

GENERAL

This information must be read in conjunction with the technical specifications produced for Hardie™ fibre cement cladding product.

This information is developed to facilitate the installation of Hardie™ fibre cement claddings to steel frame. For general information regarding their installation refer to James Hardie's current technical specifications for products such as Linea™ Weatherboard, Oblique™ Weatherboard, Axon™ Panel, Stria™ Cladding etc.

This information is for use by architects, builders, cladding installers and other contractors who may be involved with the installation of Hardie™ fibre cement claddings to steel frame. It contains information aligned with good building practice.

James Hardie's product technical specifications along with product warranties and maintenance requirements are available at www.jameshardie.co.nz or Ask James Hardie™ on 0800 808 868.

STEEL FRAMING

Steel frame is used as an alternate to timber frame construction for residential or commercial buildings. Refer to NASH Handbook, 'The Best Practice for Design and Construction of Residential and Low-Rise Steel Framing' for general information of steel frame construction.

A steel frame structure shall be in accordance with a steel framing guidance document published by National Association of Steel Housing (NASH). Refer to www.nashnz.org.nz for further information regarding steel framing. The stud spacing must not exceed 600mm centres in any circumstance for fixing Hardie™ fibre cement claddings.

The steel framing shall meet the Durability requirements of clause B2 of the New Zealand Building Code (NZBC). Refer to framing supplier for durability statement.

A typical section size 89mm × 39mm × 0.75mm BMT is recommended to be used to facilitate the installation of Hardie™ fibre cement claddings.

The steel sections are generally available in the market supplied under different brand names by various manufacturers/suppliers. For further guidance on the steel frame suppliers/construction refer to www nashnz.org.nz.

For Fire Rated Wall Systems, refer to Clause 6.4 in the Fire and Acoustic Design Manual by James Hardie for further guidance.

Refer to product specific technical specifications for extra framing requirements that may be needed for internal corners, control joints etc.

THERMAL BREAK

Thermal bridging is a term used for heat loss through a conductive path that generally connects the inner surface to the exterior. Steel frame has higher conductivity and acts as a thermal bridge between the interior and exterior face of a building.

The thermal bridging can result in the following:

- Down grade the overall thermal resistance of external walls significantly.
- Moisture accumulation in the wall cavity due to condensation.
- Allows mould to grow on inner surface of wall and within the wall cavity.

In order to comply with Clause E3 and H1 of the NZBC, an insulating material (Thermal Break) is required to be fixed to the exterior steel surface to avoid/minimise thermal bridging. This can be achieved by using materials like 10mm thick (XPS) extruded polystyrene or other materials which achieve the R-Value (thermal resistance) ≥ 0.25 m^2 °C/W.

For further guidance on how to achieve thermal break, refer to NASH Handbook at www.nashnz.org.nz or BRANZ Building Basics Steel Framing.

Thermal break is fixed over the entire external surface of steel framing, i.e. over studs, nogs, bottom and top plates. Other proprietary materials e.g. treated timber or uPVC in different thicknesses which provide similar thermal resistance can also be used over steel framing.

XPS is most practical/economical and common material that is used as thermal break. A 10mm thick XPS grade battens are generally adhered using an adhesive or a two sided adhesive tape applied over the face of the steel frame.

Extruded high density polystyrene thermal battens are available in the market. One of the suppliers of these thermal battens is Insulation Wholesalers Ltd. Phone: (06) 329 8065 or visit www.insulationwholesalers.co.nz.

When building a fire rated wall the thermal break must be replaced with a Thermal Fire Batten. Refer to Clause 7.18 of the Fire and Acoustic Design Manual by James Hardie for further information.

FLEXIBLE UNDERLAY

A flexible underlay complying with Table 23 of clause E2/AS1 must be used. An absorbent type flexible underlay shall be used as it is suitable for both absorbent and non-absorbent types of claddings. It is recommended that the flexible underlay is fixed using adhesive tapes. Flexible underlay is applied over the thermal break. Refer Figure 1. Refer to flexible underlay manufacturers for further information regarding its installation over steel frame.

RIGID AIR BARRIER

A rigid air barrier can also be used in lieu of a flexible underlay. When in EH wind zone or the wind pressures are higher than 1.5kPa, RAB™ Board 6mm thick must be used. This rigid air barrier is fixed over the thermal break. Use the Hardie™ Steel Frame Screw or a proprietary 30 × 2.5mm screw shank nail to fix rigid air barriers to steel studs.

FLASHING

All wall openings, penetrations, intersections, connections, window sills, heads and jambs etc. must be flashed suitably to ensure that the required weathertightness is achieved. Refer to E2/AS1 for further information.

Window openings must be flashed in similar way as the practice is for a timber framed building. A flexible underlay or any other building material must be lapped in such a way that the moisture tracks down to the exterior of the building.

FASTENER DURABILITY

The fasteners used for fixing Hardie™ fibre cement claddings to steel frame must meet minimum 15 year durability requirements of the NZBC.

Refer to Table 1 for the type of coating required on the fasteners to be used to fix cladding into steel framing.

Table 1:

Zone	Coating Required
Zone C and B	Class-3
Zone D and Sea Spray Zone or Geothermal Areas	Class-4

FIXINGS

Refer to Table 2 regarding the fasteners required for Hardie™ fibre cement claddings. The length of the fasteners required to fix a cladding will vary depending upon different thickness of proprietary materials used to achieve the thermal break and thickness of cladding. Generally the length of the screw is calculated by allowing a 15mm minimum penetration into steel framing ensuring a minimum of 5 threads through the steel.

The sheet material products should be fixed starting from inside and work toward edges. This will ensure sheets are hard against the frame and avoid drumminess. Do not overdrive the fasteners. The cladding fastener spacing must be similar to nail or screw spacing as specified in the technical specification developed by James Hardie for each product.

For Linea™ Weatherboard the screws can be finished flush with surface when fixed under the lap (concealed fixing method). For face fixing the screws must be finished 2mm below the surface and then filled with an exterior grade two part filler e.g. CRC® ADOS® Builders Fill

Table 2: Fasteners

Linea™ Weatherboard	Timber Cavity Batten Construction	Concealed fixing	8-10g x 65mm self embedding steel wingtek screw class 3 or 4
		Face fixing	8-10g x 75mm self embedding steel wingtek screw class 3 or 4
Stria™ Cladding, Oblique™ Weatherboard	Timber Cavity Batten Construction		8-10g x 65mm self embedding steel wingtek screw class 3 or 4
Axon™ Panel	Timber Cavity Batten Construction		8-10g x 65mm self embedding steel wingtek screw class 3 or 4
Hardie™ CLD™ Structural Cavity Batten	10g x 50mm steel self embedding wingtek screw class 3 or 4. Fixing centres as per Stria™ Cladding or Axon™ Panel Technical Specification.		

Notes:

- The length of the fasteners specified above is based on using a 10mm thick thermal break on the face of the steel frame. If the thickness of the thermal break/thermal fire batten is increased, the length of the fastener must be increased accordingly.
- The screw must be coated to class 3 or 4 to comply with the durability requirements. Refer to Table 1 for guidance.
- Fixing centres must be similar to what is specified in the product technical specification.
- It is recommended that the screw selected for cladding installation is evaluated to achieve the required penetration into steel frame.
- When a rigid air barrier is used the cladding fixing must be increased minimum thickness of the rigid air barrier.

INSTALLATION

The cladding installation and flashing requirements for a steel frame are similar to the installation to timber frame, except for the type of fixings to be used and the inclusion of a thermal break. The construction method requiring the cladding to be fixed direct to framing or using a cavity batten must be determined on the basis of risk matrix analysis as per E2/AS1. The details provided in this technical supplement are for Linea™ Weatherboard, Oblique™ Weatherboard or Stria™ Cladding with timber cavity batten construction.

The simplest way to install Axon™ Panel and horizontal Stria™ Cladding over steel frame is to use Hardie™ CLD™ Structural Cavity Batten and then fix the cladding into the Hardie™ CLD™ Structural Cavity Batten as per the published technical specification by James Hardie.

Opening flashings, junction or penetration flashings must be provided as per the details provided in the relevant technical specifications.

MAINTENANCE

It is the responsibility of the designer/specifier to determine normal maintenance requirements for a cladding and to ensure that its effectiveness is being maintained. Cleaning of the paint, finished surface, sealants, joints, junctions, penetrations, etc. must be carried out at regular intervals. Also refer to maintenance requirements of accessory manufacturers/suppliers.

As a guide, it is recommended that the following basic normal maintenance tasks shall include, but not be limited to:

- Washing down your exterior every 6-12 months using low pressure water and a brush, and every 3-4 months in extreme coastal conditions (such as high winds and sea spray). Do not use a water blaster to wash down the cladding and always refer to your paint manufacturer for washing down requirements.
- Clean out your gutters, downpipes and overflow pipes as required
- Cut back vegetation and landscaping which is too close to or touching the Hardie™ fibre cement cladding
- Re-applying exterior protective finishes. Always refer to the paint manufacturer for recoating requirements related to ongoing paint performance
- Maintaining the exterior envelope and connections including joints, penetrations, flashings and sealants
- The clearances between the bottom edge of the Hardie™ fibre cement cladding and the ground must always be maintained

Table 3: Accessories/tools supplied by James Hardie for Oblique™ Weatherboard

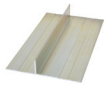
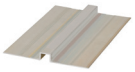
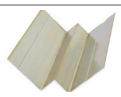
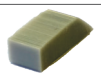
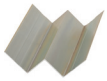
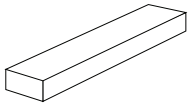
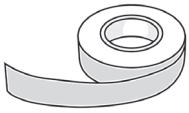
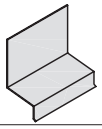
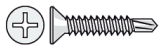
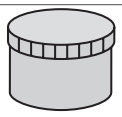
Accessories	Description	Size	Code
	**Hardie™ 14mm Aluminium Trimline Joint Flashing** Aluminium extrusion used behind cladding at horizontal and vertical joints.	3000mm long	**305827**
	**Trimline Horizontal Jointer** A jointer to cover the butt joint of Hardie™ 14mm Trimline Joint Flashing	100mm long	**305871**
	**Trimline External Corner Jointer** Joins Hardie™ 14mm Trimline Joint Flashing at an external corner	55 x 55mm	**305870**
	**Trimline Internal Corner Jointer** Joins Hardie™ 14mm Trimline Joint Flashing at an internal corner	60 x 60mm	**305872**
	**Hardie™ 14mm Vertical Flashing Stop Aluminium** Aluminium extrusion used behind cladding at vertical joints.	3000mm long	**305507**
	**Hardie™ Aluminium Internal Corner 'W' Mould** Anodised aluminium extrusion used to create internal corners.	3000mm long 4000mm long	**306262** **306180**
	**Hardie™ 14mm Aluminium External Box Corner** Anodised aluminium extrusion used to create external corners.	3000mm long 4000mm long	**306261** **305823**
	**Hardie™ 14mm Aluminium Jamb Flashing** Aluminium moulding used beside window opening to end butt the Oblique™ Weatherboard.	3000mm long	**305430**
	**Hardie™ 28mm Aluminium Cavity Closer** Aluminium moulding used as vermin proofing.	3000mm long	**305431**
	**uPVC Vent Strip** PVC moulding used as vermin proofing.	3000mm long	**302490**
	**Oblique™ 14mm Plug** To fill recess in Oblique™ Weatherboard 14mm		**306154**
	**Hardie™ Horizontal Cavity Batten 20mm** H3.1 LOSP Timber treated batten the cladding is fixed over, to be used when installing Oblique™ Weatherboard vertically.	2700mm long	**305862**

Table 4: Accessories supplied by James Hardie for Linea™ Weatherboard				
Product	**Accessory and Material Number**	**Size**	**Code**	**Material/Appearance**
	External Slimline Box Corner Mould	2700 long 4000 long	**301195** **305809**	Etch Primed Aluminium
	Internal 'W' Mould 900	2700 long 4000 long	**301184** **305807**	Etch Primed Aluminium
	Vent Strip	3000 long	**302490**	uPVC white
	Hardie™ Corner Underflashing 50 x 50mm	3000 long	**303745**	uPVC white
	External corner soaker 90º for Linea™ Weatherboard 150mm	170 long	**302820**	Aluminium
	External corner soaker 90º for Linea™ Weatherboard 180mm	200 long	**301186**	Aluminium

For other claddings/linings refer to relevant James Hardie product technical specification

Table 5: Accessories NOT supplied by James Hardie	
Product	**Accessory and Material Number**
	**Thermal Batten** supplied by Insulation Wholesalers Ltd (06) 329 8065
	**Timber cavity batten** H3.1 minimum treated Timber cavity batten the cladding is fixed over when specified in the technical specification.
	**Flexible Underlay** Must comply with Table 23 of E2/AS1 of the NZBC.
	**Flexible Tape** A flexible self-adhesive tape used in preparation of a window. Refer to the Window installation section in this manual for more information. e.g. Super-Stick Building Tape® by Marshall Innovations or 3M® All Weather Flashing Tape 8067 by 3M® Marshall Innovations: 0800 776 9727 3M®: 0800 474 787
	**Joint Sealing Tape** Used to seal the vertical joints of RAB™ Board e.g. Marshall Innovation or 3M® or Thermakraft® as per the HomeRAB™ Pre-Cladding and RAB™ Board installation manual
	**Head Flashing** Required over window heads to be supplied by window installer. Material must comply with Table 20 and 21 of E2/AS1.
	**200mm wide Polypropylene DPC** Product used over flexible underlay at internal corners. ie. Super Course 500
	**Sika® Sikaflex® 11FC** Sika®: 0800 SIKA NZ (0800 745 269)
	**Joint Sealant** Paintable flexible sealants are recommended for filling the joints e.g. Sika® Sikaflex® MS, Sika® AT Facade, Bostik® Seal N Flex™-1 or similar
	**Countersunk Fasteners** 8 – 10g × 40mm, 60mm or 75mm countersunk head self embedding wingtek screws – Class 3 or 4 coating. Fasteners must be fully compatible with all other material that it is in contact with to ensure the durability and integrity of assembly.
	**Exterior grade filler** CRC® ADOS® Builders Fill or similar two part filler to fill over nail holes

DETAILS

Various details outlined in the following table are available on pages 6 to 33.

Figure 1: Thermal break layout

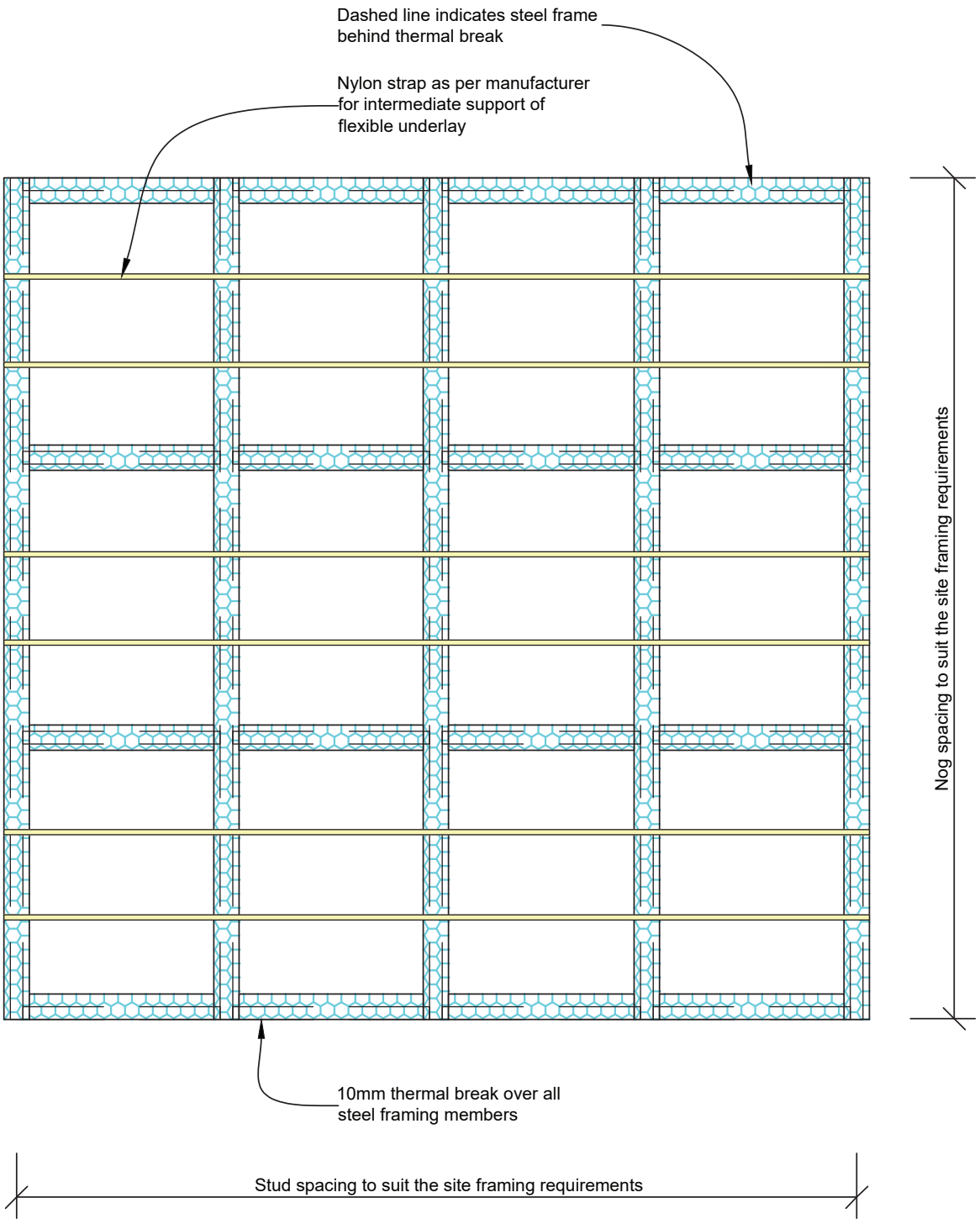


Figure 2: Oblique™ Weatherboard horizontal footing and soffit detail

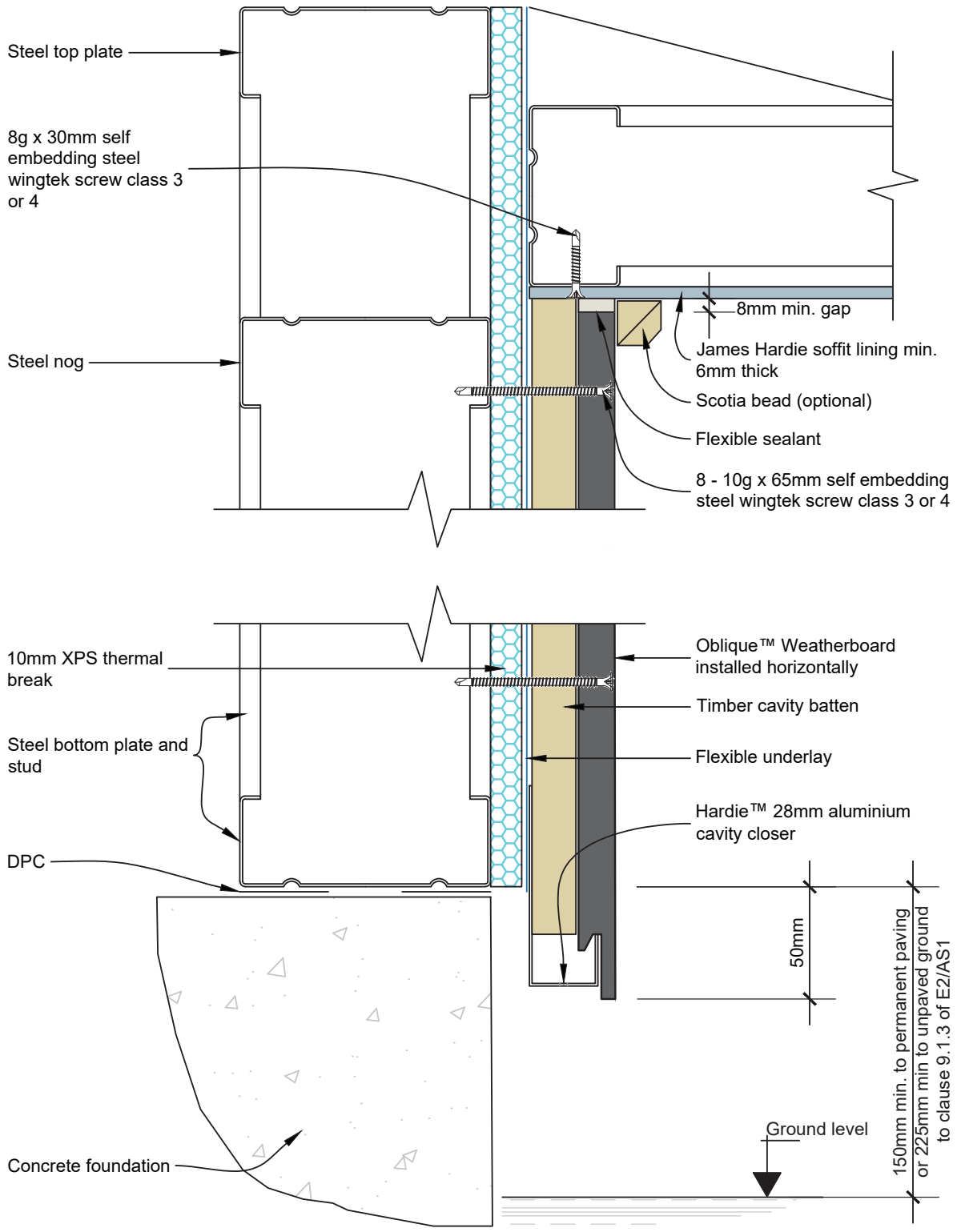
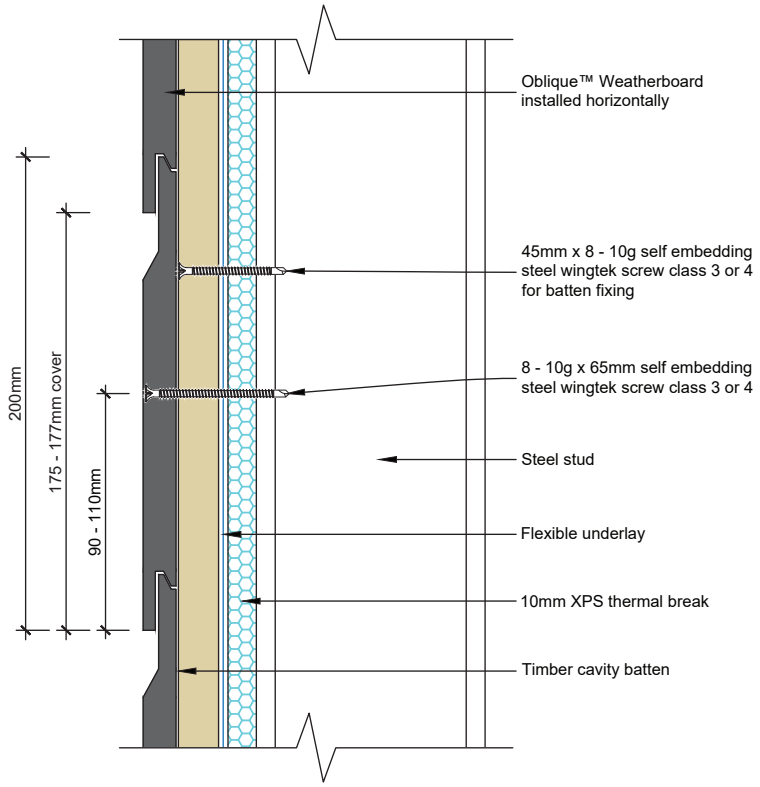


Figure 3: Oblique™ Weatherboard horizontal fixing detail



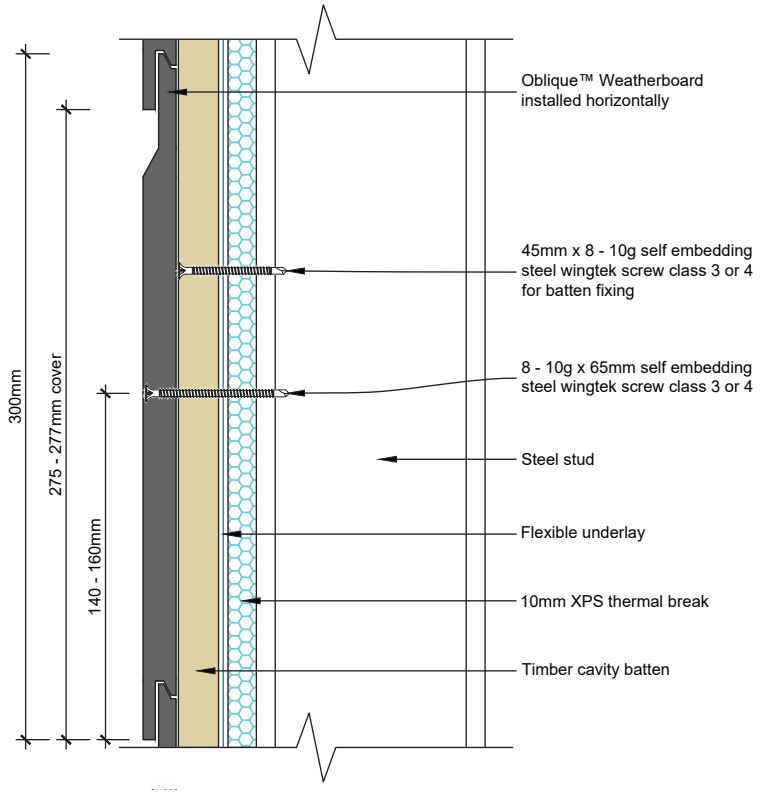


Figure 4: Oblique™ Weatherboard horizontal vertical joint detail

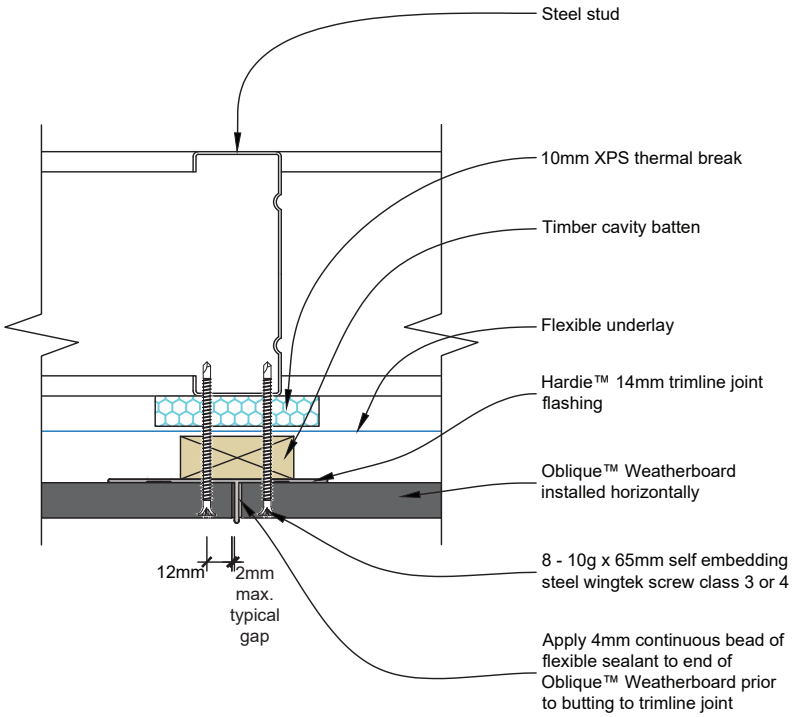


Figure 5: Oblique™ Weatherboard horizontal internal corner detail

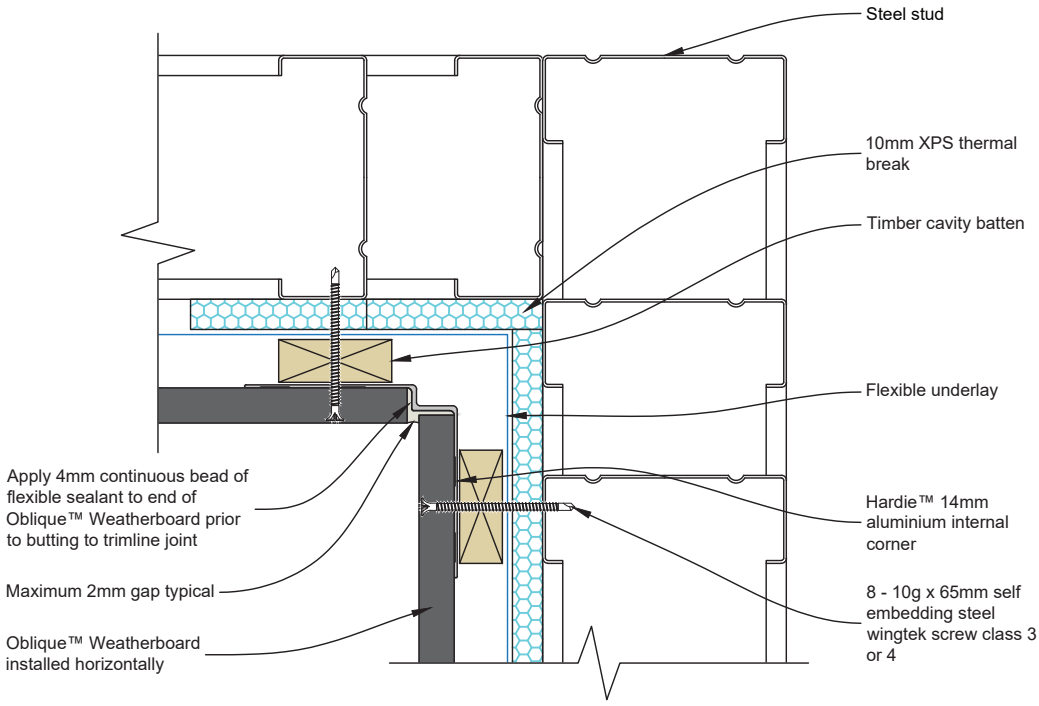


Figure 6: Oblique™ Weatherboard horizontal external corner detail

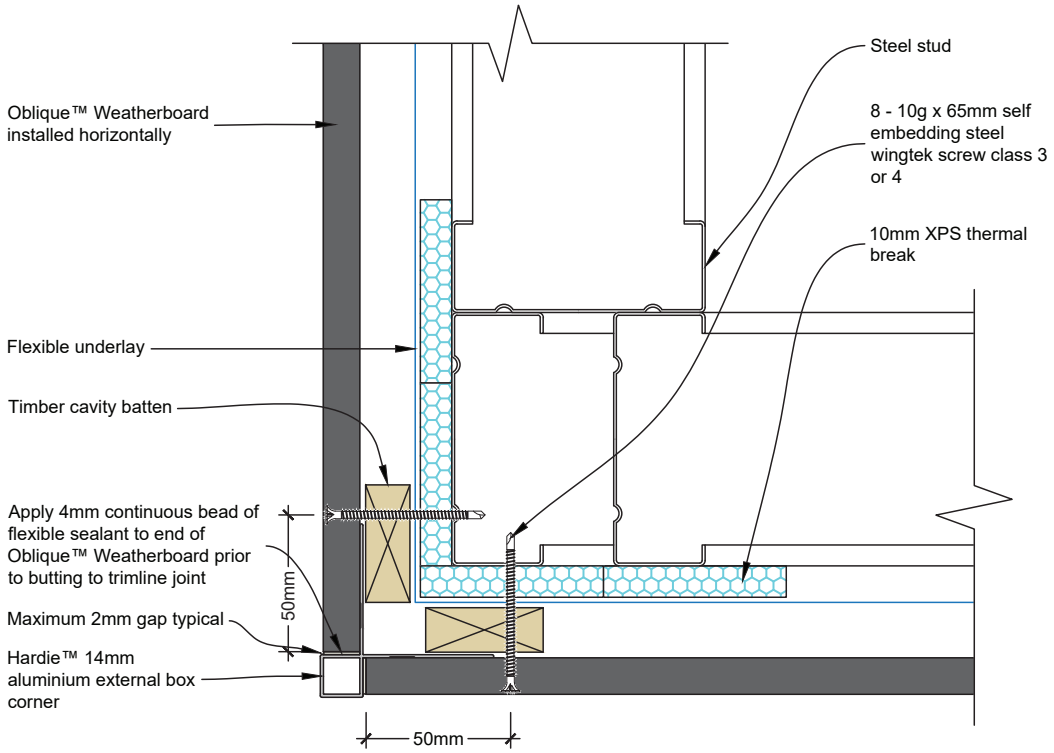
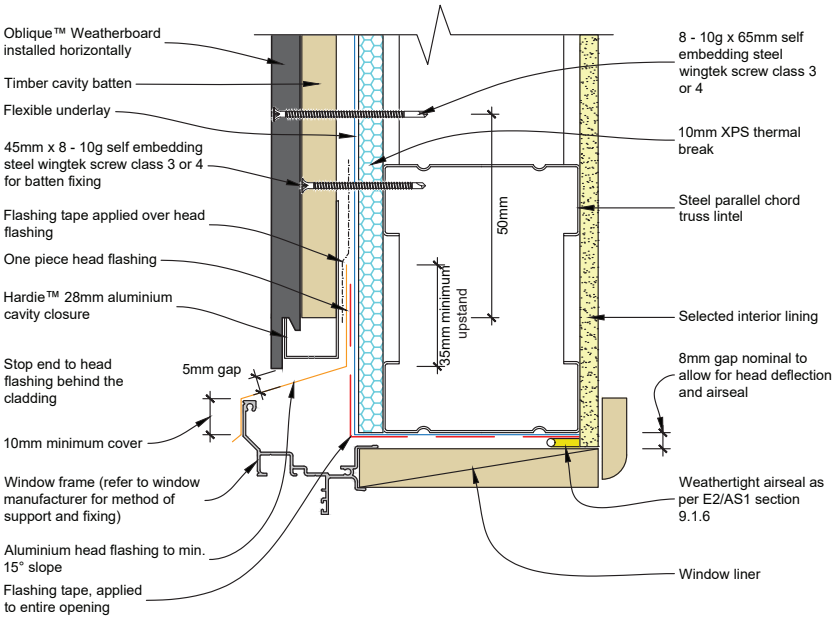


Figure 7: Oblique™ Weatherboard horizontal window head detail



General notes for material selection

1. Flashing materials must be selected based on environmental exposure, refer to the NZS 3604 and Table 20 of the NZBC E2/AS1
2. Flashing tape must have proven compatibility with materials which it comes into contact

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

Figure 8: Oblique™ Weatherboard horizontal window jamb detail

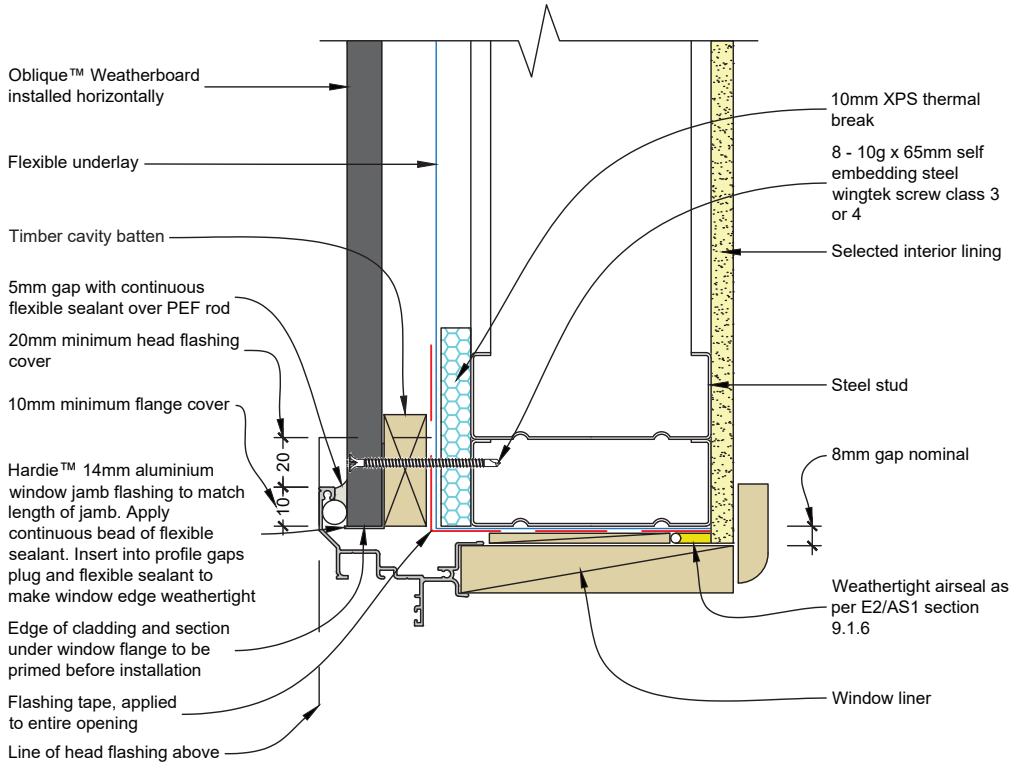


Figure 9: Oblique™ Weatherboard horizontal window jamb with scriber detail

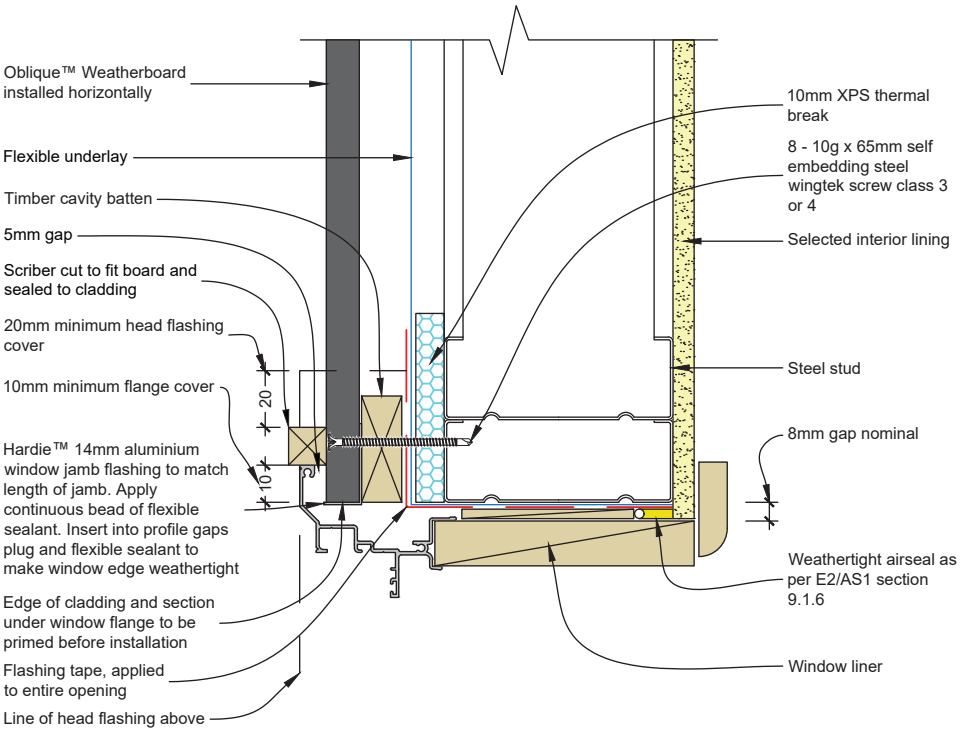
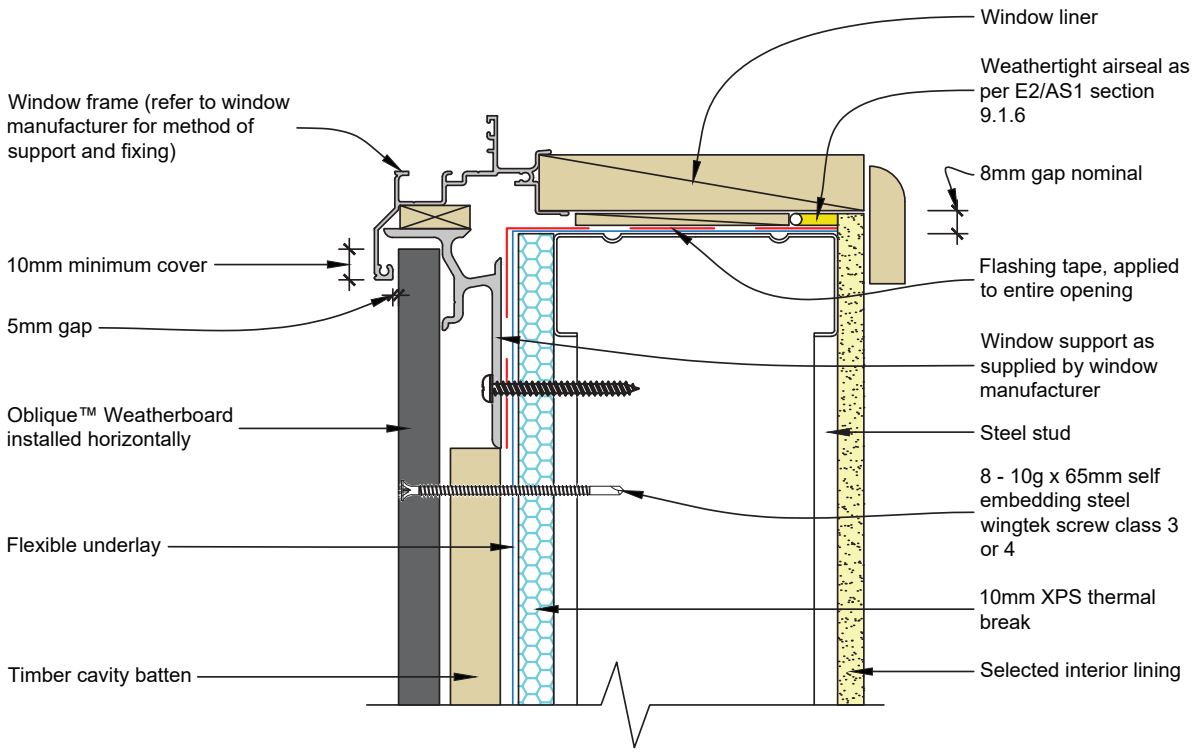


Figure 10: Oblique™ Weatherboard horizontal window sill detail



General notes for material selection

1. Flashing materials must be selected based on environmental exposure, refer to the NZS 3604 and Table 20 of the NZBC E2/AS1
2. Flashing tape must have proven compatibility with materials which it comes into contact

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

Figure 11: Oblique™ Weatherboard vertical footing and soffit detail

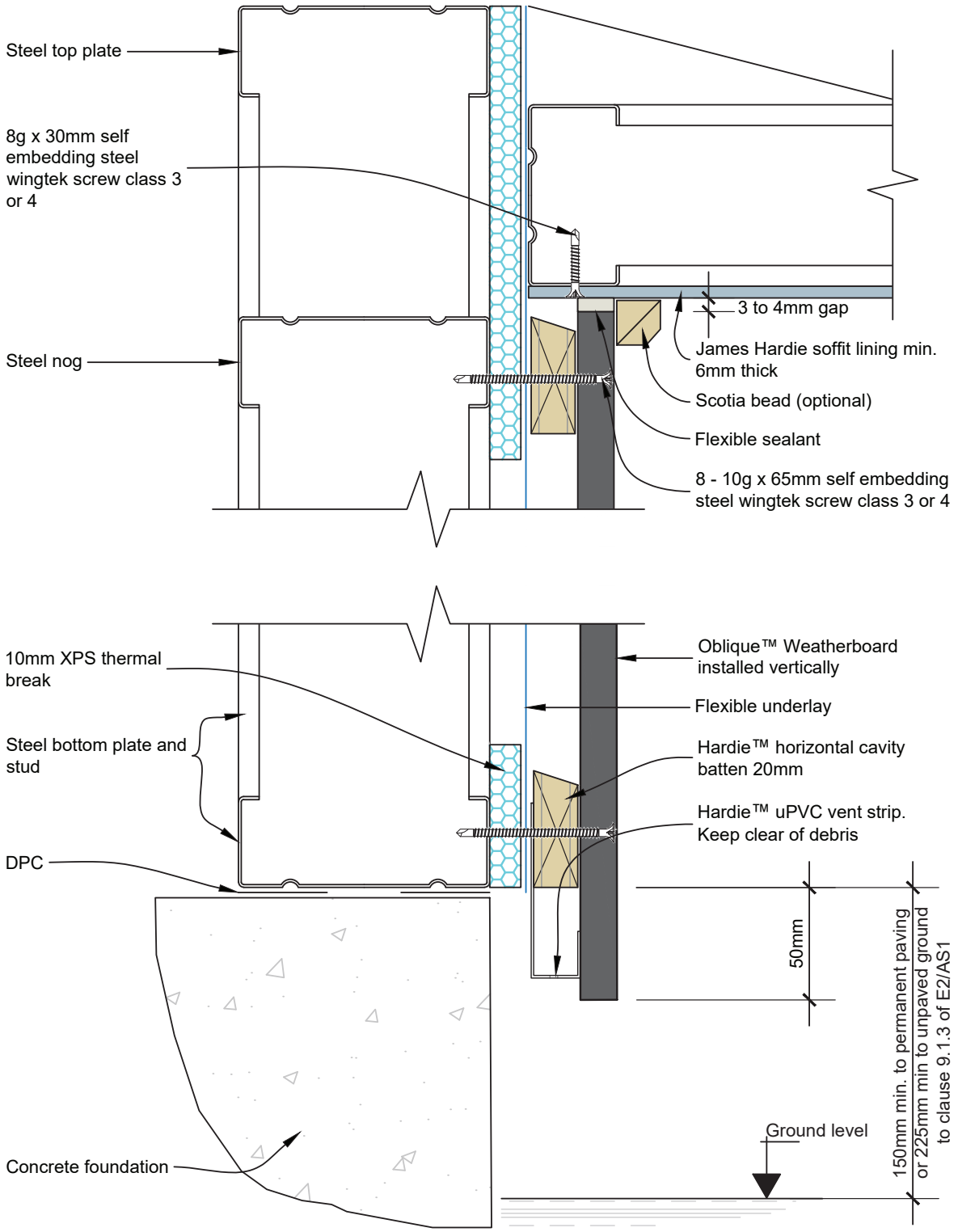
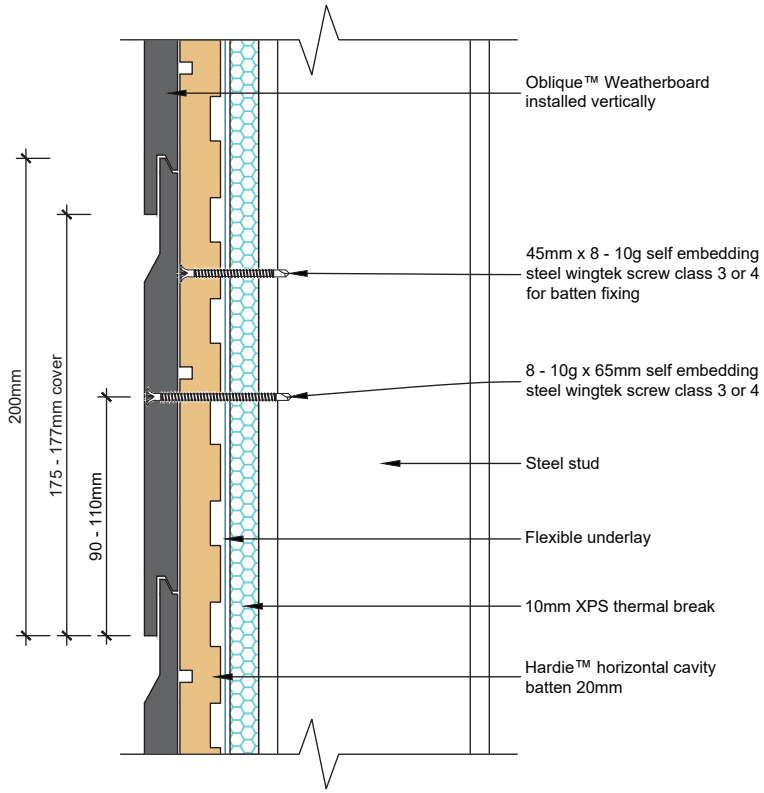


Figure 12: Oblique™ Weatherboard vertical fixing detail



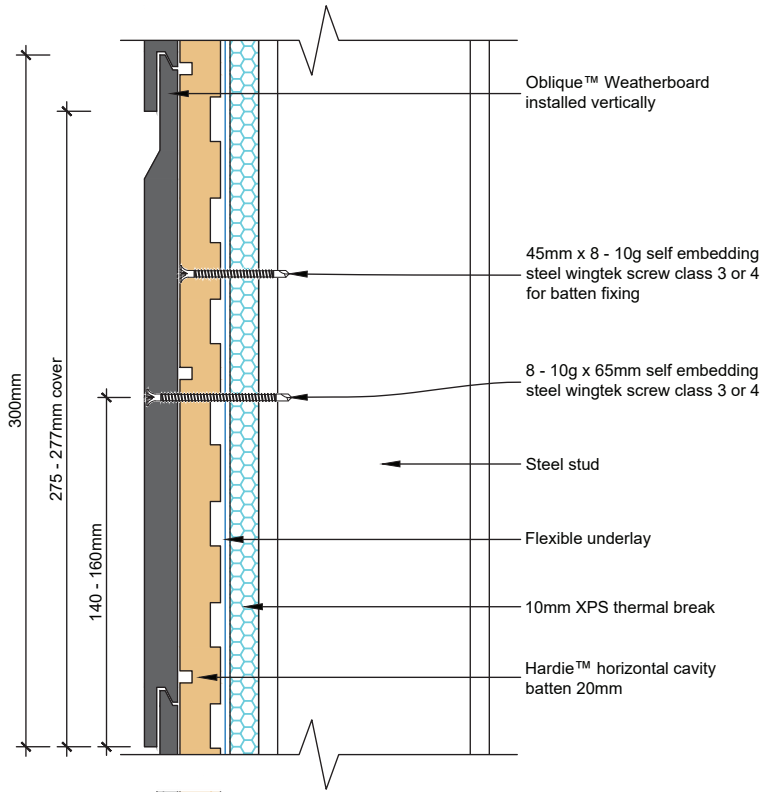


Figure 13: Oblique™ Weatherboard vertical internal corner detail

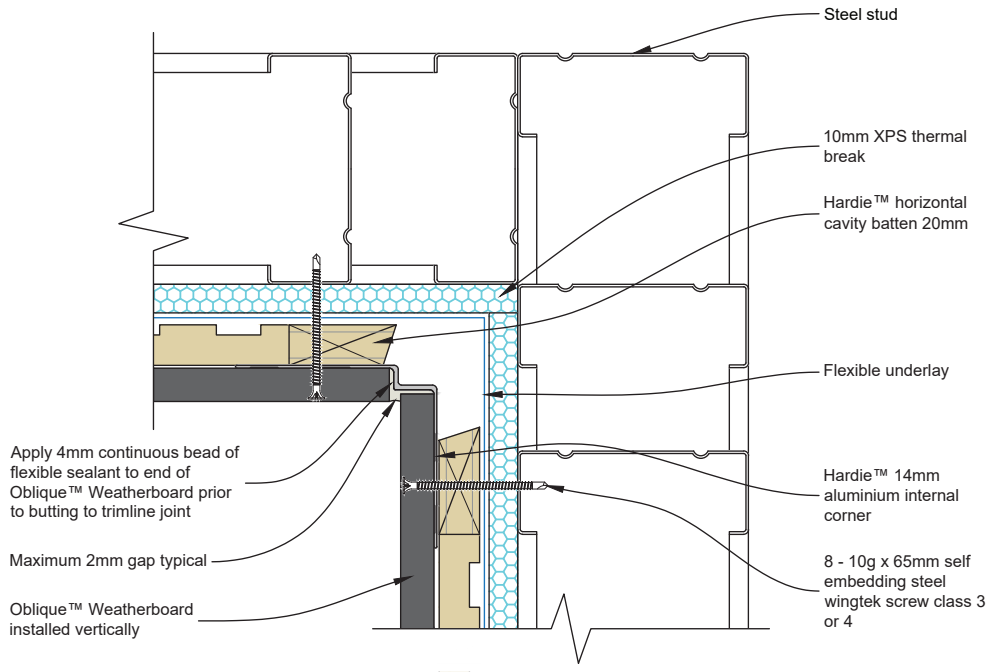


Figure 14: Oblique™ Weatherboard vertical external corner detail

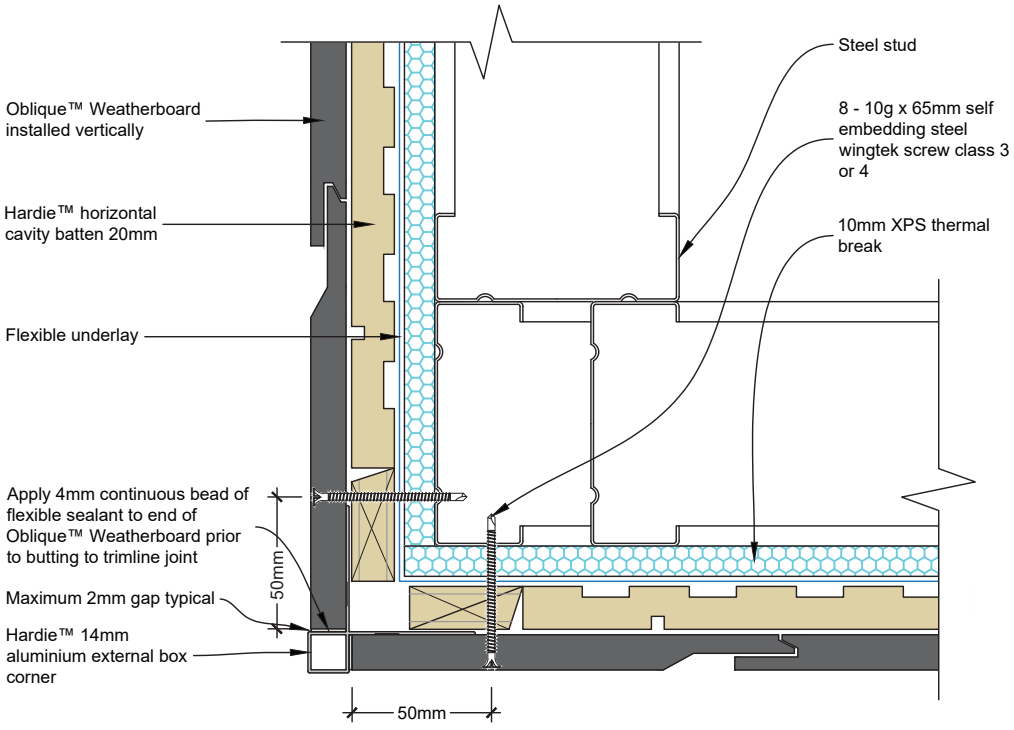
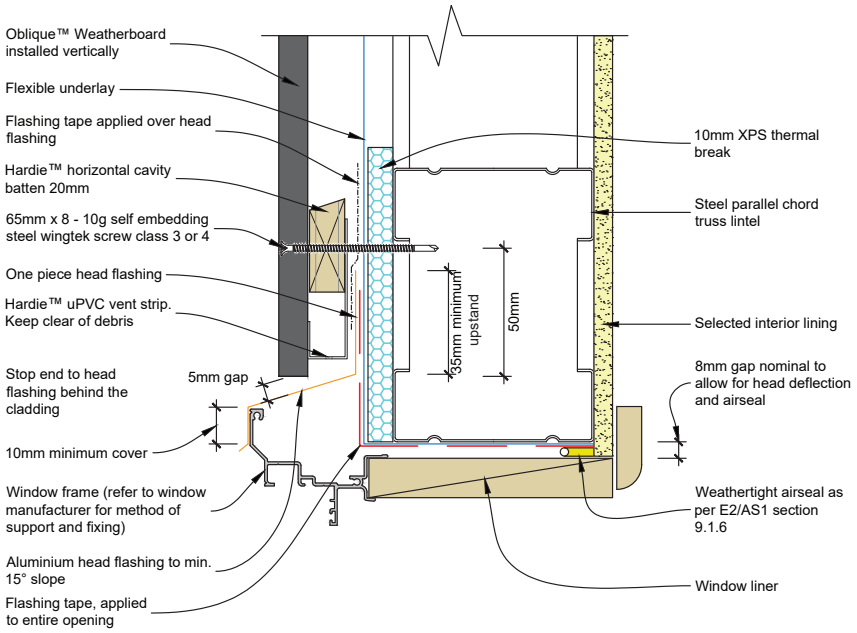


Figure 15: Oblique™ Weatherboard vertical window head detail



General notes for material selection

1. Flashing materials must be selected based on environmental exposure, refer to the NZS 3604 and Table 20 of the NZBC E2/AS1
2. Flashing tape must have proven compatibility with materials which it comes into contact

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

Figure 16: Oblique™ Weatherboard vertical window jamb detail

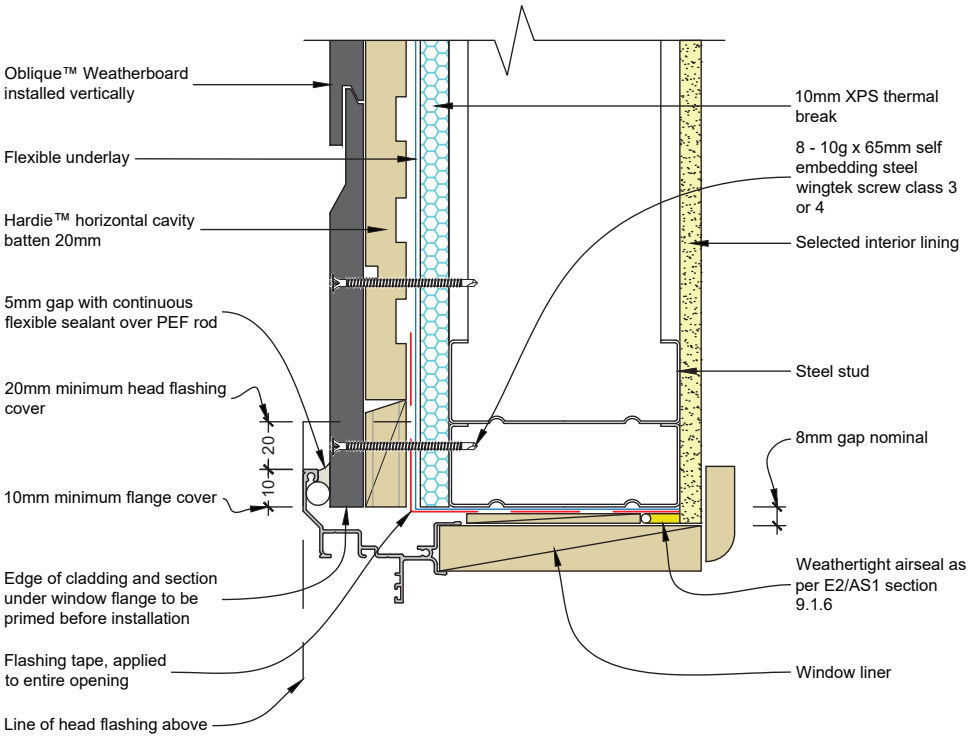


Figure 17: Oblique™ Weatherboard vertical window jamb with scriber detail

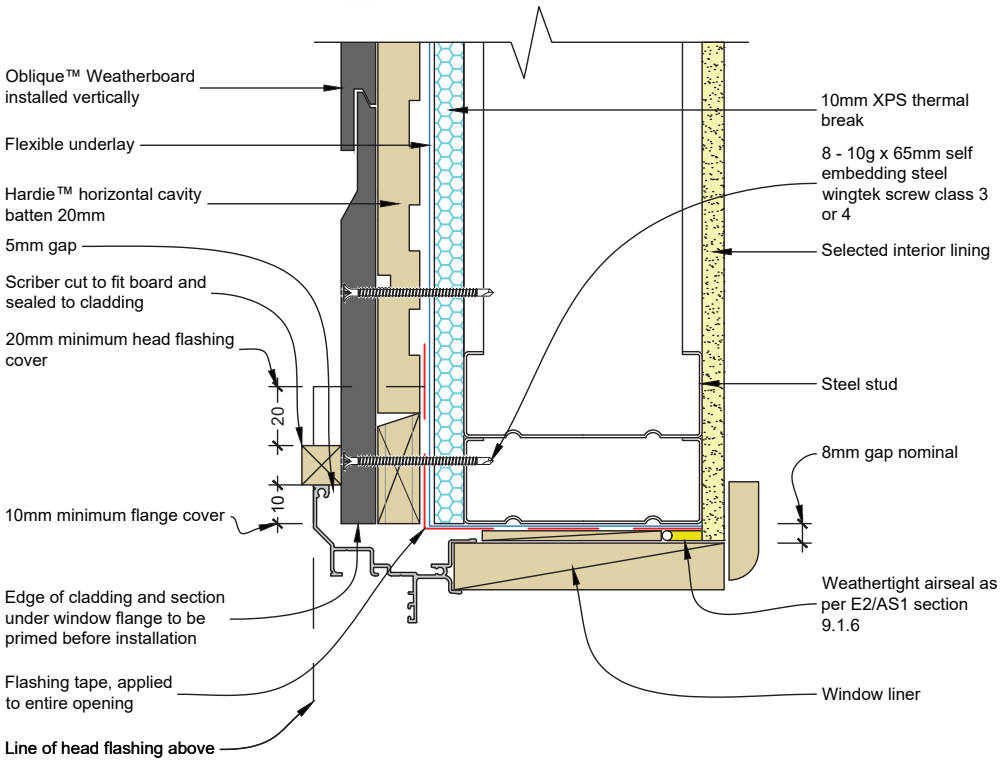
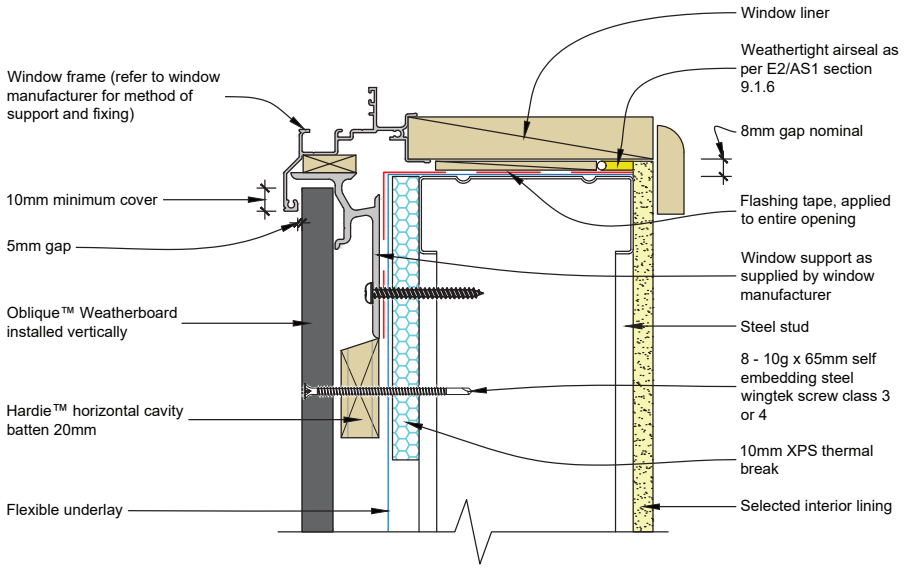


Figure 18: Oblique™ Weatherboard vertical window sill detail



General notes for material selection

1. Flashing materials must be selected based on environmental exposure, refer to the NZS 3604 and Table 20 of the NZBC E2/AS1
2. Flashing tape must have proven compatibility with materials which it comes into contact

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

Figure 19: Linea™ Weatherboard foundation and soffit

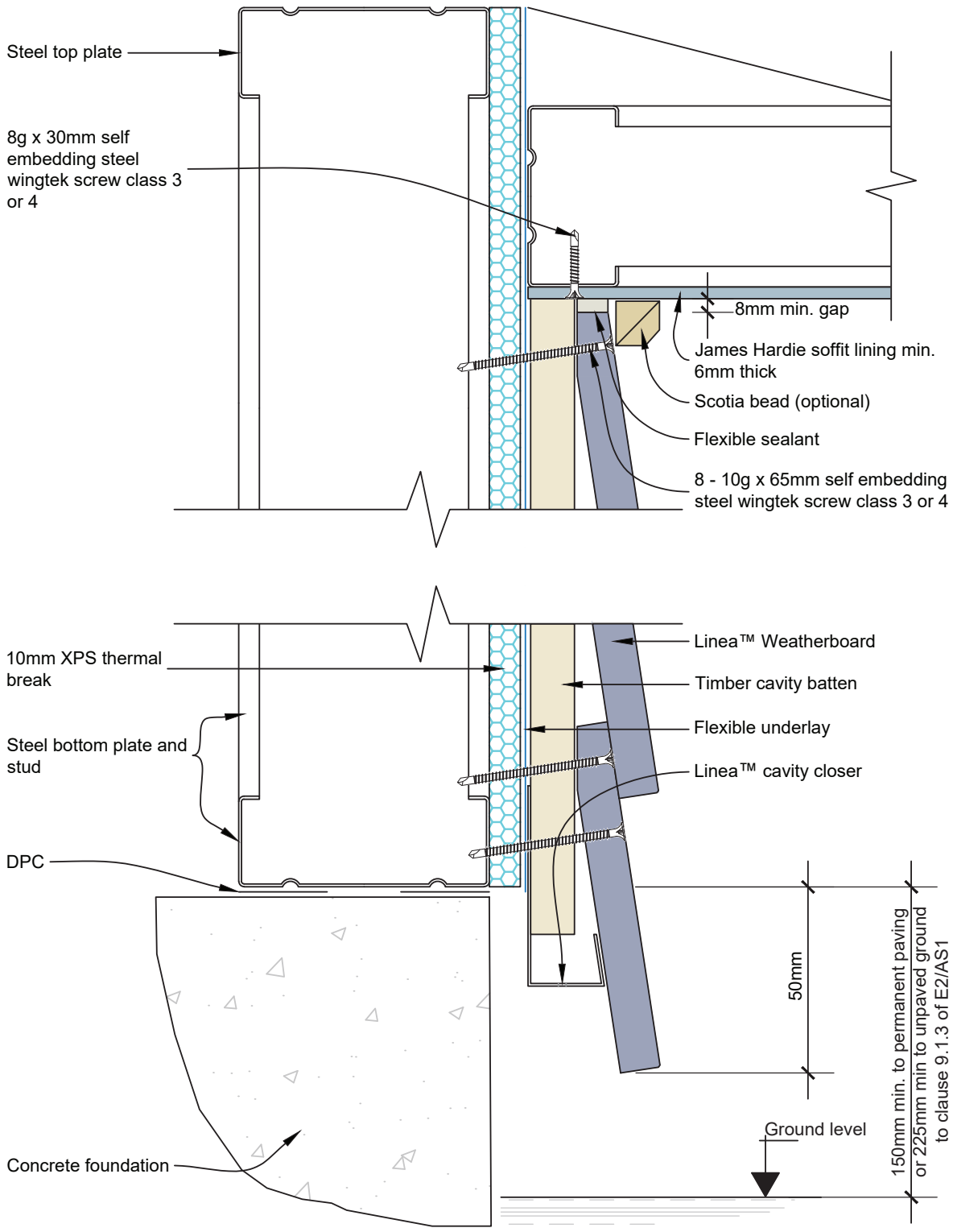
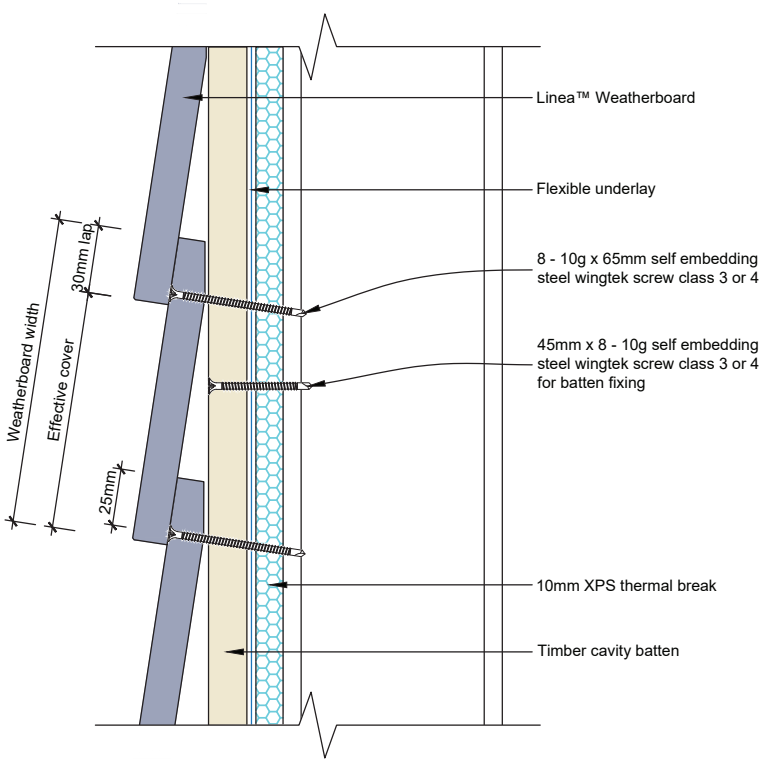
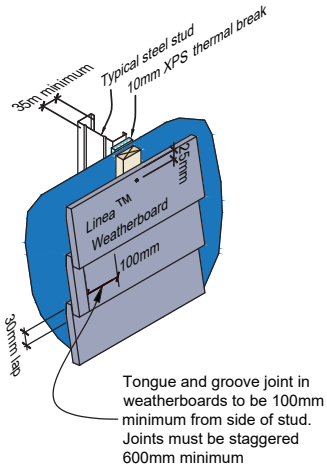


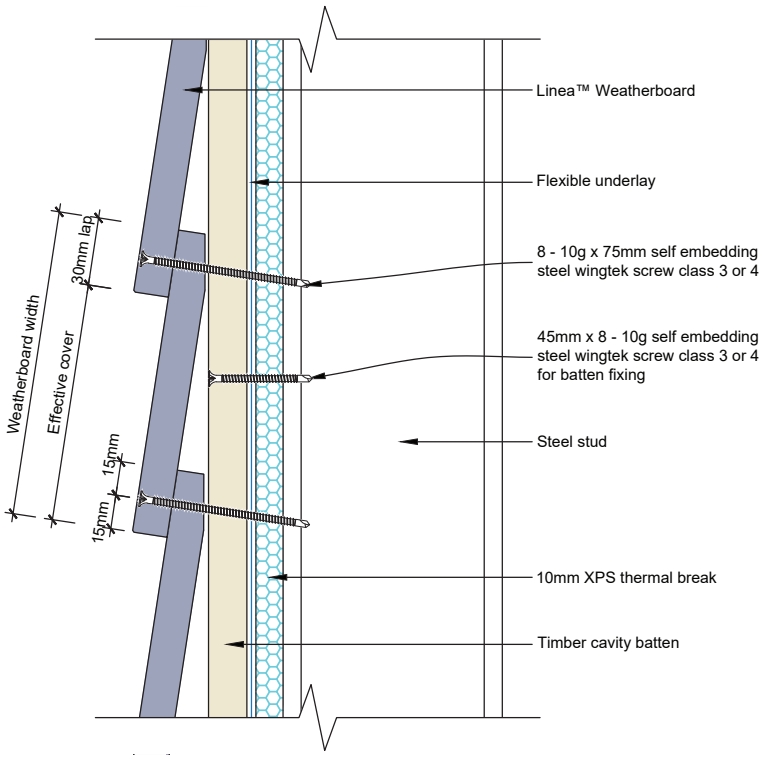
Figure 20: Linea™ Weatherboard fixing

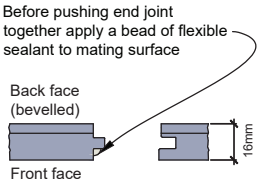


Concealed fixing



Jointing Off Stud





Tongue & Groove Joint

Figure 21: Linea™ Weatherboard aluminum box corner

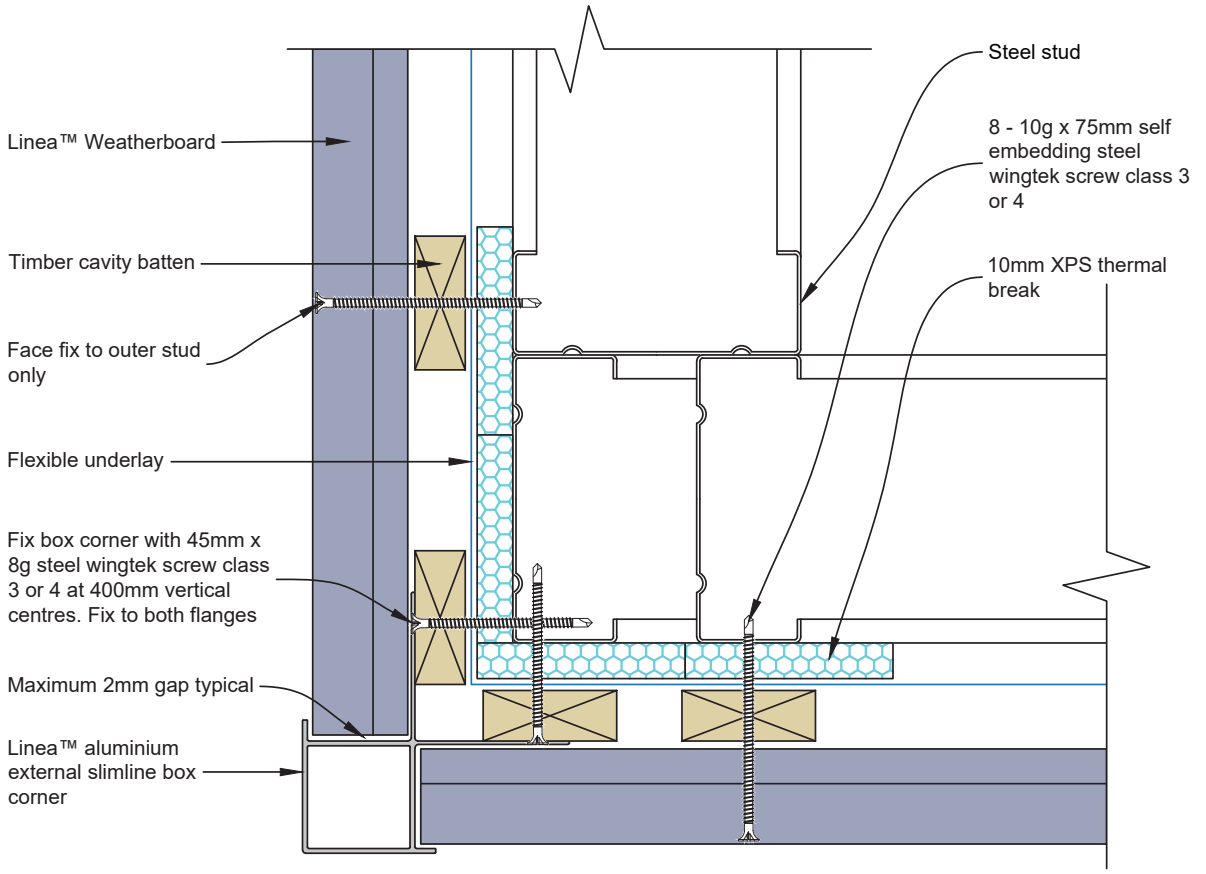


Figure 22: Linea™ Weatherboard external corner soaker

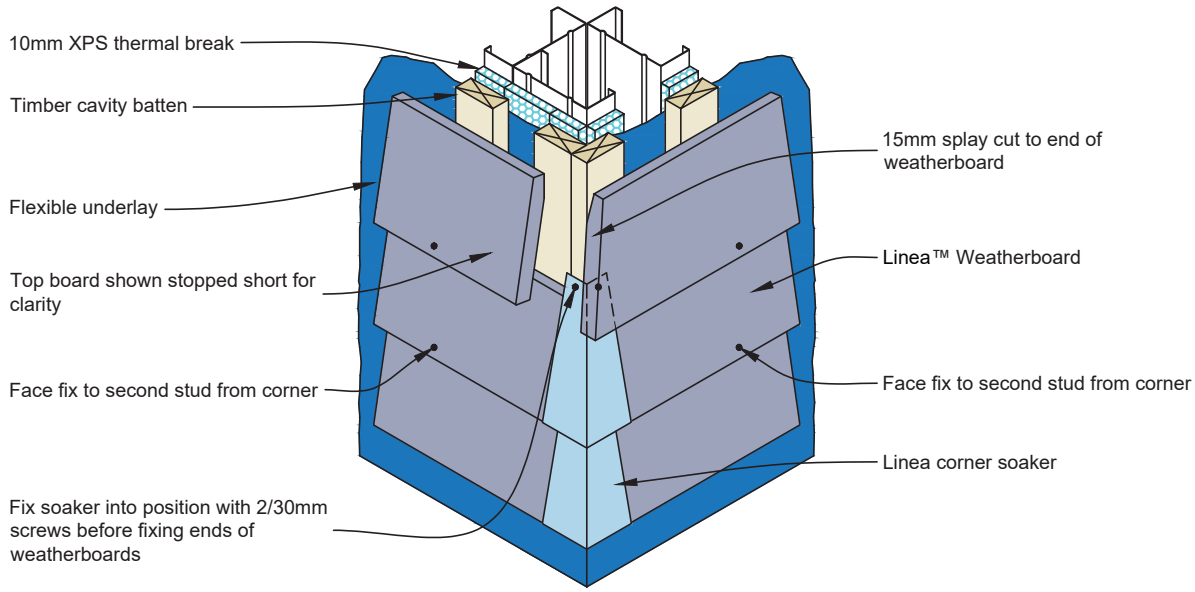


Figure 23: Linea™ Weatherboard internal scribed corner

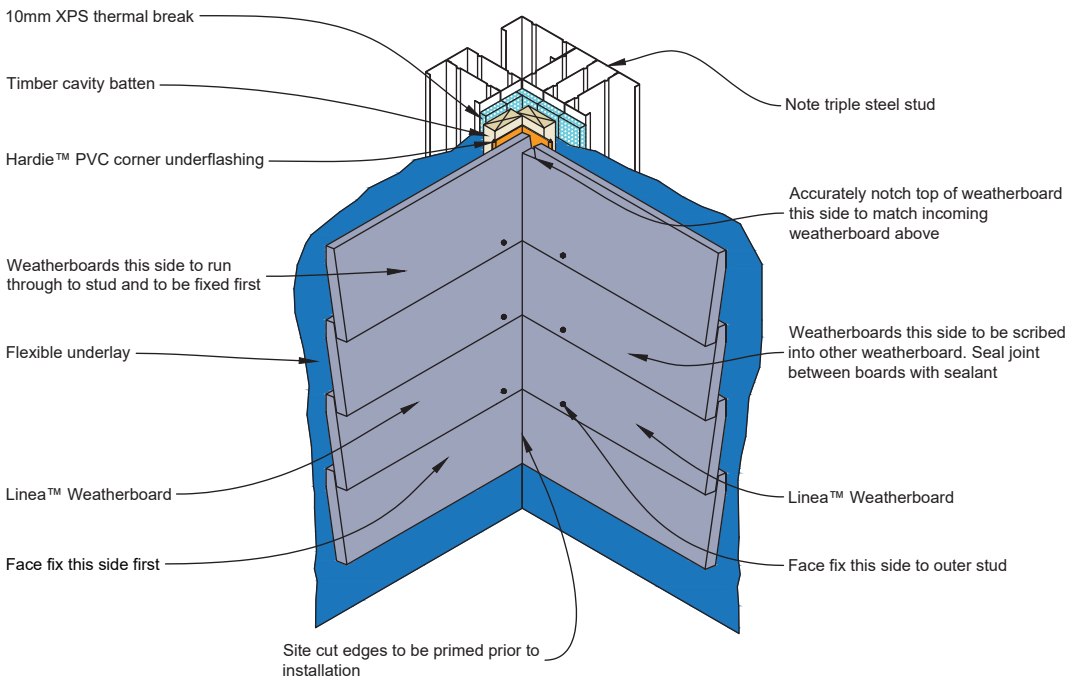


Figure 24: Linea™ Weatherboard 135° internal corner

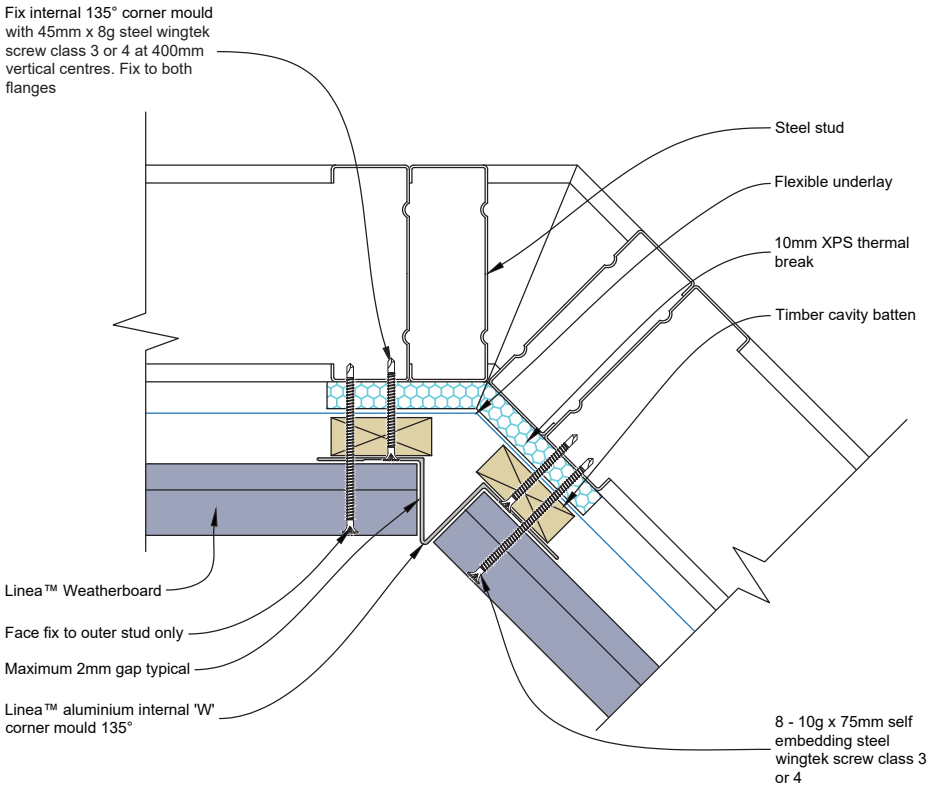


Figure 25: Linea™ Weatherboard internal W mould

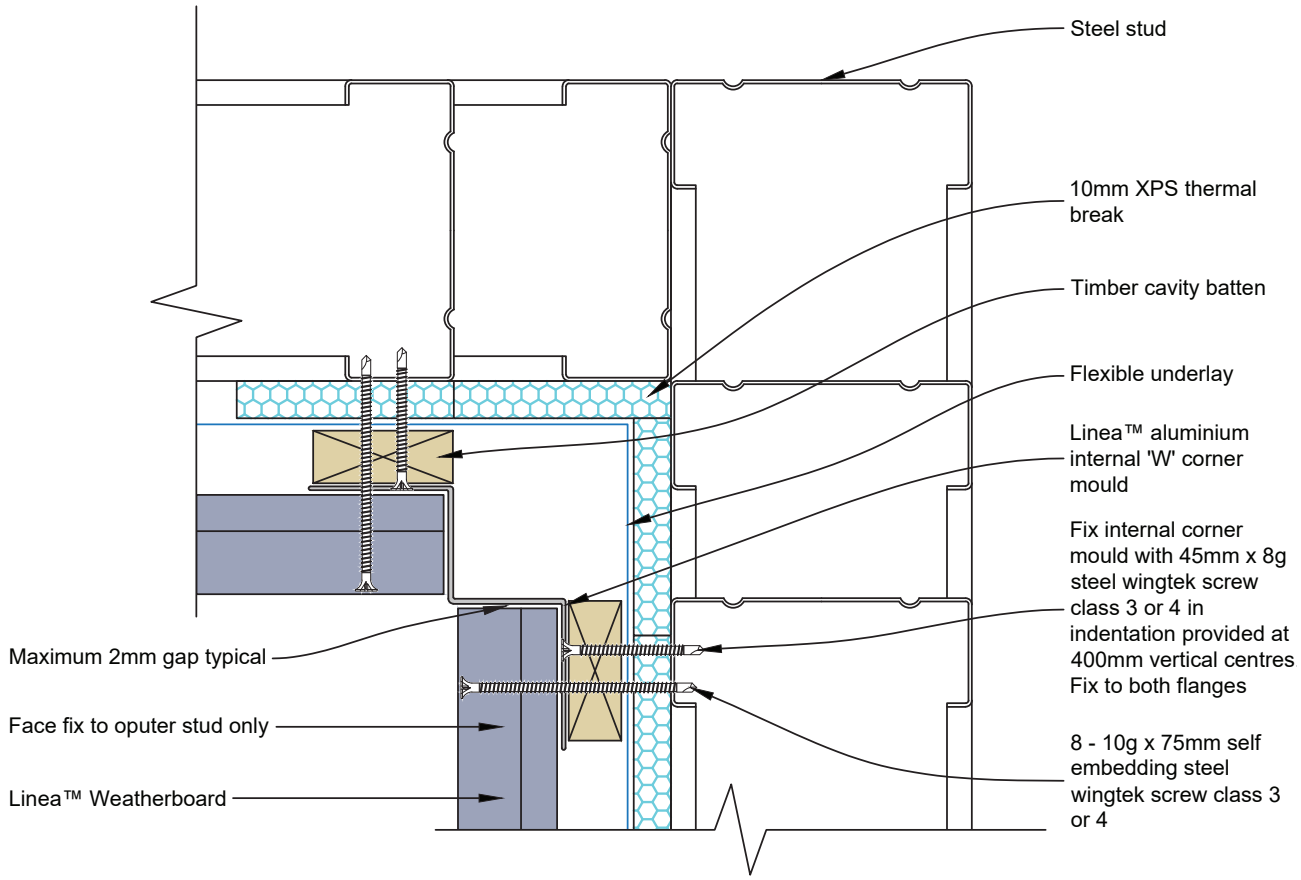
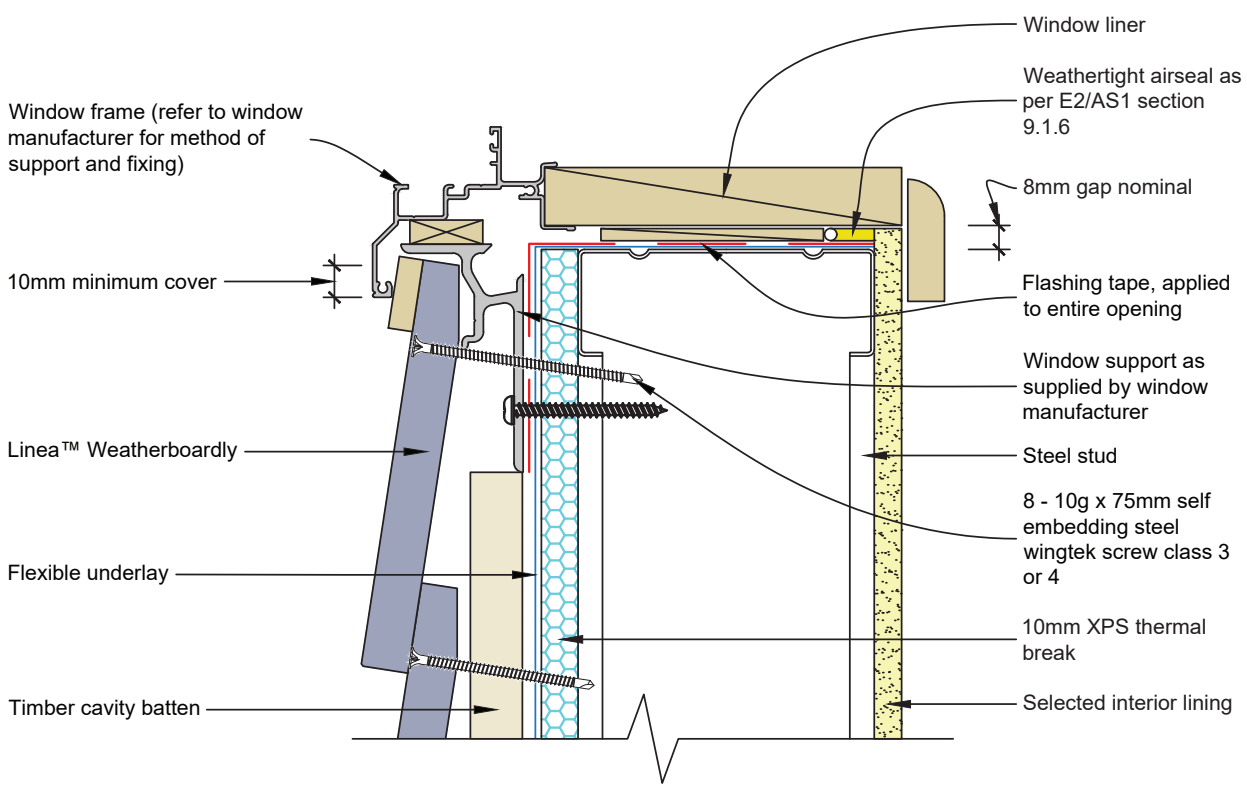


Figure 26: Linea™ Weatherboard window sill

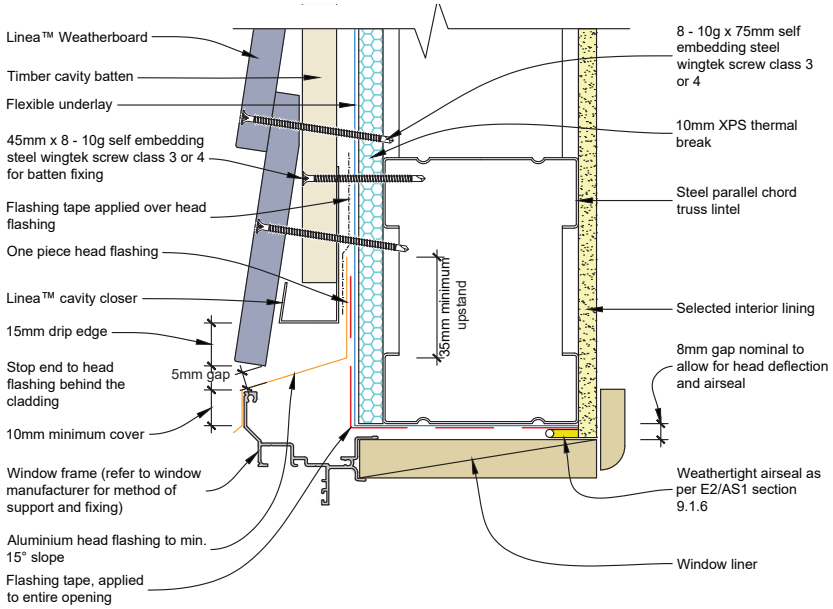


General notes for material selection

1. Flashing materials must be selected based on environmental exposure, refer to the NZS 3604 and Table 20 of the NZBC E2/AS1
2. Flashing tape must have proven compatibility with materials which it comes into contact

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

Figure 27: Linea™ Weatherboard window head



General notes for material selection

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2. Flashing tape must have proven compatibility with materials which it comes into contact

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

Figure 28: Linea™ Weatherboard window jamb

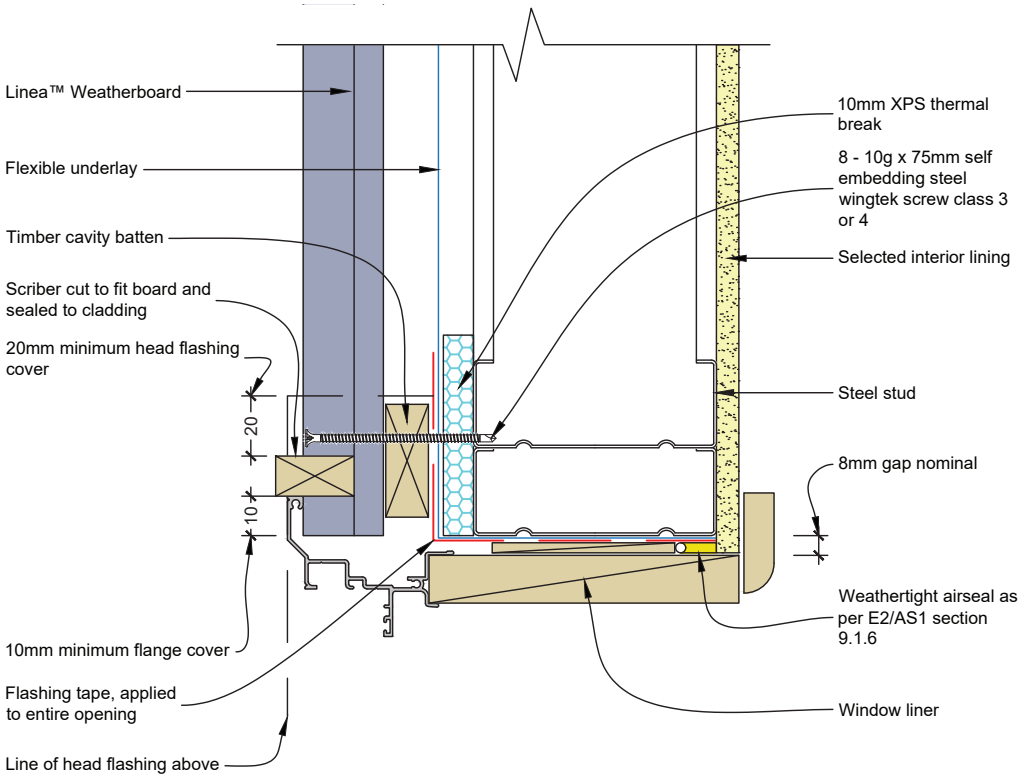


Figure 29: Linea™ Weatherboard window head

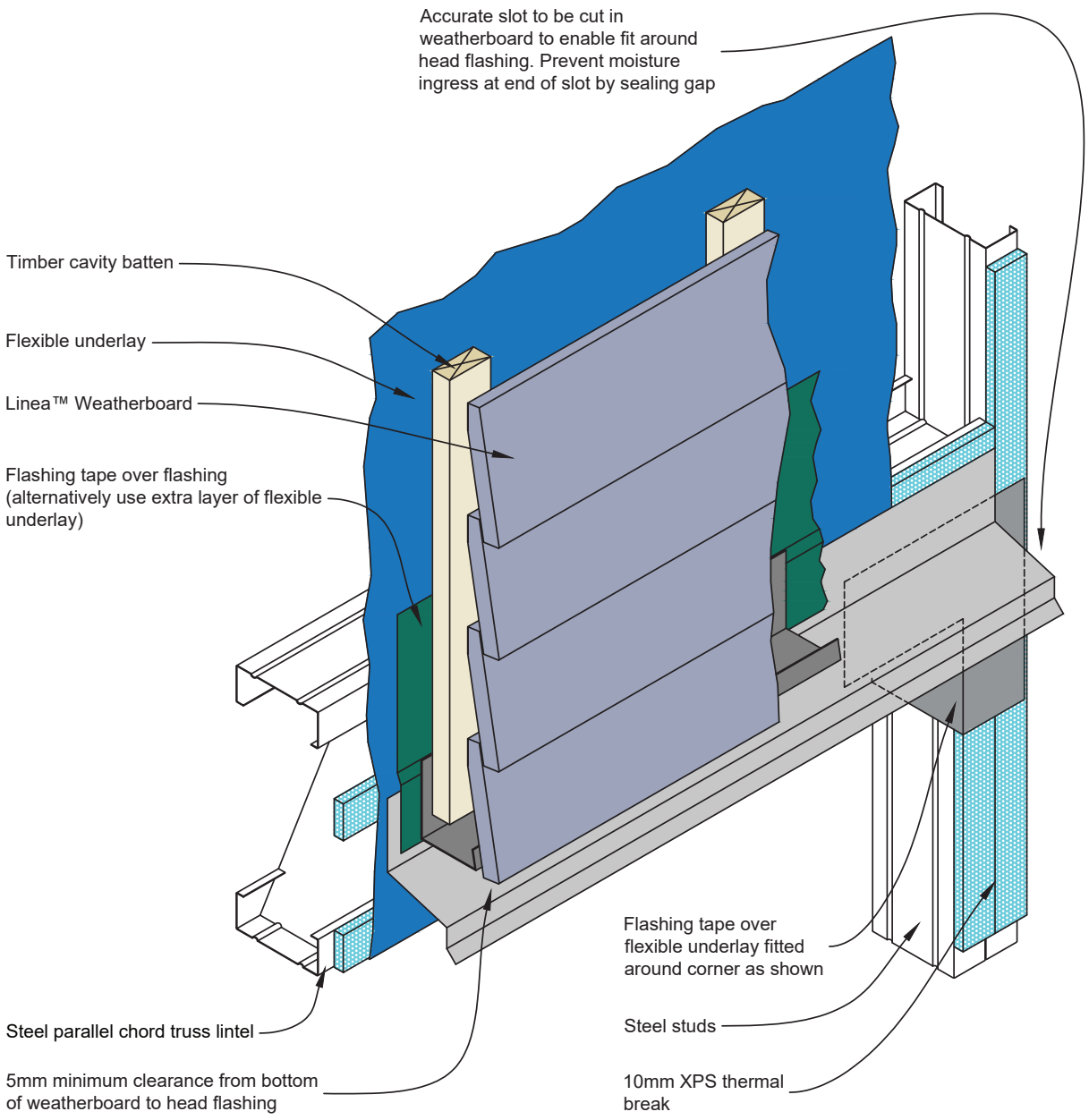


Figure 30: Linea™ Weatherboard apron flashing

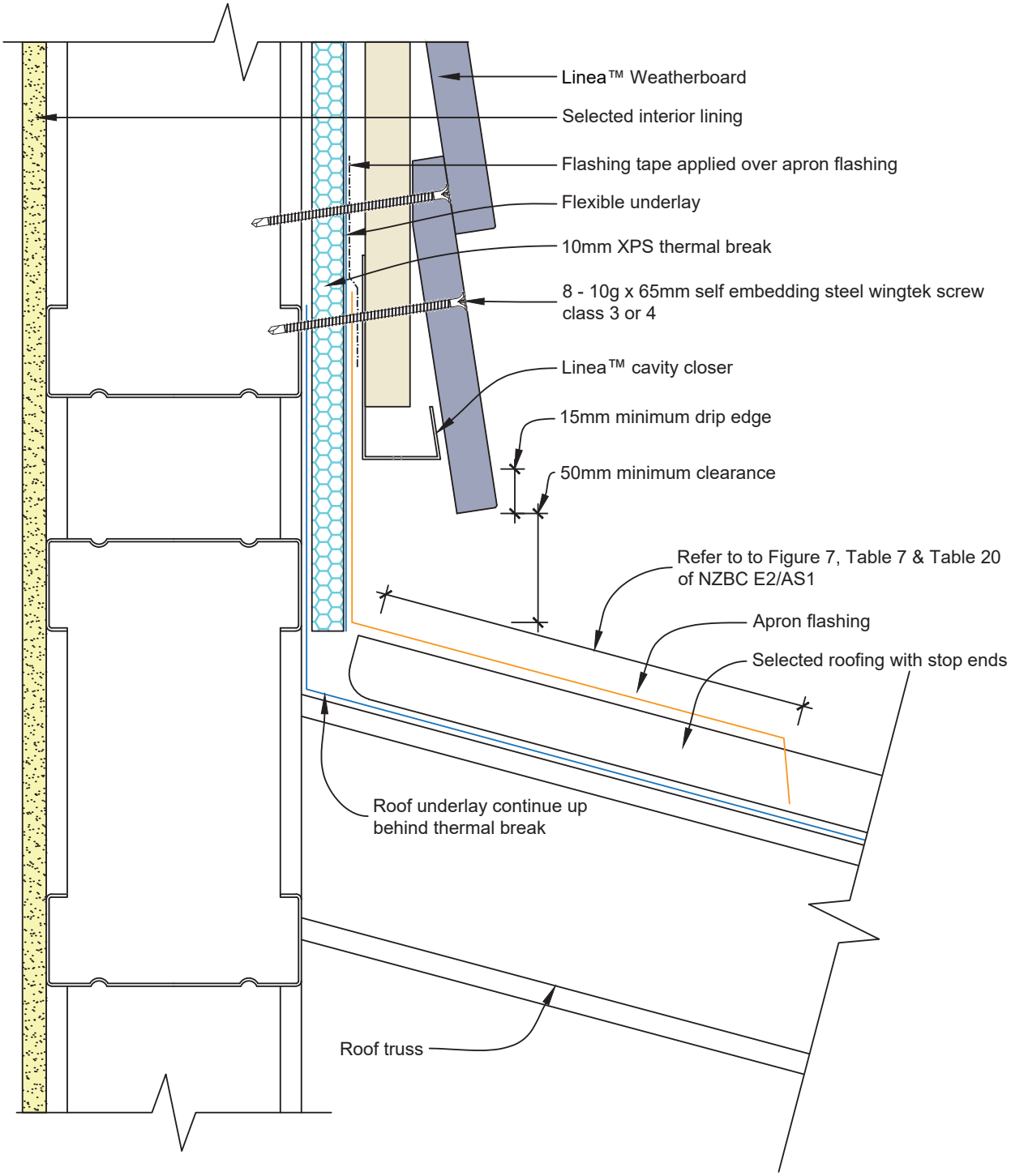


Figure 31: Linea™ Weatherboard pipe foundation

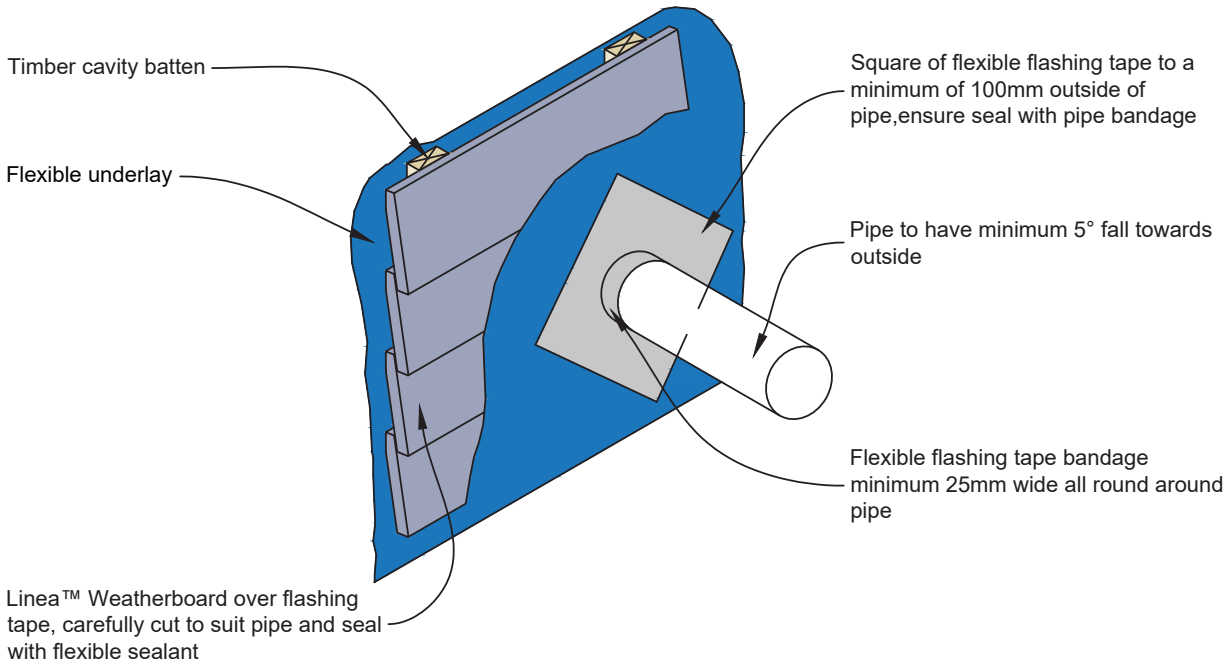
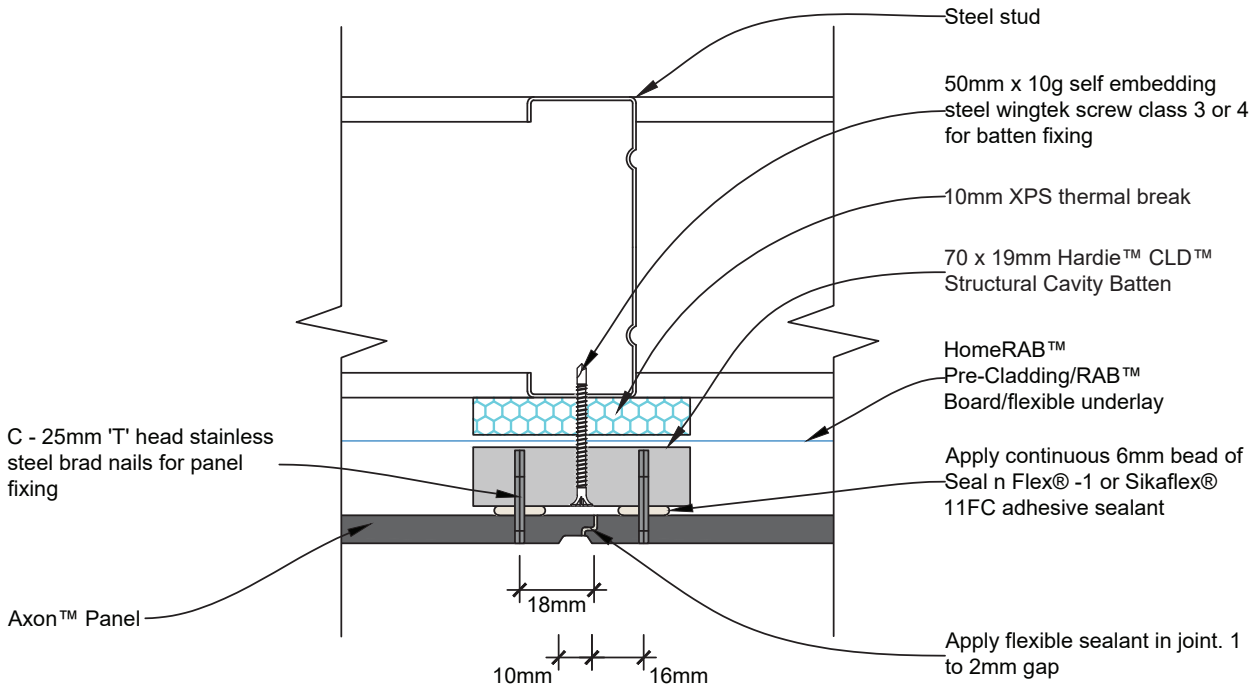


Figure 32: Axon™ Panel shiplap joint



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

Figure 33: Axon™ Panel over underlay internal corner detail

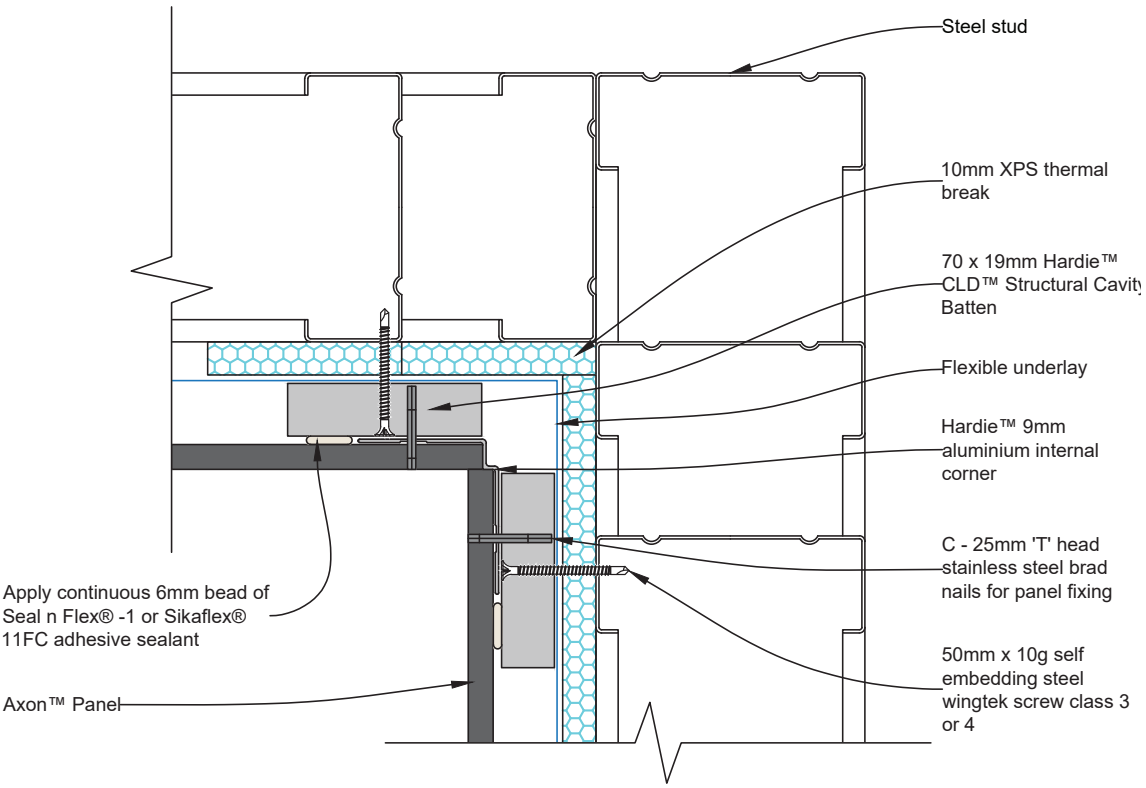


Figure 34: Axon™ Panel over underlay external corner detail

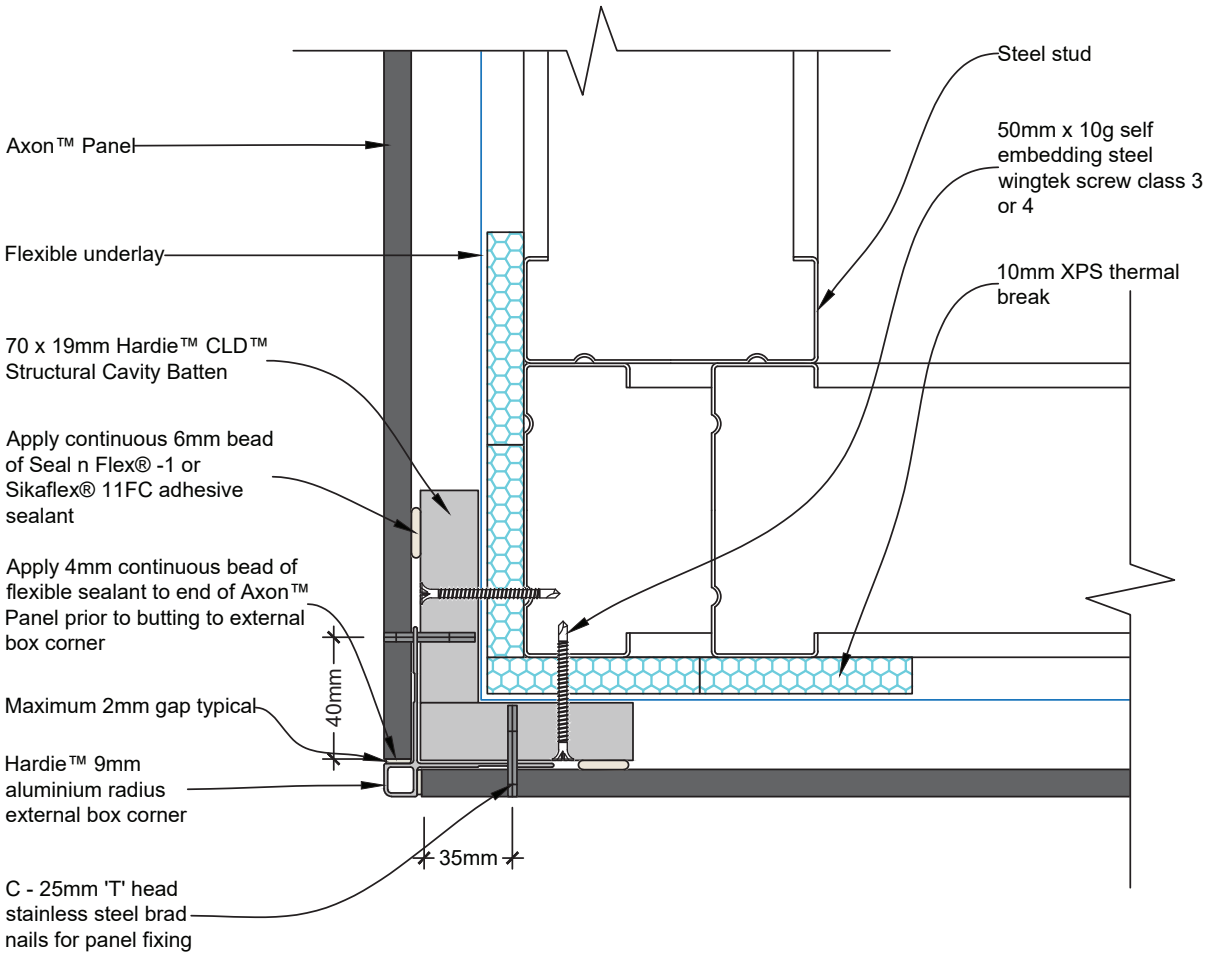


Figure 35: Villaboard™ Lining vertical flush-stop detail

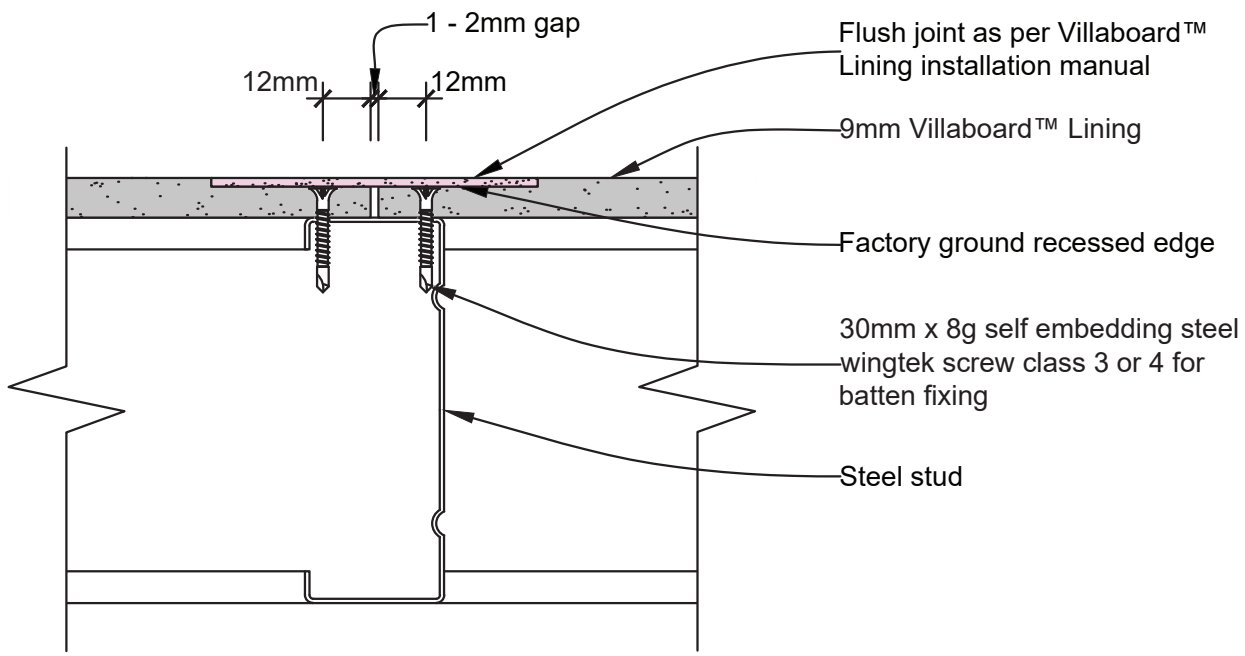


Figure 36: Villaboard™ Lining vertical butt joint

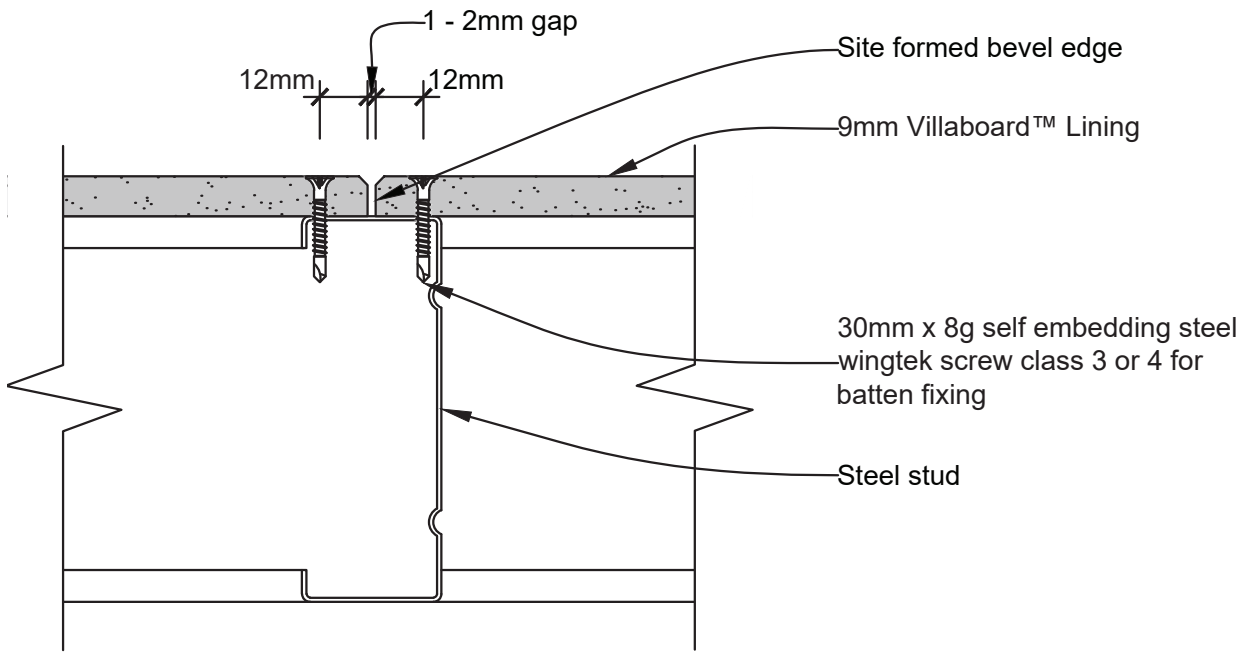


Figure 37: Villaboard™ Lining vertical sealant butt joint

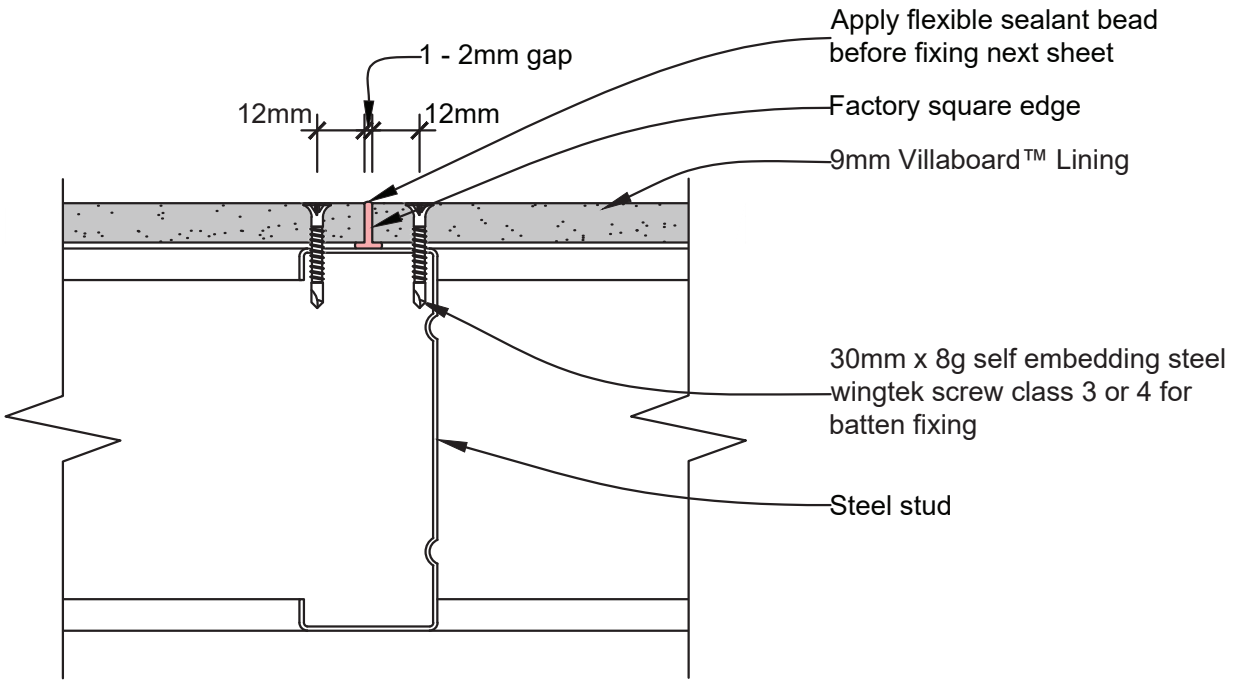


Figure 38: Villaboard™ Lining vertical internal corner tiled detail