HORIZON™ FAÇADE PANELS

LYSAGHT

DESIGN & INSTALLATION MANUAL
NON-CYCLONIC

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Contents

1.0 INTRODUCTION

1.1 RAINSCREEN FAÇADE PRINCIPLES

A rainscreen system is a walling system comprising of an inner wall protected by an outer skin, typically a façade panel. This creates an air space or cavity between the wall structure and the wall cladding. Within the cavity, a support system of battens connect the cladding to the wall structure.

The cavity formed allows for drainage and evaporation of liquid water or water vapour.

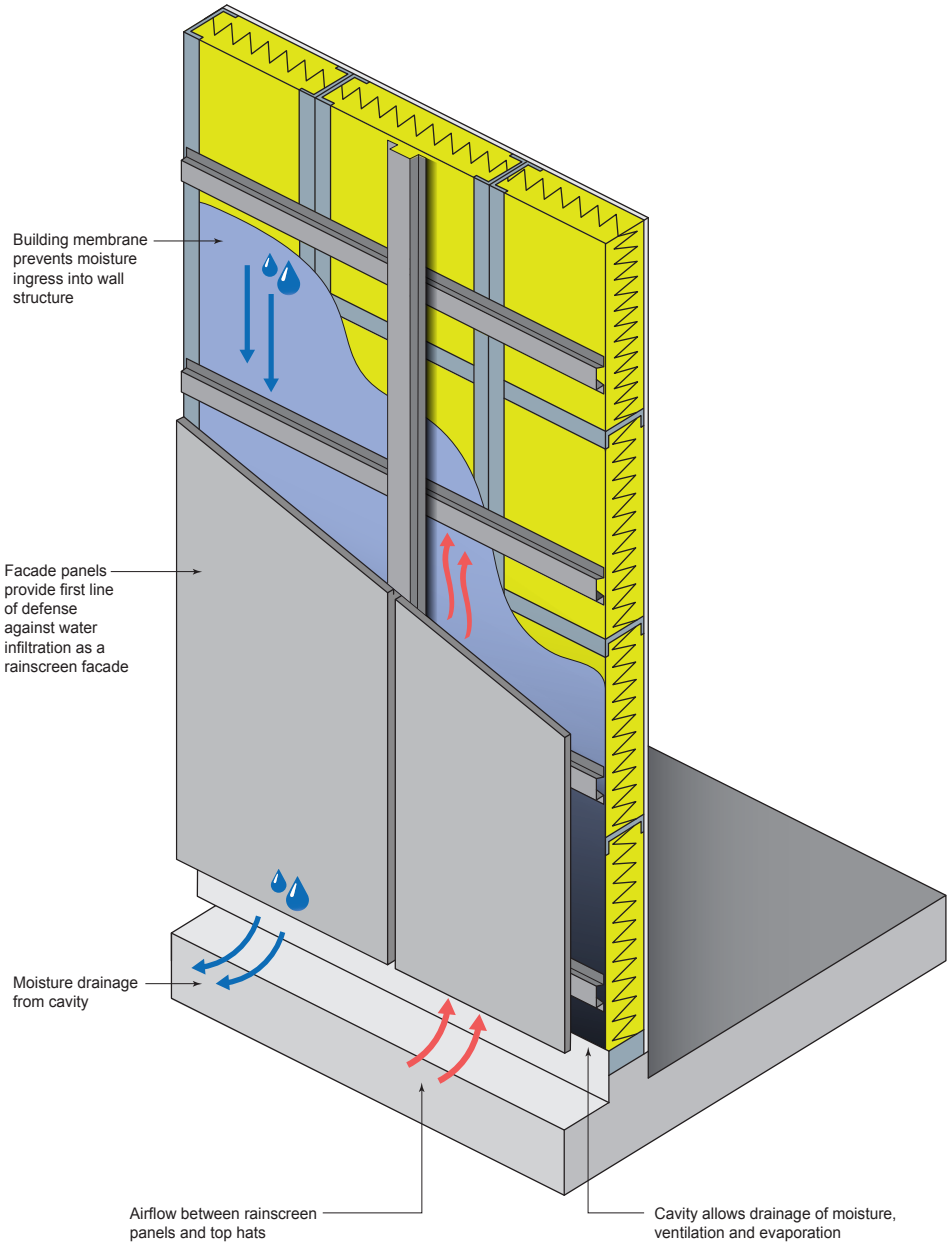
A rainscreen wall has the following three key components:

- An outer cladding, which diverts most of the water from the outside face while transferring load to the structure
- A cavity that allows drainage and evaporation of moisture, as well as air circulation between the rainscreen panels and the wall structure
- A building membrane that provides a barrier to moisture ingress into the wall substructure. The membrane prevents moisture from penetrating the building walls, and can also be specified to allow water vapour egress from within the building.

Rainscreen façades offer the following benefits:

- Protects the wall structure from rain and condensation through a multi-layer barrier system
- Less dependant on sealants and site workmanship to deliver on effective weatherproofing performance
- Better thermal efficiency through airflow in the cavity - warm air moves up and out of the cavity via convection, and this draws cooler air in at the base and insulates the primary wall structure.

FIGURE 1.1-1:
Cavity wall showing outer rainscreen, drained cavity, membrane barrier.



2.0 PRODUCT APPLICATION, DESCRIPTION & FEATURES

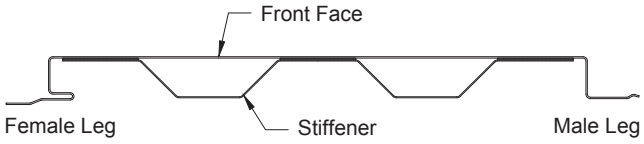
2.1 APPLICATION

The HORIZON™ panel is a COLORBOND® steel panel used for wall and rainscreen façade applications. The addition of a factory-adhered ZINCALUME® stiffener to the back of the panel enables greater widths to be achieved without face distortion, delivering a wider, smoother and flatter aesthetic.

For façades, the panel may be installed vertically or horizontally. Soffit installation may be achieved subject to specific detailing.

FIGURE 2.1-1:

HORIZON™ panel profile



2.2 DESCRIPTION & FEATURES

Product Description

The HORIZON™ panel is a steel panel with a plank-type profile. The exposed surface comprises of pre-painted COLORBOND® steel. An engineered stiffener with a trapezoidal profile is factory-adhered to the back.

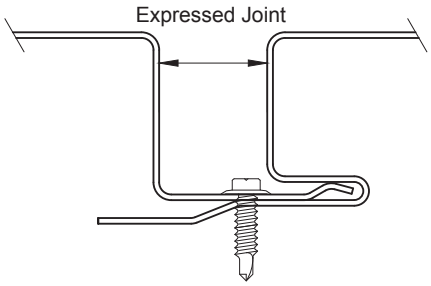
The HORIZON™ panels join along the long edges to form a recessed joint (Expressed Joint). The panels are fixed to a support system, typically battens.

Product Features

- The addition of an engineered stiffener on the back results in a lighter, flatter panel.
- The trapezoidal profile of the stiffener provides improved ventilation, with a minimum void cross-sectional area of 6,000 mm^2/m on standard panel sizes.
- Each panel features male and female edges that interlock along the long edge to form an Expressed Joint.
- The male-female edge engagement at the Expressed Joint, provides a tight fit.
- The HORIZON™ panel is available in the full range of COLORBOND® steel colours and finishes.

FIGURE 2.2-1:

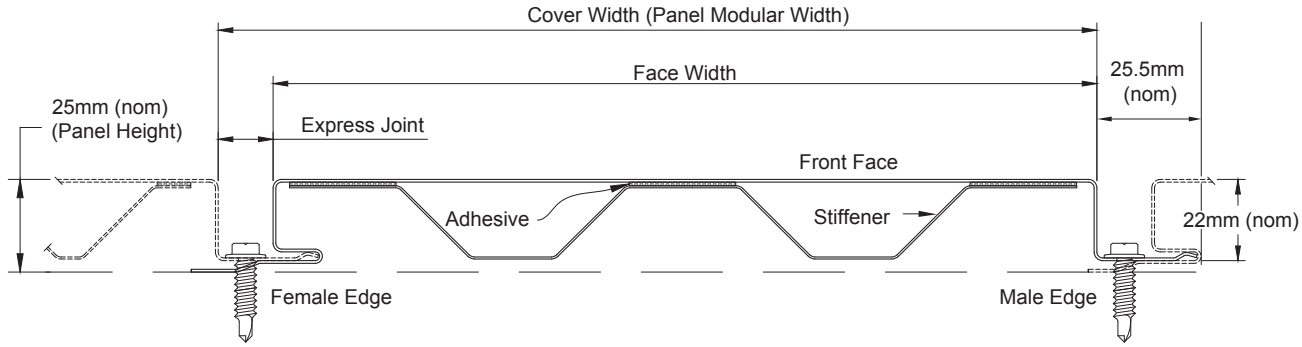
Male-Female leg engagement and Expressed Joint



3.0 PRODUCT DETAILS & PERFORMANCE

FIGURE 3.0-1:

HORIZON™ panel profile details



The overall depth of all panels is 25mm (nominal).

The voids of the HORIZON™ panel provide a minimum cross-sectional area of 6,000mm²/m, for any of the standard panels as referenced in Table 3.0-1

FIGURE 3.0-2:

Voids for ventilation and drainage of panels

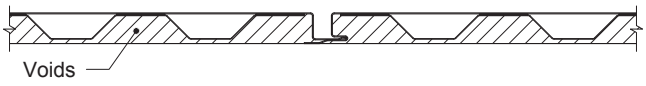


TABLE 3.0-3:

Standard panel dimensions and masses (nominal)

Panel Face Width (mm)	285		485		585	
Panel Modular Width (mm)	300		500		600	
Panel Height (mm)	25					
Standard Panel Length[1] (mm)	1000 - 6000 (Cut on-site for <1000)					
Panel Base Metal Thickness (mm)	0.55	0.75	0.55	0.75	0.55	0.75
Stiffener Thickness	0.55		0.55		0.55	
Mass / Unit Length (kg/m) including Stiffener	3.1	3.7	4.9	5.9	5.8	6.9
Mass / Unit Area (kg/m²) including Stiffener	10.9	12.9	10.1	11.9	9.9	11.7
Minimum Yield Strength (MPa)	300 (G300)					
Tolerances (mm)						
Sheet length	+/- 3mm					
Cover width	+/- 2mm					

Notes:

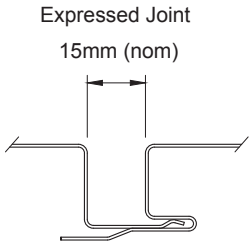
1. Other lengths may be available by enquiry.

Non-standard panel widths may be required to allow for site variability, and may be available subject to enquiry. Non-standard panel widths may not be available with performance data. The standard Expressed Joint width is nominally 15mm.

Each Expressed Joint width has an adjustable range of -0mm, +3mm to allow for site variability.

FIGURE 3.0-4:

Standard Expressed Joints



Panels are available with standard "closed ends".

FIGURE 3.0-5:

Panel closed end

3.1 STEEL MATERIAL SPECIFICATIONS

The exterior face of the panel is COLORBOND® steel, which complies with AS/NZS 2728. The steel base is an aluminium/zinc/magnesium alloy-coated steel complying with AS 1397. The alloy coating has a minimum coating mass of AM100 (100g/m²).

The stiffener is fabricated from Next Generation ZINCALUME® steel. The steel base is an aluminium/zinc/magnesium alloy-coated steel complying with AS 1397. The alloy coating has a minimum coating mass of AM125 (125g/m²).

3.2 FIRE PERFORMANCE

The HORIZON™ panel meets the requirements of NCC 2022, Volume 1 C2D10 (6) (e) - *Pre-finished metal sheeting having a combustible surface finish not exceeding 1mm thickness and where Spread-of-Flame index of the product is not greater than 0.* The product has been tested to AS/NZS 1530.3 (CSIRO Report No: FNE12929-A) and achieved a Spread of Flame Index of 0.

The adhesive used for the stiffener meets the non-combustibility exemption requirements of NCC 2022 Volume 1 C2D10(4)(p), which applies only to adhesives and tapes associated with stiffeners that may be installed to prevent buckling, bowing or distortion of a cladding material.

3.3 WEATHER PROOFING PERFORMANCE

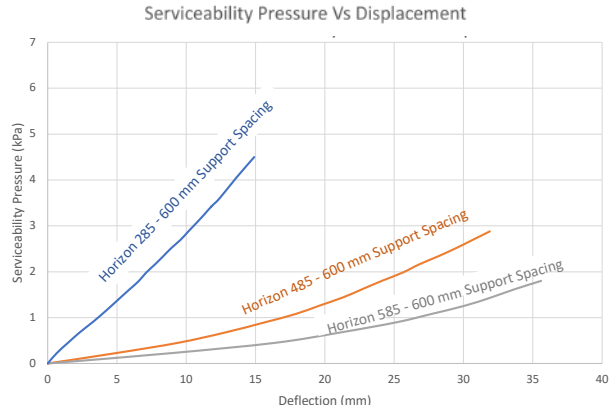
The HORIZON™ panel meets the requirement of NCC 2022 DTS Compliance provisions for weather proofing, in accordance to NCC 2022 Volume 1 F3D5 (1c) and NCC 2022 Volume 2 H1D7(5) -AS 1562.1 for metal wall cladding.

3.4 PRESSURE CAPACITIES

The HORIZON™ panel has been designed and tested in accordance to AS 1562.1 and AS 4040.2, based on which Limit State Pressure Capacities are provided in Figures 3.4-1, 3.4-2 and 3.4-3 below. The panels are fixed to a support system as specified in the Tables.

FIGURE 3.4-1:

HORIZON™ Panel - 0.55 BMT, Direct fix to min. 1.0mm thick Steel Support		
Face Width (mm)	**Support spacing (mm)**	**Limit State Strength Pressure Capacity (kPa)**
285	600	7.90
485	600	5.16
585	600	4.60



Notes:

1. The Limit State Strength Pressure Capacity has been determined by testing conducted per AS 1562.1 and AS 4040.2.
2. Panel serviceability pressure performance is determined by testing.
3. Serviceability deflection is the elastic deflections (pillowing across the panel width under missing pressure).
4. The designer must determine the most appropriate deflection for the project.
5. Steel support material shall be a minimum of 1.0mm BMT G550. Where thicker steel support is used then consideration to differing screw fastener specification will be necessary, however the above capacities will remain applicable.
6. Through-fixed screws using #10-16 x16 wafer head or low profile hex head metal screw (eg., Designer head screws) with Min Class 3 coating as specified.
7. The panel to be fixed to at least three supports. All supports to be uniformly spaced.
8. The serviceability pressures and deflections are for the panel only. The designer will need to account for any deflections of the selected support system.

FIGURE 3.4-2:

HORIZON™ Panel - 0.55 BMT, Direct fix to min. 1.0mm thick Steel Support		
Face Width (mm)	**Support spacing (mm)**	**Limit State Strength Pressure Capacity (kPa)**
285	1200	3.45
485	900	4.03
585	900	2.82

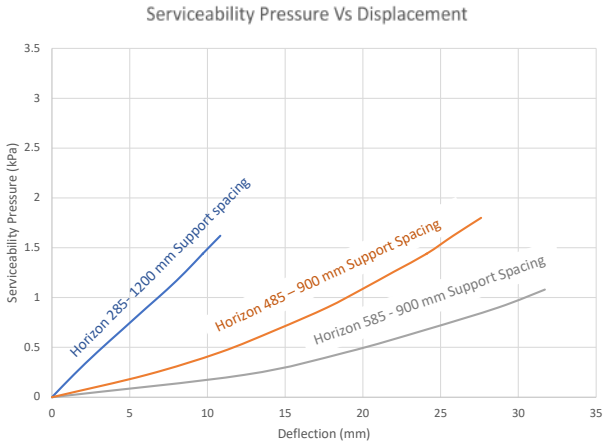
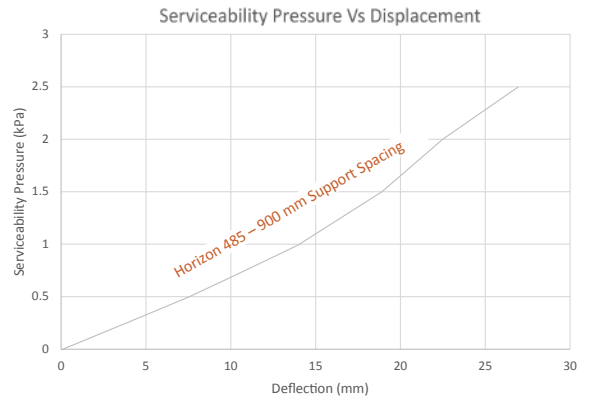


FIGURE 3.4-3:

HORIZON™ Panel - 0.75 BMT, Direct fix to Steel Batten		
Face width (mm)	**Support spacing (mm)**	**Limit State Strength Pressure Capacity (kPa)**
485	600	4.24
Steel Batten:		Rondo 50 x 25 x 1.15 BMT, G200
Batten Spacing		600mm (max)
Batten Span:		1200mm (max)
Minimum Steel Support Thickness:		1.0mm BMT G550



4.0 DETAILING

This section addresses the principles for consideration by the designer and installer when laying out and detailing the façade, including flashings and cladding panels.

The accepted trade practices for flashing should not be compromised. Where relevant, refer to accepted industry/trade standards and guidelines (e.g. SA HB39, educational documents for trades, LYSAGHT® Roofing & Walling Manual, *LYSAGHT® Flashing Guide for Architects, NZ Cladding Code of Practice* and BlueScope Technical Bulletins).

This manual does not detail the fasteners used for fixing of flashings. It is recommended to follow the minimum industry-accepted practices, including fastener specifications, spacing and position. The details illustrated in this publication refer to non-cyclonic conditions. Additional fixing requirements should be considered in situations of higher exposure to wind.

It is important that flashings be made from materials that are compatible with the panels. Flashings should conform to AS/NZS 2179.1. Refer also to *BlueScope Technical Bulletin TB-08*.

Refer to Appendix A for Typical Construction Details and Appendix B for Typical Flashings.

FIGURE 4.0-1:
LYSAGHT HORIZON® Panel – Vertical Layout

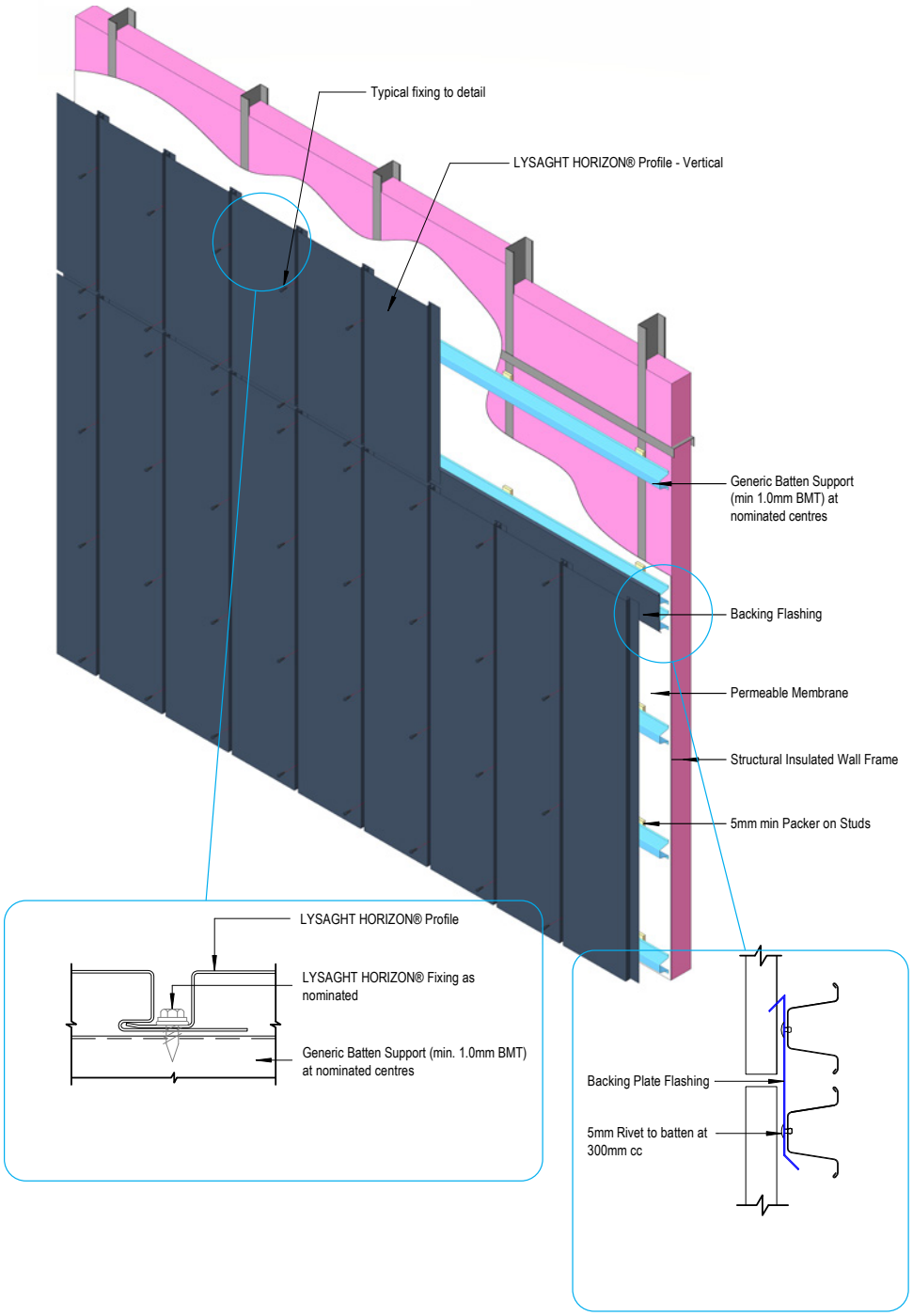
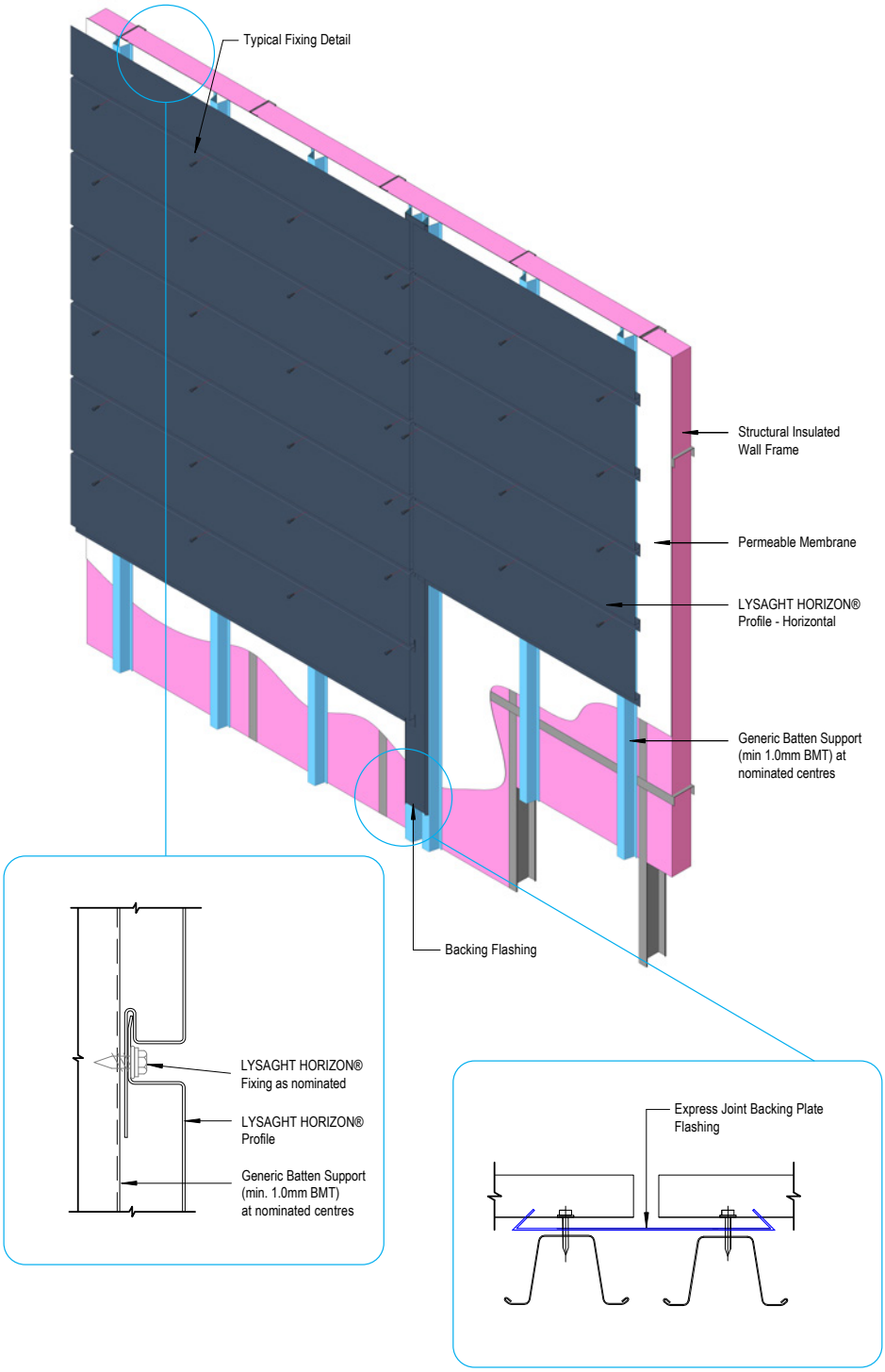


FIGURE 4.0-2:
LYSAGHT HORIZON® Panel – Horizontal Layout



4.1 DIRT & WATER RETENTION

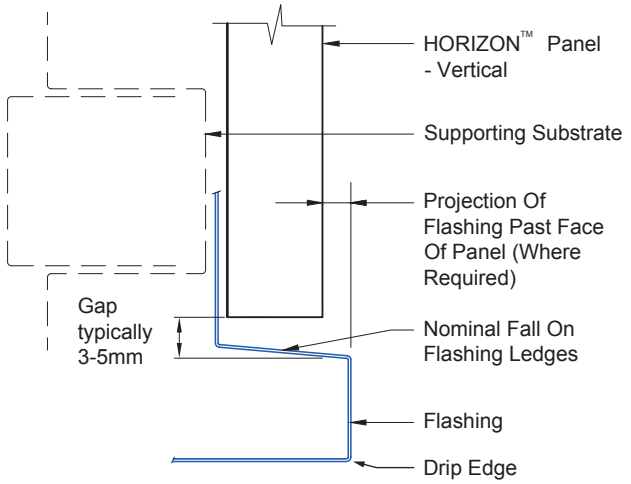
Flashing details should consider the potential for water and dirt retention, examples of which are shown in Figure 4.1-1. Ledges of flashings and the top face of parapet cappings should have a nominal fall (Figure 4.1-2) to allow for self-flushing action from rainwater or from regular cleaning/ maintenance activities. This minimises the potential for build-up of moisture-retaining dirt. Industry-standard practices for self-flushing should be followed.

FIGURE 4.1-1:

Dirt retention and water ponding

FIGURE 4.1-2:

Typical Flashing Features



4.2 PROJECTION PAST THE PANEL FACE

Flashings should project past the face of the panel (Figure 4.1-2) to hide any irregularities resulting from manufacturing and construction tolerances. The extent of the projection should be consistent throughout the wall.

4.3 DRIP EDGE

Horizontal flashing details should include a drip edge to minimise the potential of rainwater back-tracking into the wall cavity or resulting in water run stains on the face of the panels (Figure 4.1-2).

Flashing at the top end of a wall will require the drip edge to have a positive projection past the face of the panels (Figure 4.3-1). Flashing at the bottom end of a wall will require a drip edge to be a distance from the base of the wall (See Figure 4.3-2). Refer also to *BlueScope Technical Bulletin TB-30*).

Drip edge detailing should follow industry-standard practices.

FIGURE 4.3-1:

Parapet flashing drip edge

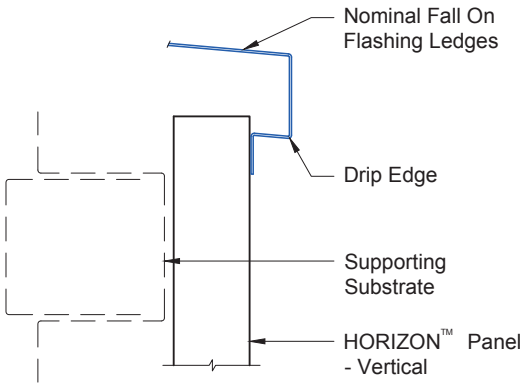
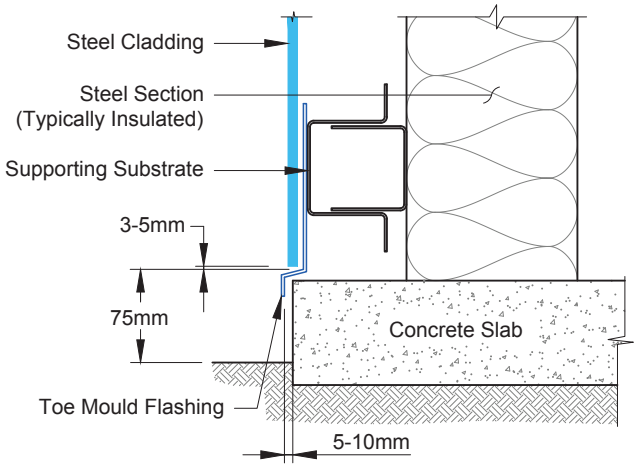


FIGURE 4.3-2:

Wall base flashing drip edge



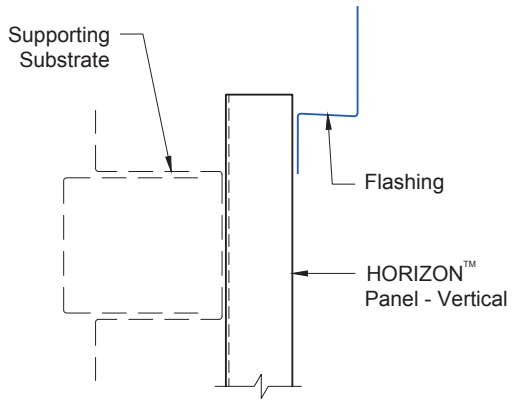
4.4 OVER-FLASHING & UNDER-FLASHING

Over-flashing is the traditional approach to flashing, whereby the flashing is placed over the panels and fixed to the face of the panels, i.e. the flashing is installed last (Figure 4.4-1). Over-flashing details are recommended in the following situations:

- To minimise the complexity of the flashing details.
- To maximise the resistance to water entry behind the panel.
- Wherever ends or edges of panels are to be concealed.
- Where the panels are of uneven length or where some panels are cut to length, hence the ends of the panels need to be concealed.
- Where panels are cut along the length (longitudinally cut) to be trimmed around penetrations such as windows.

FIGURE 4.4-1:

Over-flashing



Under-flashing is an alternative approach where the flashing is installed underneath the panel (Figure 4.4-2) or supporting substrate (Figure 4.4-3), for instance, under the battens. Consideration should be given to the potential water flow pathway behind the cladding to ensure no ponding within the profile.

FIGURE 4.4-2:

Under-flashing underneath the panel

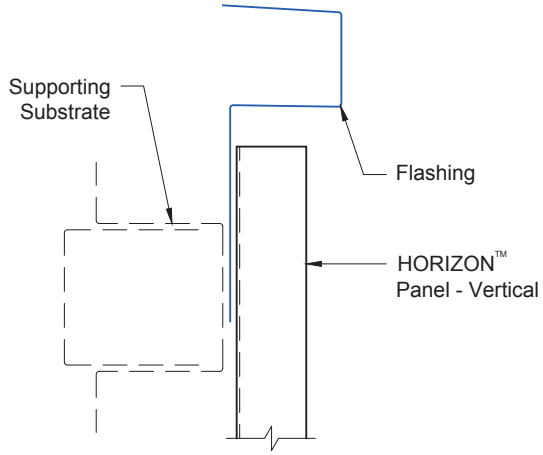
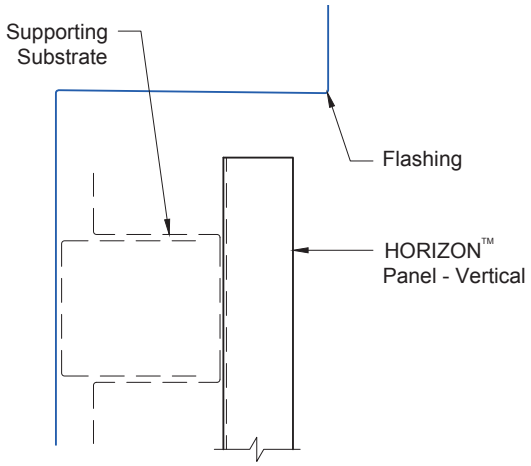


FIGURE 4.4-3:

Under-flashing underneath the batten



The flashing can be hidden by fastening onto the male leg (Figure 4.4-4) or engaging into the female edge (Figure 4.4-5) of the HORIZON™ Panel. These flashing details, although more complex, provide a more aesthetically-pleasing effect as they simulate an Expressed Joint.

FIGURE 4.4-4:

Parapet Wall Top Flashing fastened onto the male leg of HORIZON™ Panel

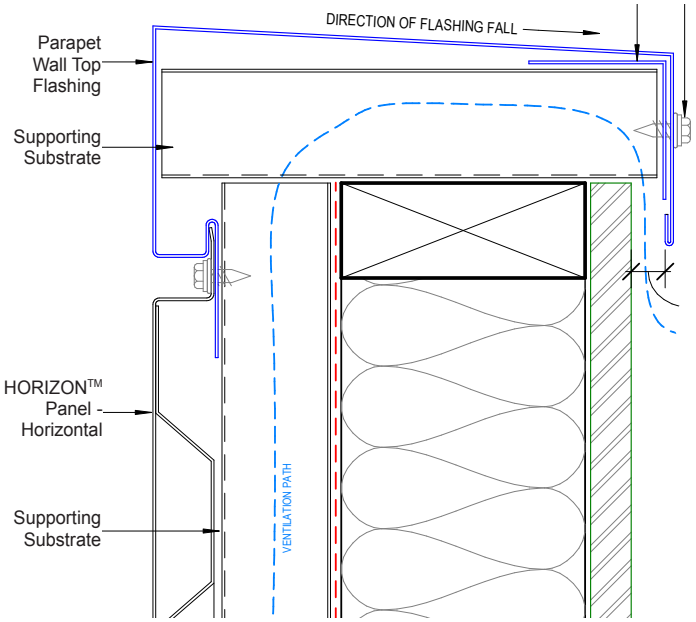
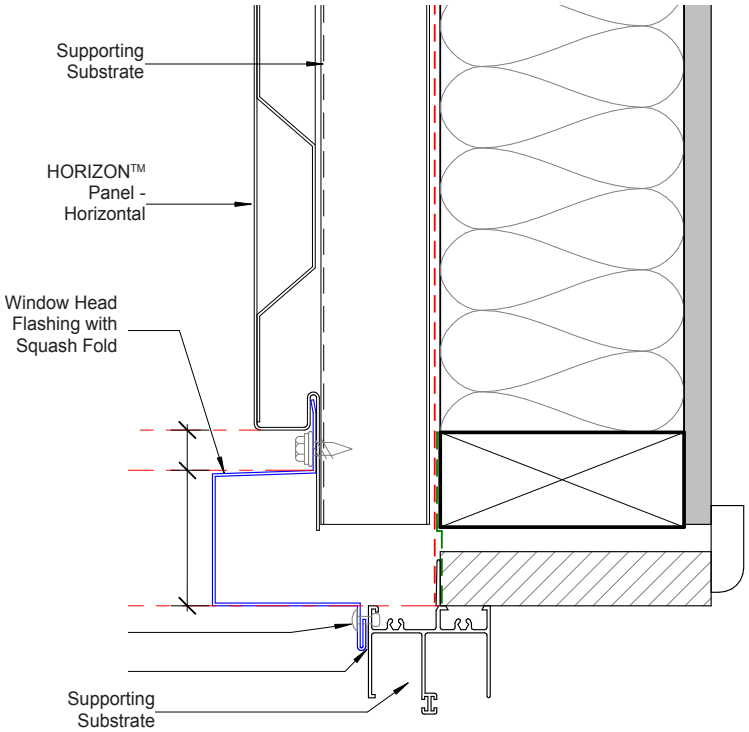


FIGURE 4.4-5:

Window Head flashing fastened into female recess of HORIZON™ panel



4.5 FLASHING AFFECTING FIXING PLANE

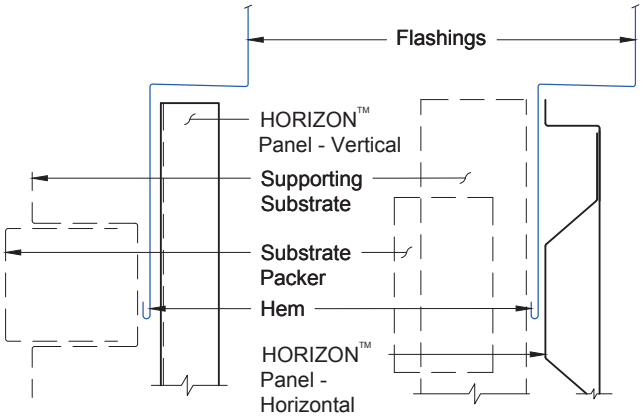
When detailing flashings, the designer/installer should aim to avoid multiple layers of flashings being sandwiched between battens and the panels, as this will result in a non-level fixing plane. Multiple layers of flashing may also occur due to the lapping of flashings at corners, lapping along the length, and other forms of lapping. If multiple layers of flashings are unavoidable, they should be positioned where they are not sandwiched between the batten supports and the panel.

Flashing positioned under the battens or panels should be fastened at locations that will not interfere with the positioning of the batten supports or the panel. The fastener heads may result in a local variation in the fixing plane when sandwiched between the panel and support, or between the support and structural wall frame.

Where a flashing edge requires an anti-capillary hem, the batten support at the hemmed edge must be set at a different fixing plane to compensate for the hem (Figure 4.5-1).

FIGURE 4.5-1:

Flashing anti-capillary hem positioning



4.6 WINDOW & DOOR FLASHING

The flashing around penetrations such as windows and doors should be detailed and installed to ensure any water/moisture entering the cavity of the façade (between the panel and permeable membrane) is captured and that the flow is directed around and away from the penetration. The principles of flashing as stipulated in the Australian Glass & Window Association (AGWA) publications must be followed. Refer to Figure 4.6-1 for an example window sill flashing detail. Typical window flashing details are provided in Appendix A.

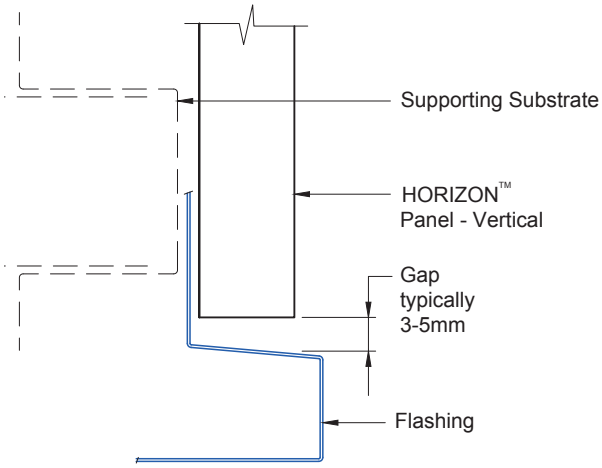
4.7 GAPS

Gaps between the flashing and panels should be determined with consideration to functionality, practicality and aesthetics. Typically, this gap is limited to 3-5mm. However, a larger gap may be considered to match the aesthetics of the façade. For instance, a gap of 15mm may be considered to mimic the Express Joint.

In bushfire-prone regions, the gap is limited to 3mm max. Refer to *NZ Cladding Code of Practice, BlueScope Technical Bulletin TB-30* and AS 3959 for more guidance.

FIGURE 4.7-1:

Gap between flashing and cladding



4.8 PANEL END DETAILING

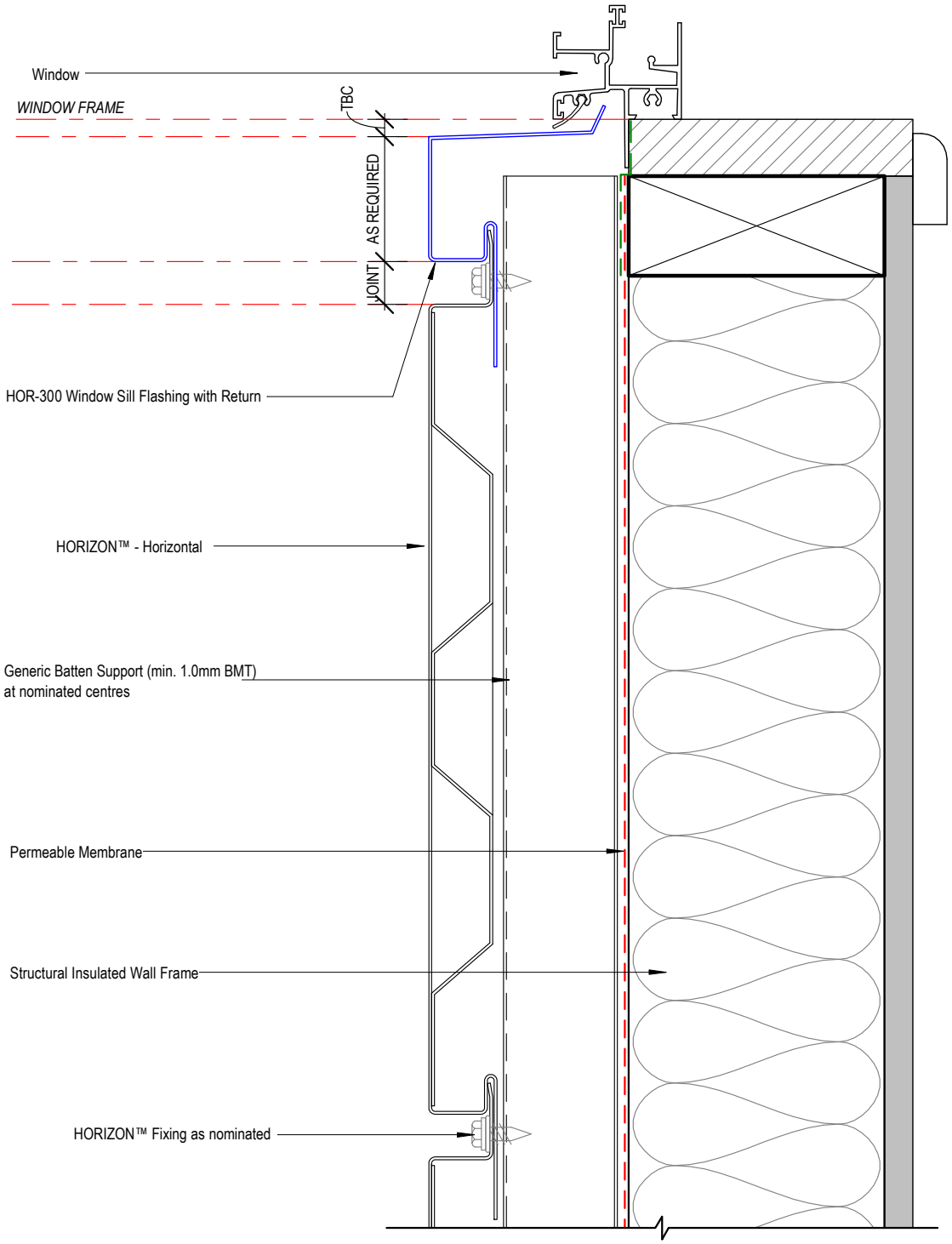
HORIZON™ panels are available with closed ends as standard.

Closed ends are intended to allow the ends to be exposed to view, which allows for under-flashing detailing. As panels with closed ends are custom-manufactured to length, focus is required on the following:

- The design of the wall system, installation and flashing must be carefully detailed on the drawings before any construction commences. These details must be precisely followed during the construction.
- Precise site installation detail is required to ensure suitable alignment at both ends of the panel. Alternatively, one end can be concealed by being over-flashed. For example, the top end of vertically-installed panels can be concealed with parapet flashing, or the top end of horizontally-installed panels can be concealed with window jam flashing.
- The panel lengths must be site-measured to ensure that the precise lengths are ordered.

FIGURE 4.6-1:

Example window sill flashing detail with horizontal HORIZON™ panels



5.0 CONSTRUCTION SEQUENCING

5.1 SCAFFOLDING

Consideration should be given to the sequencing of scaffolding erection/dismantling and the effect that it will have on panel installation. Horizontal panels are installed from the top of the façade (or top of the wall compartment), progressing downwards. As such, scaffolding for the full height of the façade will be necessary.

Scaffolding may impede the handling and installation of the façade supports (e.g. battens) and panels. For instance, scaffolding may limit the lengths of battens and panels that can be safely handled and installed. Consideration should be given to this limitation by breaking up the wall into modules or compartments (e.g. by limiting vertical panel construction to floor-to-floor compartments). Each wall compartment can have the supports individually installed, levelled, plumbed and squared, and the shorter panels can then be installed to fit the size of the compartment. The edges of the compartment can then be individually flashed.

The construction sequence and methodology of the scaffolding may also impede handleability during the installation of heavy or wide panels.

Dismantling of the scaffolding must be such to prevent damage to the installed façade. Consideration must be given to the CORSTRIP® film removal and the façade cleaning as the scaffolding is being dismantled. Alternatively, separate provisions must be made.

5.2 SUPPORTING SUBSTRATE

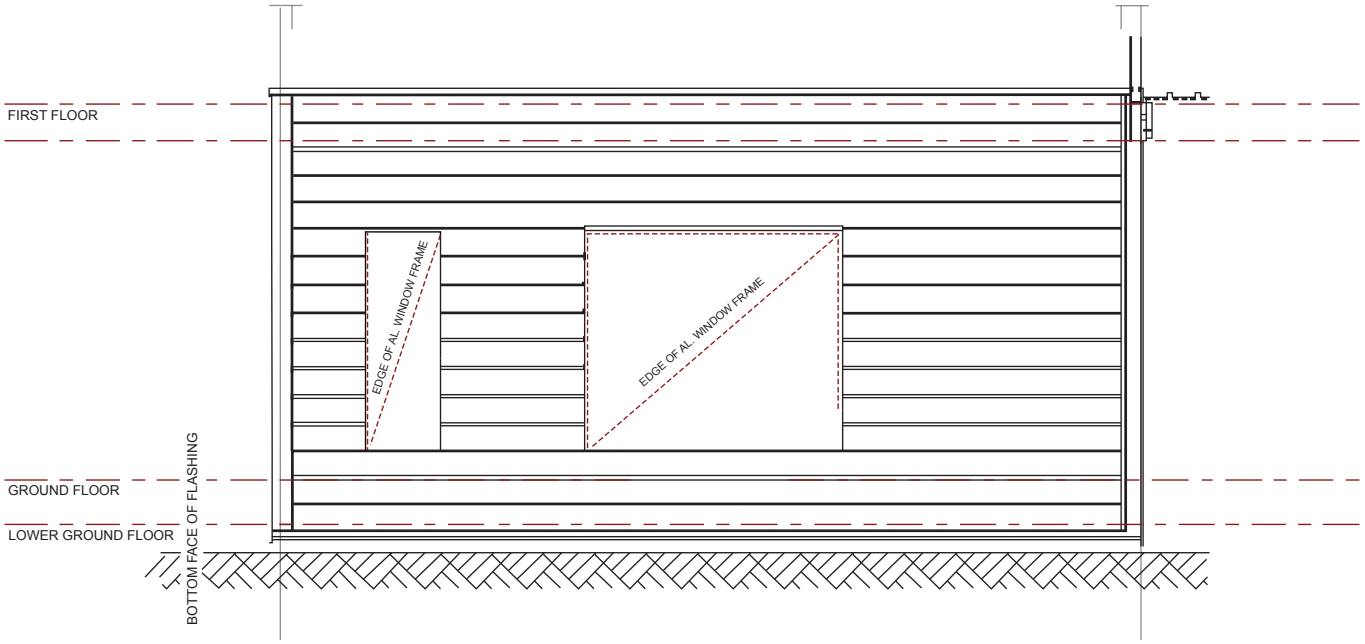
- The substrate (e.g. battens) must be detailed to provide adequate support for the panels and flashings with consideration to the panel orientation and selected flashing details.
- Some flashings require installation before the supports. For example, flashing around window/door openings and toe moulds.
- Measurements should be taken on-site after the supports have been installed to determine the appropriate panel dimensions (cover width, face width and length) and minimise cutting on-site.

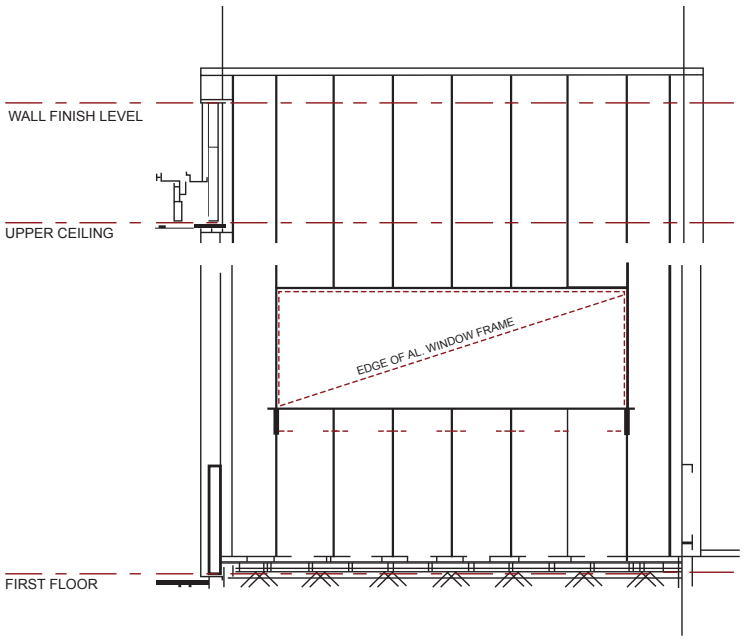
5.3 PANEL LAYOUT & FLASHING

- Measure and mark the expected layout of the panels to minimise panel cutting/trimming whilst considering the overall visual symmetry and alignment at the nominated locations along the wall, such as at the corners and window/door openings.
- Flashing dimensions should be considered in the panel set-out and allowance should be given to the manufacturing tolerances of the panel width and the adjustability available in the panel joints to ensure visual symmetry and alignment.
- Consider the required panel widths and lengths with respect to the location of penetrations such as window/door openings and the resulting aesthetics, especially regarding symmetry and joint distribution/alignment.
- Consider the order and direction of the installation of the panels and the flashings. Each wall segment/compartment should be installed in a direction that will simplify the installation and result in acceptable overall aesthetics. Note that the direction of laying of vertically-orientated panels may also need to consider the prevailing wind direction.

FIGURE 5.3-1:

Typical HORIZON™ Panel layout showing alignment with openings





6.0 SITE SAFETY, STORAGE AND HANDLING

6.1 SAFETY

It is commonsense to work safely, protecting yourself and workmates from accidents on the site. Safety includes the practices you use, as well as personal protection of eyes and skin from sunburn, and hearing from noise. Some sunscreens contain titanium oxides. These have been shown to break down some paint compounds and these should be avoided.

Occupational health and safety laws enforce safe working conditions in most locations. Laws in every state require you to have fall protection which includes safety mesh, personal harnesses and perimeter guardrails. We recommend that you are fully aware of all local codes of safe practice and you adhere strictly to all laws that apply to your site.

For comprehensive information on safety when working with steel, building professionals should consult the appropriate legislation, regulations, codes of standard practice such as SA HB39 and industry literature such as *BlueScope Technical Bulletins TB-07, TB-13* and *TB-37* and LYSAGHT® Roofing & Walling Installation Manual.

6.2 SITE STORAGE OF PRODUCT BEFORE INSTALLATION

The panels are delivered in a variety of different pack sizes. The packs are designed to protect the panels during loading, transportation and unloading. It is the site's responsibility to ensure:

- Suitable on-site lifting equipment is available for safe unloading of the packs without damaging the packs or the panels within.
- A suitable area is provided for storage of the packs without stacking. The area should be reasonably clean and level. The packs should also be positioned to enable adequate access for unpacking panels, or to allow the packs to be relocated if necessary.
- The packs are adequately supported such that they are raised above ground level, preferably with a slight slope to allow for rainwater runoff.
- If the packs are to be left exposed to the weather for extended periods, it is recommended that the packs are covered with waterproof covers. However, adequate ventilation should be maintained.

Where the packs have been opened, and where panels have been partially removed from the packs, it is recommended that the opened packs and individual panels are stored with care, as described above.

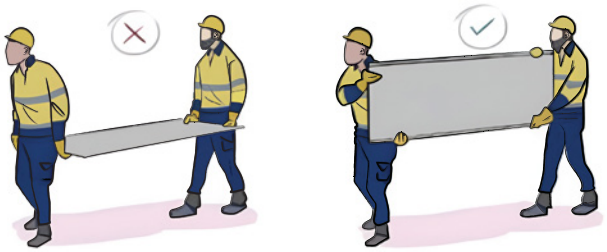
6.3 SITE HANDLING

The HORIZON™ panels can have a greater mass per square metre than other cladding products. The panels are delivered in a variety of pack sizes designed to protect the panels, which may be larger and heavier than traditional pack sizes for conventional cladding products. Consequently, suitable lifting devices, handling devices and adequate labour force will need to be considered for the safe handling of the packs, removal of individual panels from the packs, and the handling of the individual panels into position for installation.

Although the panels are considerably rigid, it is recommended the panels be handled on the long edge as shown in Figure 6.3-1. The profile of the panel also provides a natural "hand hold" for ease of grip.

FIGURE 6.3-1:

Incorrect and correct panel handling



For the handling of heavy panels, it is recommended to use grips (either suction or magnetic grips) to assist in maneuvering and holding the panels in position during installation.

7.0 SITE TOOLS

Use of drilling and cutting tools result in sharp edges, burrs and swarf. Refer to BlueScope Technical Bulletin TB-05 for the prevention & removal of the swarf and other debris, corrective actions and regular clean-up during construction.

7.1 FIXING TOOLS

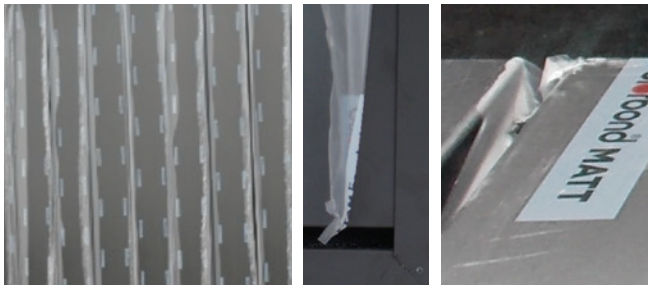
The drive bit of the screw gun must accommodate the screw specification and suit the width and depth of the Express Joint. It would be prudent to use extended drive bits and narrow-width heads. Wide-drive bits leave little tolerance to the side of the Express Joint, which can result in surface damage along the Express Joint.

It is important that the correct size drive bit be selected for the screw head. This will minimise the risk of the drive bit slipping, and damaging the coloured screw head or Express Joint.

Drilling through the product can produce hot swarf that may damage the surface if not protected. Localised removal of the CORSTRIP® film as shown below (as opposed to complete removal), helps to protect the product surface.

FIGURE 7.1-1:

Localised removal of CORSTRIP® film



7.2 CUTTING TOOLS

On-site cutting should be minimised by using factory-supplied cut-to-length panels.

Shears

With regards to flat sheet steel and flashing products, Lysaght recommends the use of powered hand shears for complex cuts, intricate cuts or trimming; however, manual shears (tin snips) may be appropriate or practical in certain situations.

Power Saws

With many steel-profiled products, powered rotary cutting tools (e.g. circular saws) will be required as they are more practical. Lysaght do not recommend the use of abrasive discs when cutting steel-profiled products and panels. Abrasive disc-cutting methods can damage the edges of the material and may result in premature corrosion of the edge. Instead, Lysaght recommends the use of cold cutting saw blades/discs as the process generates larger and cooler particles than abrasive discs. It is recommended to use a high-speed saw blade with small/fine teeth, which is suitable for cutting thin steel material (<1.0mm BMT). Poor quality or blunt blades may produce excessive burring or excessive friction and heat. Remove all burrs prior to fixing the panels.

Note: Where practicable, sheets cut on-site should be cut at ground level or on suitable supports. **DO NOT** cut over the top of other coated products because debris may fall onto them and cause damage. Care should be taken to ensure that hot swarf does not come into contact with nearby sheets. Where cutting must be carried out near sheets already installed, the area around the cut must be masked and the stream of hot particles directed away from completed work, or alternative measures should be taken to protect adjacent surfaces (e.g. by the use of a drop cloth).

The HORIZON™ panels must be cut with the exterior surface facing upwards, thus particular care must be practised and the CORSTRIP® film should be kept intact until it needs to be removed.

Cutting the panels must be done with care to ensure that the cut is straight (square across the panel width or at an angle across the panel face) and square to the vertical (perpendicular to the face). The cutting blade should be set to a cutting depth slightly more than the overall depth of the panel (nominally 30-35mm).

The cutting direction can be from either the male or female edge of the panel. When starting the cut, care should be exercised when the blade first makes contact with the lip's edge, to prevent kicking up or locking of the saw blade's teeth onto the edge. The saw must be running at full speed before commencing the cut.

8.0 PRE-INSTALLATION PREPARATION

Refer to Section 5.0 for construction sequencing with consideration to scaffolding, the supporting substrate, panel layout and flashing.

8.1 SUPPORTING SUBSTRATE

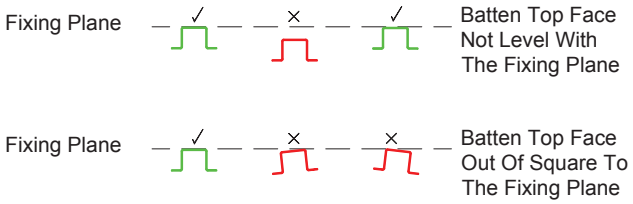
It is very important that the supporting substrate is first installed plumb, level (uniform) and square to provide a suitable fixing plane for the wall cladding/panel. The wall structure is commonly constructed to a different standard of construction tolerances, and thus should not be relied upon as a suitable fixing plane.

A plumb surface is necessary to ensure straight lines (both horizontally and vertically) and to ensure squareness at corners and at openings/penetrations (window and door frames). A level fixing plane (uniform/flat plane) will minimise panel distortion. Panel distortion can result in panel twist and curvature, resulting in waviness or localised creasing.

It is very important that the support batten top surface is square to the fixing plane, and all supports are in the same plane. Non-square support installation will result in localised buckling/distortion of panel at the fixing points.

FIGURE 8.1-1:

Support surface fixing plane



8.2 FLASHING

Refer to Section 4.0 for the flashing considerations with respect to the details and direction of installation, and Section 5.0 for guidelines on the order of installation of supports, flashing and panels.

8.3 PANEL CUTTING & EDGE STIFFENING

Refer to Section 7.2 for cutting tools.

Cutting and trimming of HORIZON™ panels should be minimised where possible, but there will be situations where this will be required (e.g. cutting to size, accommodating penetrations and openings).

When a panel is cut longitudinally (i.e. panel width reduction), then it may be necessary to provide edge stiffeners to support the weakened cut edge of the front face. Such edge stiffening is required where the front face has an unsupported edge of 50mm or more from the backing skin. The recommended stiffening trim is detailed below.

The cut panel must be prepared with the stiffening trim before installation. The preparation includes:

1. Applying on-site adhesive and installing the stiffening trim into position.
2. Clamping the edges with stiff packers to smooth out any waviness on the front face.
3. Allowing the adhesive to cure.

FIGURE 8.3-1:

Nominal dimensions of the stiffening trim

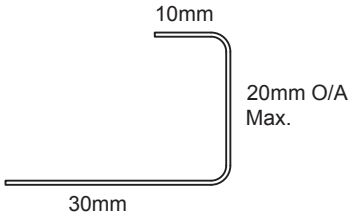
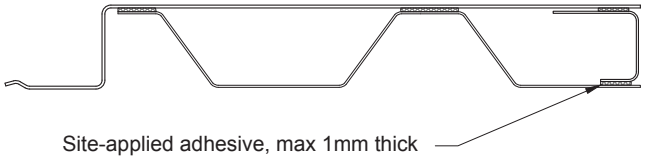


FIGURE 8.3-2:

Stiffened edge of a longitudinally-trimmed panel



The edge of the trimmed panel will require securing as detailed below. Sealing between the mating surfaces at the exposed leg of the edge trim may be required. If required, the trimmed edge can be concealed with over-flashing.

FIGURE 8.3-3:

Nominal dimensions of the edge trim

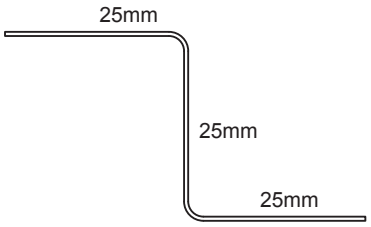
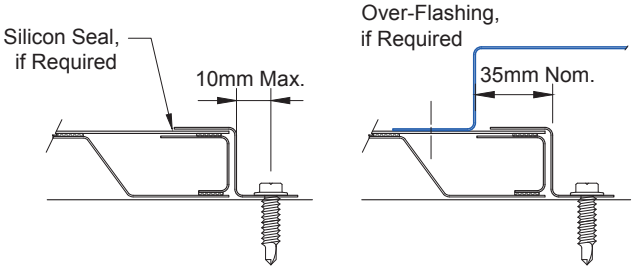


FIGURE 8.3-4:

Fixing and finishing of a trimmed edge



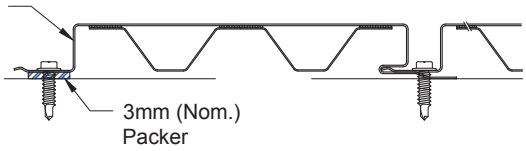
9.0 INSTALLATION

9.1 STARTER PANEL PACKING

The first/starter panel will likely require a packer/shim under the male leg to ensure all exposed faces are in the same plane. If the male leg engages into a female edge/groove, then a packer/shim will not be required. In applications where fire performance is required, then the packer must be non-combustible. The manufacturer of the packer/shim material should be contacted to confirm their product's suitability for this application.

FIGURE 9.1-1:

Levelling the first male leg with a packer



9.2 DIRECTION OF INSTALLATION

In wall applications, the panels can be installed horizontally or vertically.

With consideration to prevailing winds, horizontally-installed HORIZON™ panels must be installed commencing from the top of the wall segment/compartment, i.e. the male leg is pointed upward and the female edge pointed downward, thus providing good drainage from the female edge. However, when installed vertically, some consideration of the prevailing winds may require that the male leg point towards the prevailing winds.

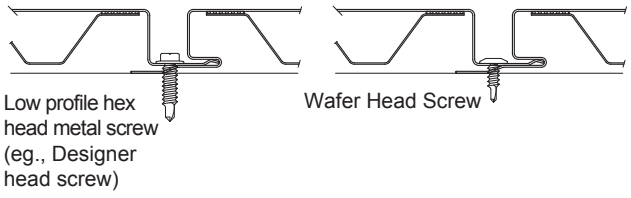
9.3 FIXING DETAILS

Engage the male edge into the female edge (i.e. the panels are lapped) and screw fix through both legs. Spacers blocks, temporarily inserted into the Expressed Joint, will be required to ensure a consistent gap between lapping sheets.

The screw head should be centred on the Expressed Joint, with the centre of the screw a minimum of 30mm away from either end of the panel.

FIGURE 9.3-1:

Screw fixing details



9.4 PANEL INSTALLATION STEPS

The typical installation process is described below. Some parts of the installation process may vary depending on the flashing details selected for the project. Other methods may be employed to suit the installer's needs or the project requirements, provided that the basic principles of detailing, lap engagement and fixing are adhered to. The installer must plan the whole project to optimise the laying sequence.

1. Select the panels that require cutting on-site to suit the wall details (e.g. openings such as windows & doors). Mark these panels in preparation for cutting; however, do not cut until required.
2. Some flashing details may require installation prior to the panel; these may include internal corners, openings, toe moulds etc. Install these flashings as required. Ensure adequate redirection/drainage of water ingress (such as at window heads). Sealing may be required where the building membrane is penetrated.
3. Commence installing the panels from the selected location.
4. Select the first panel for installation.
5. Peel back the CORSTRIP® film from the male and female edges only. This accommodates installation of the adjacent panel, and allows for easy removal of the film at completion. Minimise the removal of the CORSTRIP® film during installation, as it helps protect the COLORBOND® steel surface from being damaged.

FIGURE 9.4-1:

CORSTRIP® film peeled back at the long edges for panel installation

6. Temporary spacer blocks, a straight edge or stringline may be used at the panel ends to help align the panels and ensure a uniform gap at the ends of the panel.

FIGURE 9.4-2:

Temporary spacer blocks during installation

7. When installing the first panel, packers/shims may be used under the male leg to assist with engaging into the female edge, and ensure a flat plane of the finished surface.
8. Screw fix the first panel through the male leg at each support along the full length of the panel.
9. Select the next panel for installation, and repeat the process for peeling back the CORSTRIP® film from the male/female edges only.
10. The male leg of this panel should engage snugly with the female edge of the first panel. Ensure sheets are aligned as per Step 6.
11. Spacer blocks will also be required along the long edges to ensure the Expressed Joint is uniform.
12. Fix the panel through the male leg, as for the previous panel. This fixing will pass through both the male and female legs.
13. Continue installation of the following panels as above and continuously check to ensure that the panels are aligned and the Expressed Joints are uniform.
14. At each penetration, re-measure the location and dimensions of the required cuts (length, width, notched) for the next panel. Check the previously marked panel. Cut the panel when the cut-out dimensions have been confirmed (i.e. measure-twice, cut once).
15. Panels cut to width or notched for openings may require stiffening flashings to be fitted.
16. Install the cut panel.
17. Continue with remaining panels, as described above, to complete the wall segment/compartment.
18. Install remaining flashings as appropriate.

9.5 INSTALLATION & FIXING TIPS

9.5.1 CARE WITH DRIVE BIT SELECTION & SCREW DRIVING

The HORIZON™ panels have exposed screw fixings located in the Expressed Joints. The drive bit on the screw gun must be selected to ensure adequate clearance from the COLORBOND® steel surface along the Expressed Joint. Screws must be positioned in the centre of the Expressed Joint, and fixed with care.

9.5.2 MINIMISING PANEL DISTORTION DURING HANDLING

When the panel is being installed, care must be taken to prevent excessive pressure on the panel while it is held in place and fixed. Excessive hand pressure, excessive pressure on the screw gun while driving, or excessive torque setting on the screw gun, could result in local, but minor, distortion of the panel profile. Such distortion could result in poor aesthetics. It is recommended that panel installation be managed as a 2-person task to minimise risk of panel distortion whilst maintaining panel alignment.

9.5.3 MINIMISING PANEL DISTORTION DURING INSTALLATION

While the panel is fixed at the Expressed Joint, it is common practice for installers to temporarily pin the panel on the female leg to maintain correct alignment. Where this pinning is done with a through-fix fastener (e.g. a screw) then it is advised that this temporary fastener is removed, as soon as practical, before the installation of the next lapping panel. Leaving the temporary fastener in place can result in localised distortion of the panel when the next lapping sheet is fixed into place.

9.5.4 CARE WITH PRE-PAINTED FASTENERS HEADS

The fasteners in the Expressed Joints are usually pre-painted as they are exposed and visible. Care should be taken when driving the screws into the panels to avoid scuffing the painted screw heads.

9.5.5 PANEL PROTECTION DURING CUTTING

Always ensure that the COLORBOND® steel surface of the panel is adequately protected when cutting panels on-site. This can be achieved by leaving the CORSTRIP® film in place, or by applying a suitable protective tape to the surface prior to marking and cutting.

10.0 FINISHING

10.1 CORSTRIP® PROGRESSIVE REMOVAL (DURING PANEL INSTALLATION)

CORSTRIP® film is a clear laminate plastic film placed over the COLORBOND® steel face of the panels and flashings. It provides some protection to the COLORBOND® steel surface from dirt, scratches and scuffing during the various phases of panel manufacturing, transportation, handling, cutting and installation. Refer to *COLORBOND® steel Data Sheet and BlueScope TB-15* for further information on CORSTRIP® film.

CORSTRIP® film removal must be minimised during panel installation to help protect the COLORBOND® surface. Refer to Section 9.4 PANEL INSTALLATION STEPS for further detail.

10.2 CORSTRIP® BULK REMOVAL (POST PANEL INSTALLATION)

After installation, complete the removal of the CORSTRIP® film from the HORIZON™ panels and flashings, and dispose of responsibly. It is recommended that the CORSTRIP® film be removed when all other trade activities (including rainwater goods installation) are completed. At tall building sites, the film may need to be incrementally removed, working from the top down, as the scaffolding is being dismantled.

If trade activity is required after the CORSTRIP® film is removed, a high degree of care should be taken to prevent damage to the exposed COLORBOND® steel surface.

10.3 CLEANING

If the COLORBOND® steel surface is dirtied or marked due to on-site handling and activities, follow these basic cleaning guidelines:

- Wash the surface with a mild solution of pure soap or non-abrasive dish washing detergent in warm water. Washing should be conducted with a sponge, soft cloth or soft bristle nylon brush (no abrasive scourers, steel wool etc.), and be performed gently to reduce the possibility of scuffing the product surface.
- Thoroughly rinse the surface with fresh water immediately after cleaning to remove traces of detergent.

The COLORBOND® steel surface can appear scuffed if rubbed too hard or if abrasive cleaning pads have been used. However, these marks will fade with exposure to normal weathering.

FIGURE 10.3-1:

Typical staining from site activity including hand marks, poor cleaning, and dirt splash from rain activity.

11.0 IN-SERVICE INSTRUCTIONS

11.1 REGULAR/ONGOING MAINTENANCE

A common issue in the case of walling occurs in areas not naturally washed by rainfall, known as 'unwashed areas'.

Vertical surfaces which can be sheltered from general rain washing, allow the build-up of dust and dirt that rain would otherwise wash away. Because condensation can be absorbed by the dust and dirt, increasing the time the material is in contact with sufficient moisture to initiate corrosion, is recommended to maintain the finished work in accordance with the BlueScope Technical Bulletin TB-4.

Washing should be done at six monthly intervals as a minimum, or three monthly in locations such as coastal areas where marine salt spray is prevalent, or in areas where high levels of airborne dust/dirt or industrial fallout occur.

Simple maintenance of these finishes by regular washing with clean fresh water will enhance the service life of the product and help maintain the appearance.

In cases where regular maintenance using fresh water does not remove all dirt from the surface of the product, or local water regulations prohibit the use of a mains water hose, the following procedure should be followed using water obtained from a locally approved source:

- Wash the surface with a mild solution of pure soap or non-abrasive dish washing detergent in warm water. Washing should be conducted with a sponge, soft cloth or soft bristle nylon brush (no abrasive scourers, steel wool etc.), and be performed gently to reduce the possibility of scuffing the product surface.
- Thoroughly rinse the surface with fresh water immediately after cleaning to remove traces of detergent.

BlueScope information covering a range of important installation and maintenance considerations is available on-line, including BlueScope Technical Bulletin TB-4.

Attention should be placed on the removal of dirt and debris at all Express Joints and ledges. Fungal growth removal may require special attention. Refer to *BlueScope Technical Bulletin TB-27* for more information.

11.2 WINDY CONDITIONS

A slight, temporary outward deformation of the panels can be expected in windy conditions. The panels should return to their normal flat appearance.

11.3. HIGH HEAT CONDITIONS

In high heat conditions, some oil canning may be visible on the panel surface due to thermal expansion.
The panels will return to their normal flat appearance when the temperature cools.

11.4 MARKING OF THE PANEL SURFACE

The COLORBOND® surface of the HORIZON™ panel is durable and reasonably resistant to pedestrian activities, If the surface is marked or scratched as part of normal wear & tear, this does not affect the panel performance and the panel is still serviceable.

However, should the COLORBOND® surface come in contact with chemicals or other materials that may be of concern for corrosion, refer to the BlueScope Technical Bulletins available at steel.com.au for guidelines on cleaning, maintenance and restoration of COLORBOND® steel. Alternatively, contact your local lysaght branch for advice.

11.5 DAMAGE TO THE PRODUCT FACE

Contact with sharp or heavy items can damage the COLORBOND® steel surface. If the surface is dented, severely scratched or punctured, the panel will still be serviceable. If necessary, contact a tradesperson to determine if repair work is possible or if a replacement is required.

APPENDIX A: TYPICAL CONSTRUCTION DETAILS FOR LYSAGHT HORIZON® PANELS (NON-CYCLONIC)

The construction details presented here represent potential detailing solutions to common construction situations. These details may not be suitable for all projects / situations and users should use professional judgement in determining suitability of the details for their particular project whilst referencing AS 1562.1 and SA HB39. The full suite of HORIZON™ constructions details are available for download from *https://bimcontent.com/lysaght/* in both REVIT and PDF format.

NOTES

1. These details have been created in reference to 'Condensation Control In Australian Buildings Constructed with LYSAGHT® Claddings' available on professionals.lysaght.com to maximise the lifespan of the products.
2. Flashing coverage and fixings to comply to AS 1562.1 - Design and Installation of Sheet Roof and Wall Cladding - Metal
3. As a general rule, a minimum gap of 5,000mm^2/m has been adopted for ventilation and drainage for walling applications.
4. Consideration should be given in BAL zones. An additional stainless steel mesh may need to be installed over ventilation pathways to prevent ember ingress.
5. Definitions:

IMPERMEABLE refers to a Class 1 or Class 2 membrane (Class is determined in reference with climate zone) which no substance can pass through

PERMEABLE refers to a Class 3 or Class 4 membrane (Class is determined in reference with climate zone) having pores or openings that permit water vapour to pass through but not moisture

DIMENSIONS

Prior to commencing construction, verify all dimensions against Architect's, other Consultant's and Sub-Contractor's drawings. Dimensions are not to be scaled or read electronically from these drawings. Setout dimensions, unless specifically shown, are to be obtained from the Architect's or other Consultant's drawings.

DISCLAIMER

1. Lysaght takes no responsibility for the use of these details and exclude ourselves to the fullest extent permitted by law, any liabilities for any damages whatsoever (including, without limitation, damages for loss of profit, business interruption, loss of information, or any other pecuniary loss) arising out of the use or inability to use these construction details.
2. Due to ongoing product development and manufacturing evolution, product details are subject to change without notice. Please refer to product technical data sheets on www.lysaght.com for the most current product information.
3. These details are suggested methods of ventilation and drainage pathways only. The overall design and dimensions are still the responsibility of the designer in accordance with the NCC and relevant BLA requirements.
4. Lysaght accepts no responsibility for the accuracy or for any consequence resulting from the use of these drawings in electronic form. Drawings in electronic form should be checked for accuracy against the equivalent hard copy issued by Lysaght.

FIGURE A.1-1:

Typical Wall Cladding Setout – LYSAGHT HORIZON® Panel – Horizontal Fix – Plan View – H03-01

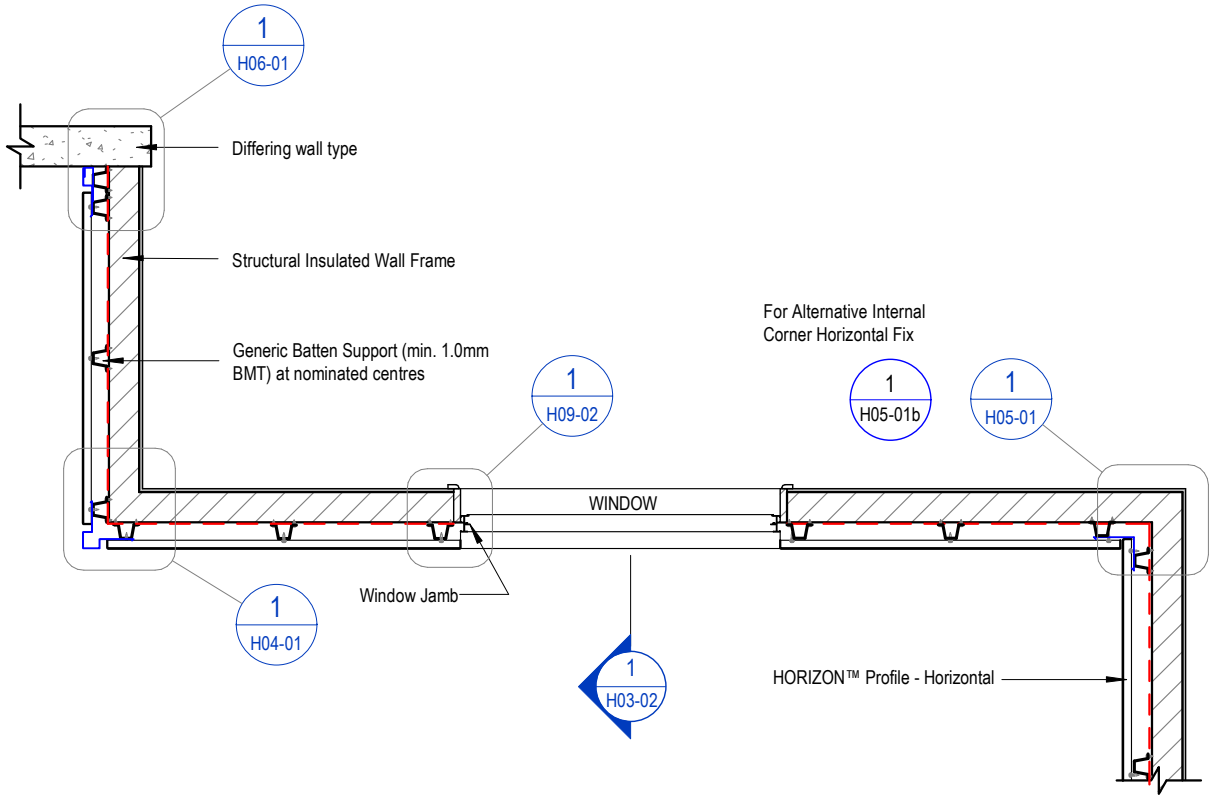


FIGURE A.1-2:

Typical Wall Cladding Setout – LYSAGHT HORIZON® Panel – Horizontal Fix – Sectional View – H03-02

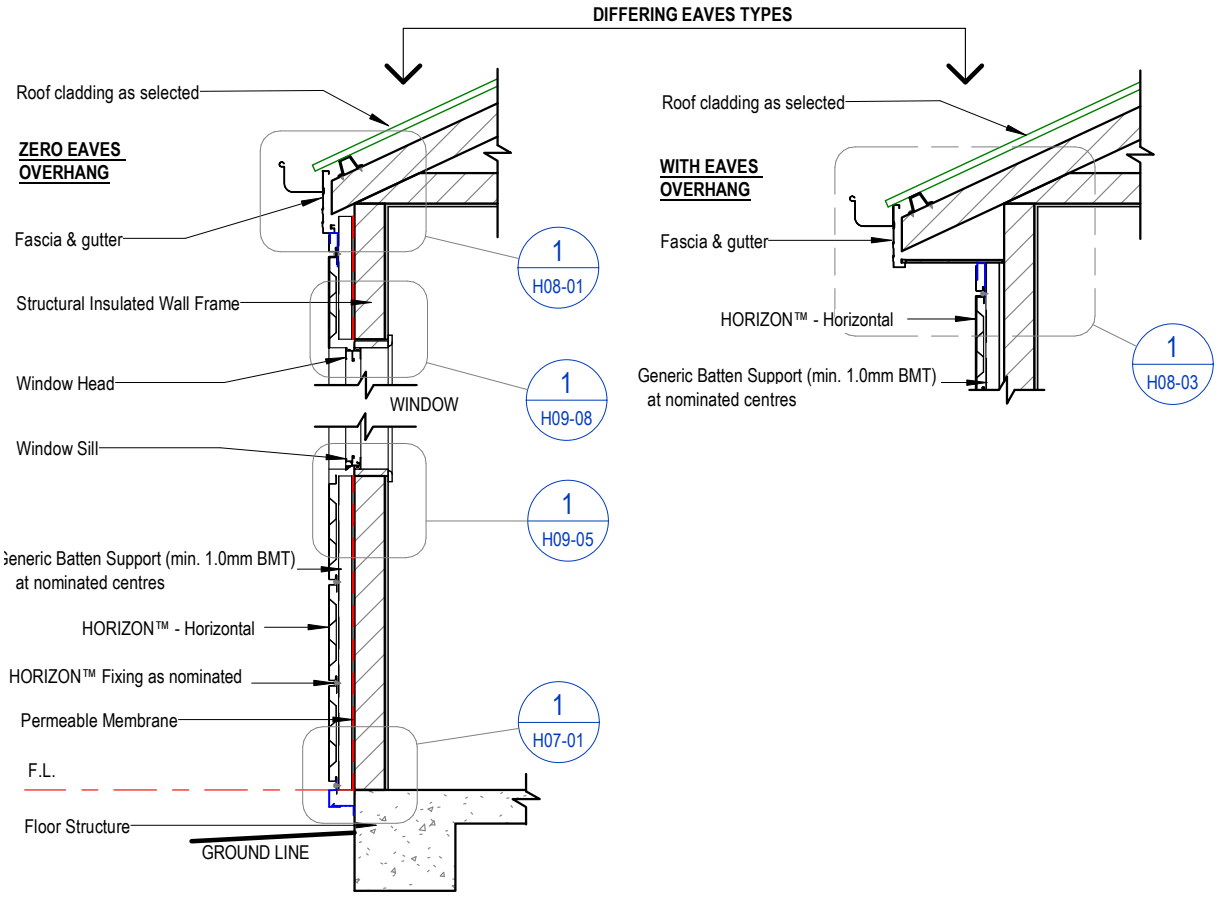


FIGURE A.1-3:

Typical Wall Cladding Setout – LYSAGHT HORIZON® Panel – Vertical Fix – Plan View – H03-03

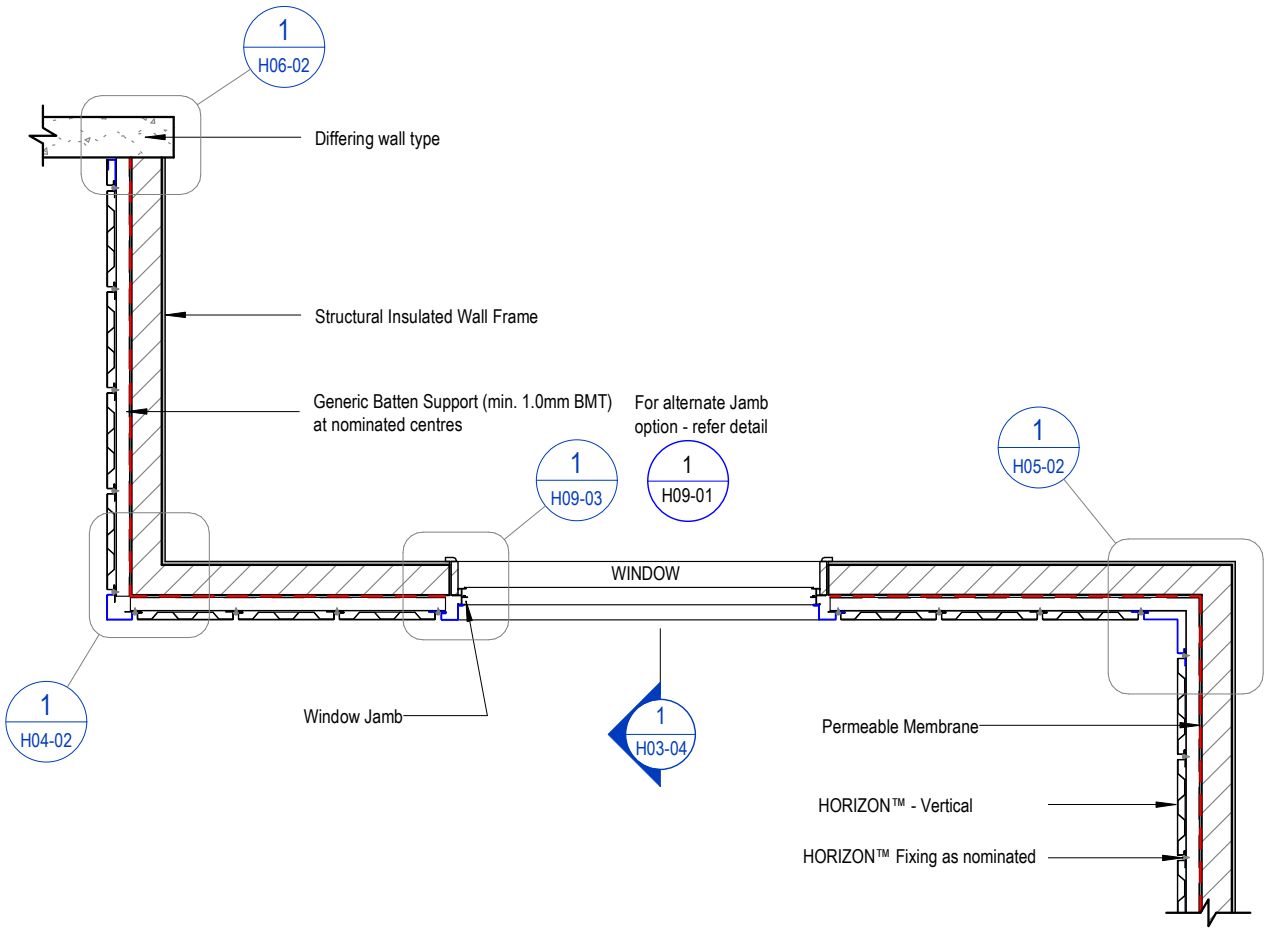


FIGURE A.1-4:

Typical Wall Cladding Setout – LYSAGHT HORIZON® Panel – Vertical Fix – Sectional View – H03-04

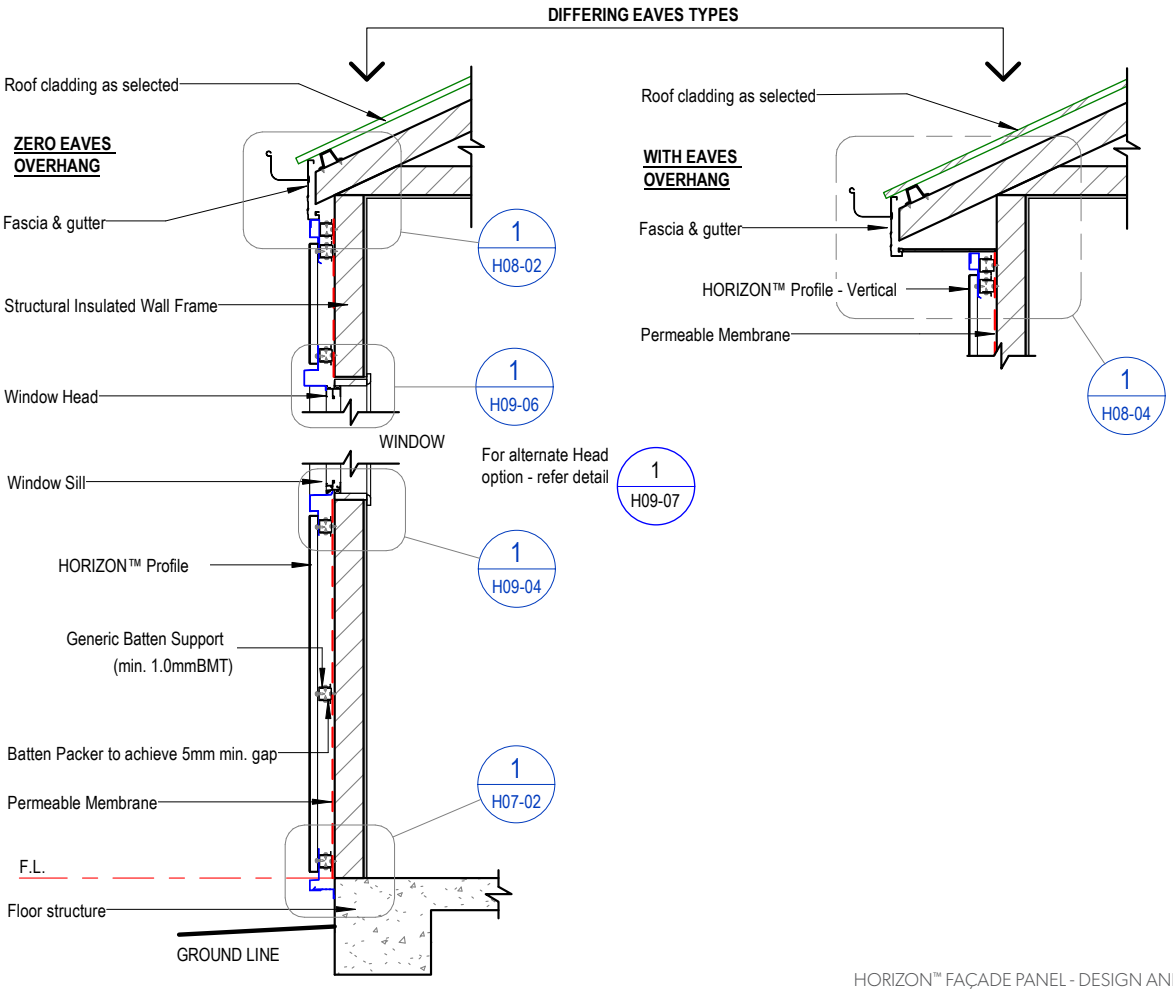


FIGURE A.2-1:

External Corner Detail – LYSAGHT HORIZON® Panel – Horizontal Fix – H04-01

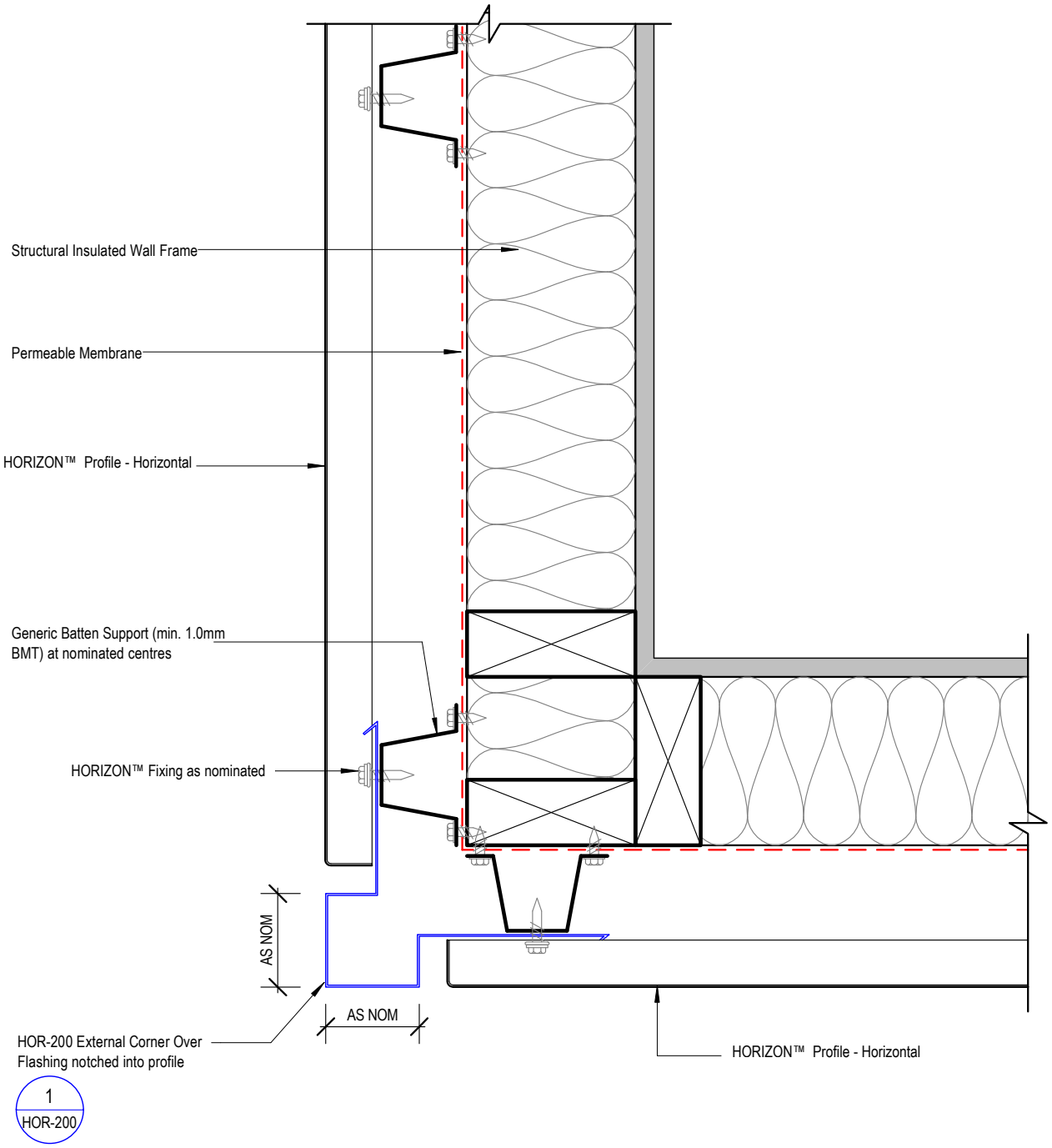


FIGURE A.2-2:

External Corner Detail – LYSAGHT HORIZON® Panel – Vertical Fix – M-M – H04-02

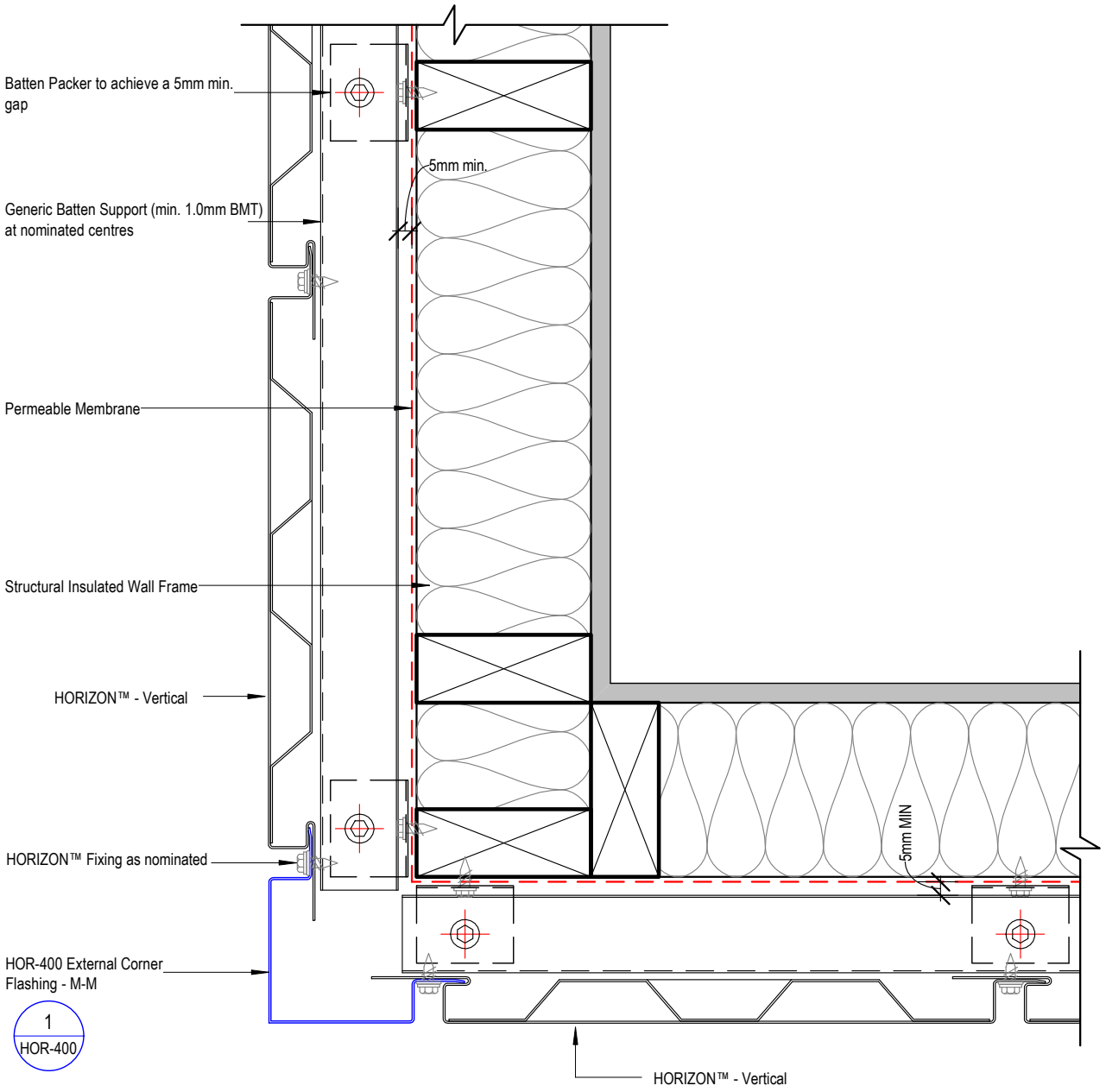


FIGURE A.2-3

External Corner Detail – LYSAGHT HORIZON® Panel – Vertical Fix – M-F – H04-03

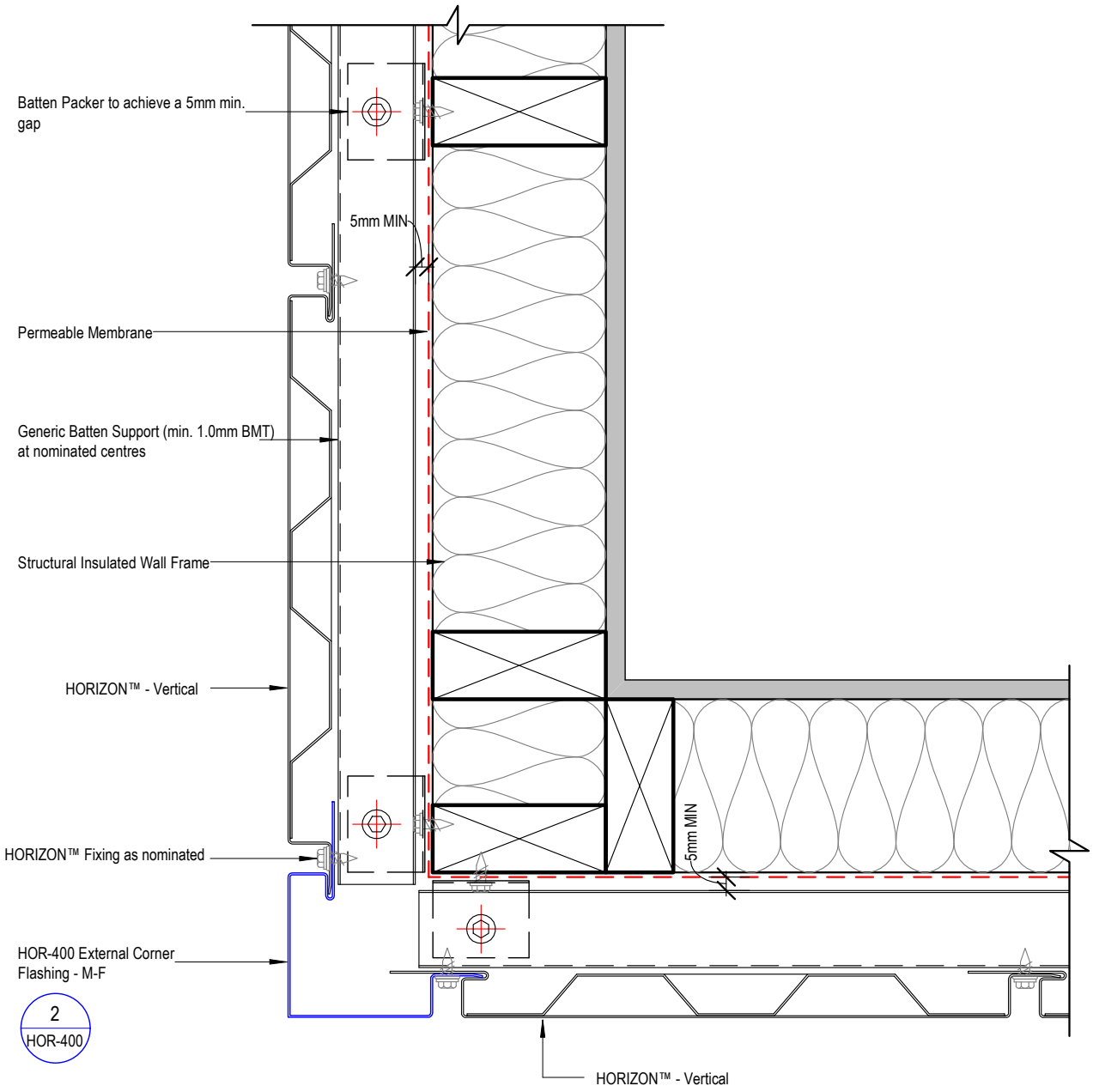


FIGURE A.2-4:

External Corner Detail – LYSAGHT HORIZON® Panel – Vertical Fix – M-F – H04-03

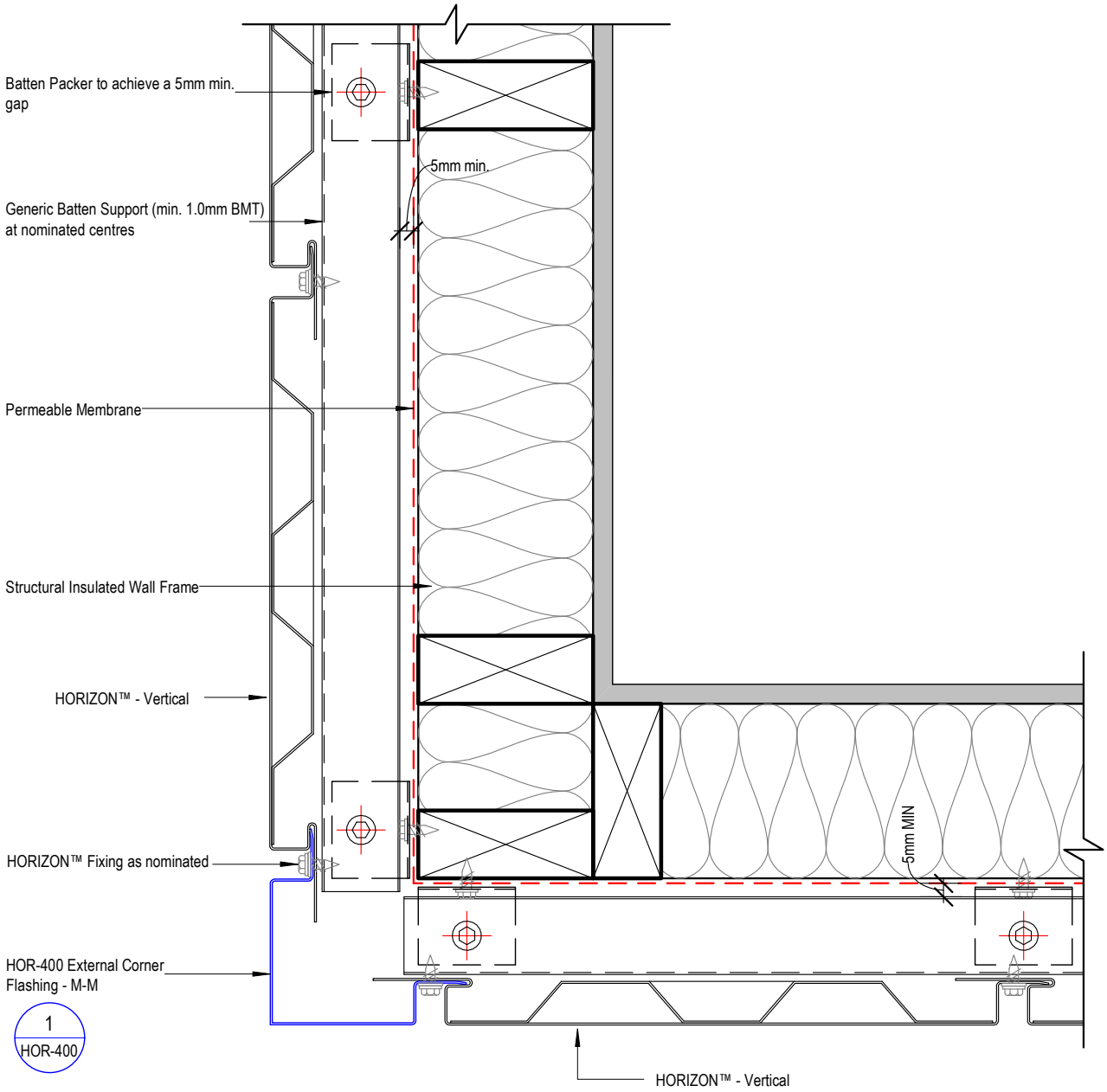


FIGURE A.2-5:

External Corner Detail – LYSAGHT HORIZON® Panel – Vertical Fix – F-F – H04-04

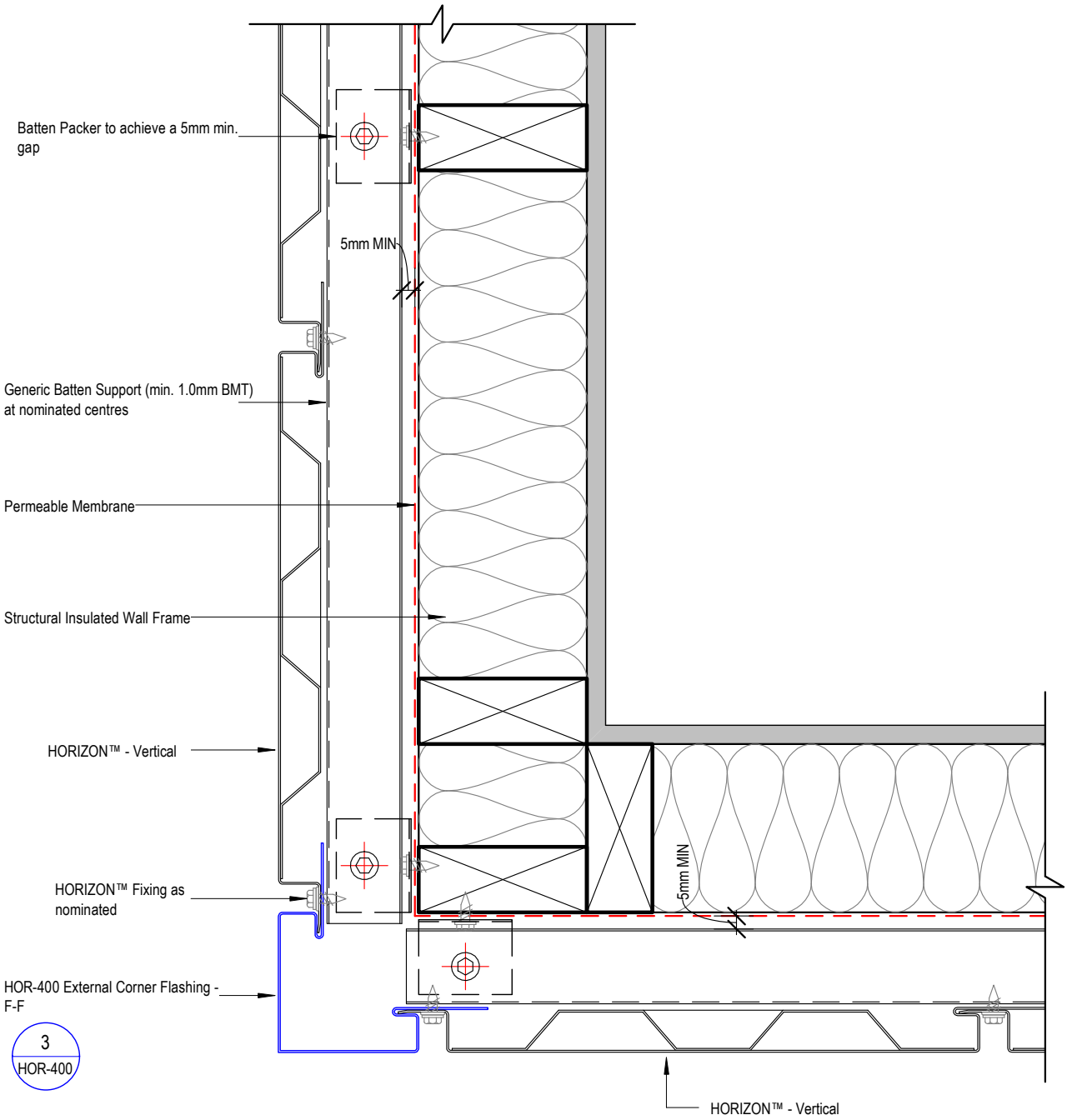


FIGURE A.3-1:

Internal Corner Detail – LYSAGHT HORIZON® Panel – Horizontal Fix – Option 1 - H05-01

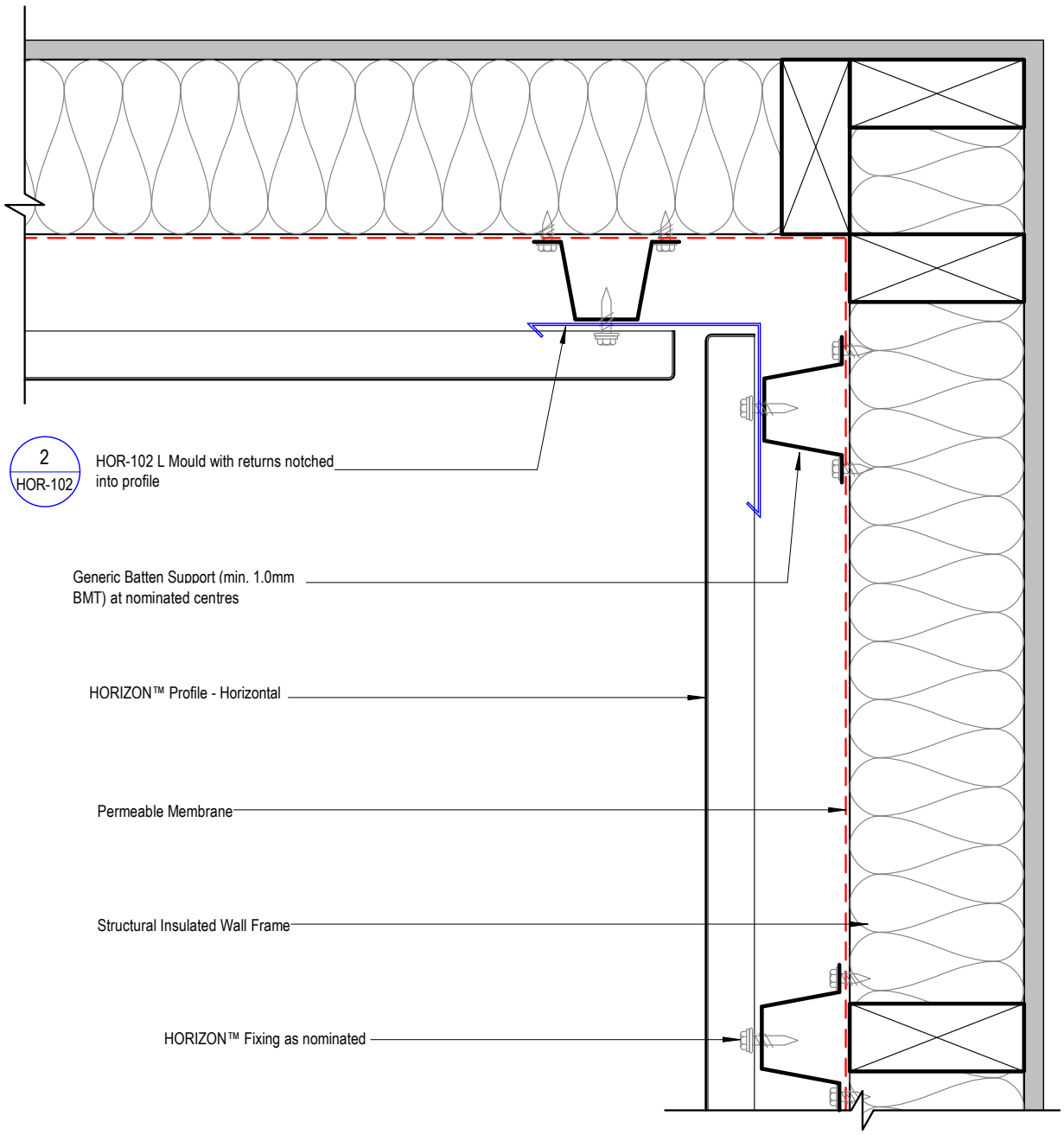


FIGURE A.3-2:

Internal Corner Detail – LYSAGHT HORIZON® Panel – Vertical Fix – M-M – H05-02

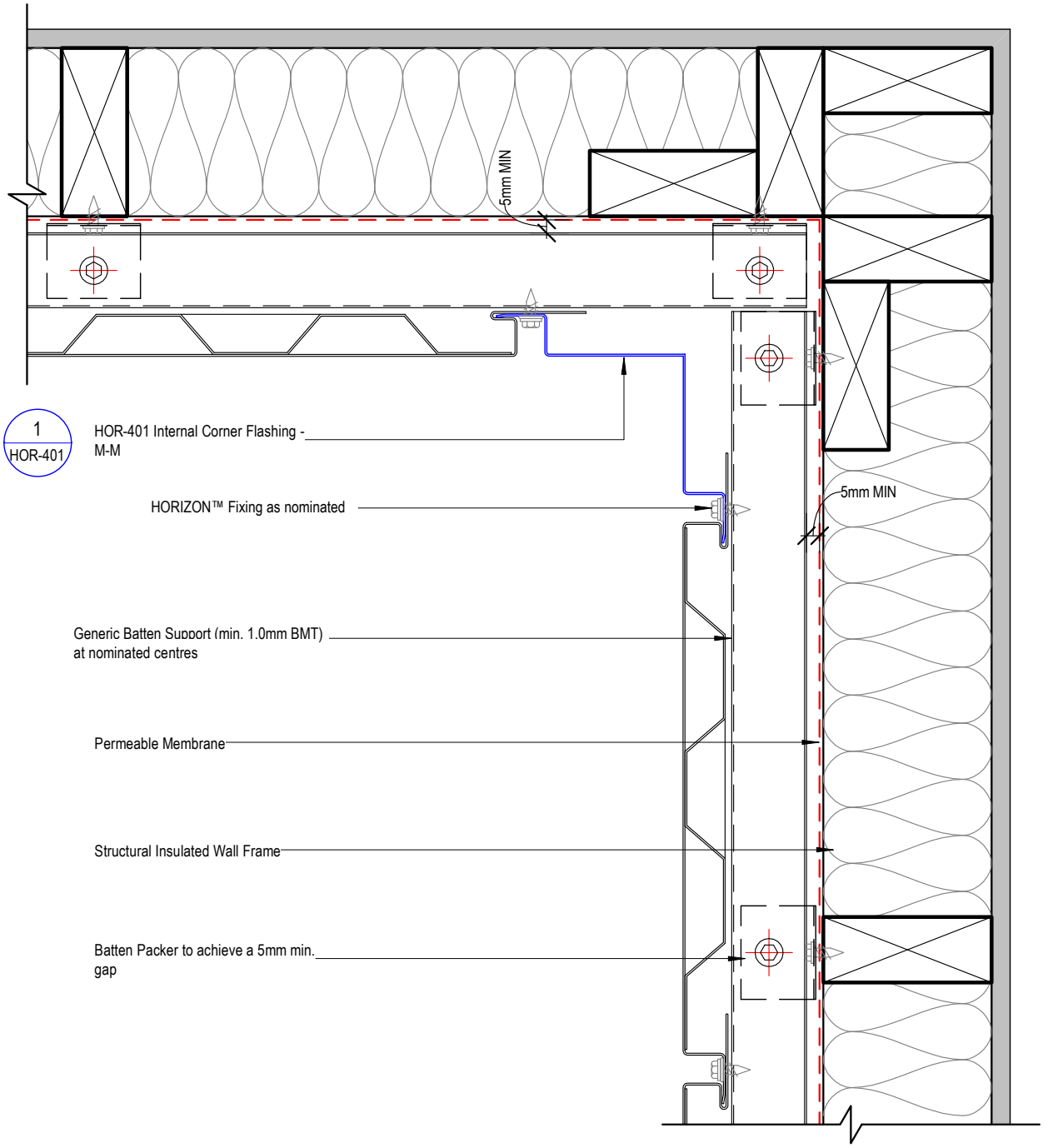


FIGURE A.3-3:

Internal Corner Detail – LYSAGHT HORIZON® Panel – Vertical Fix – M-F – H05-03

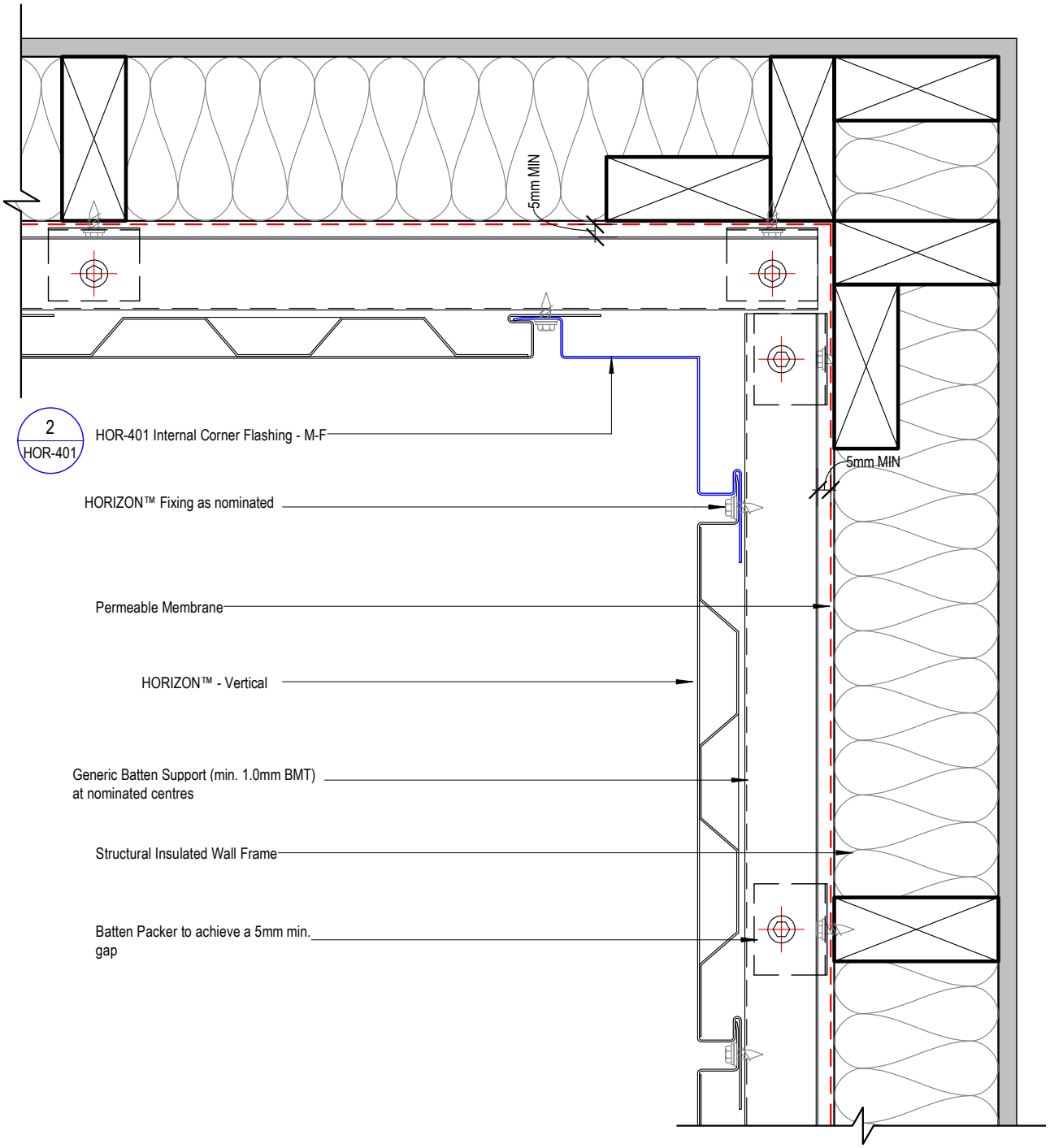


FIGURE A.3-4:

Internal Corner Detail – LYSAGHT HORIZON® Panel – Vertical Fix – F-F – H05-04

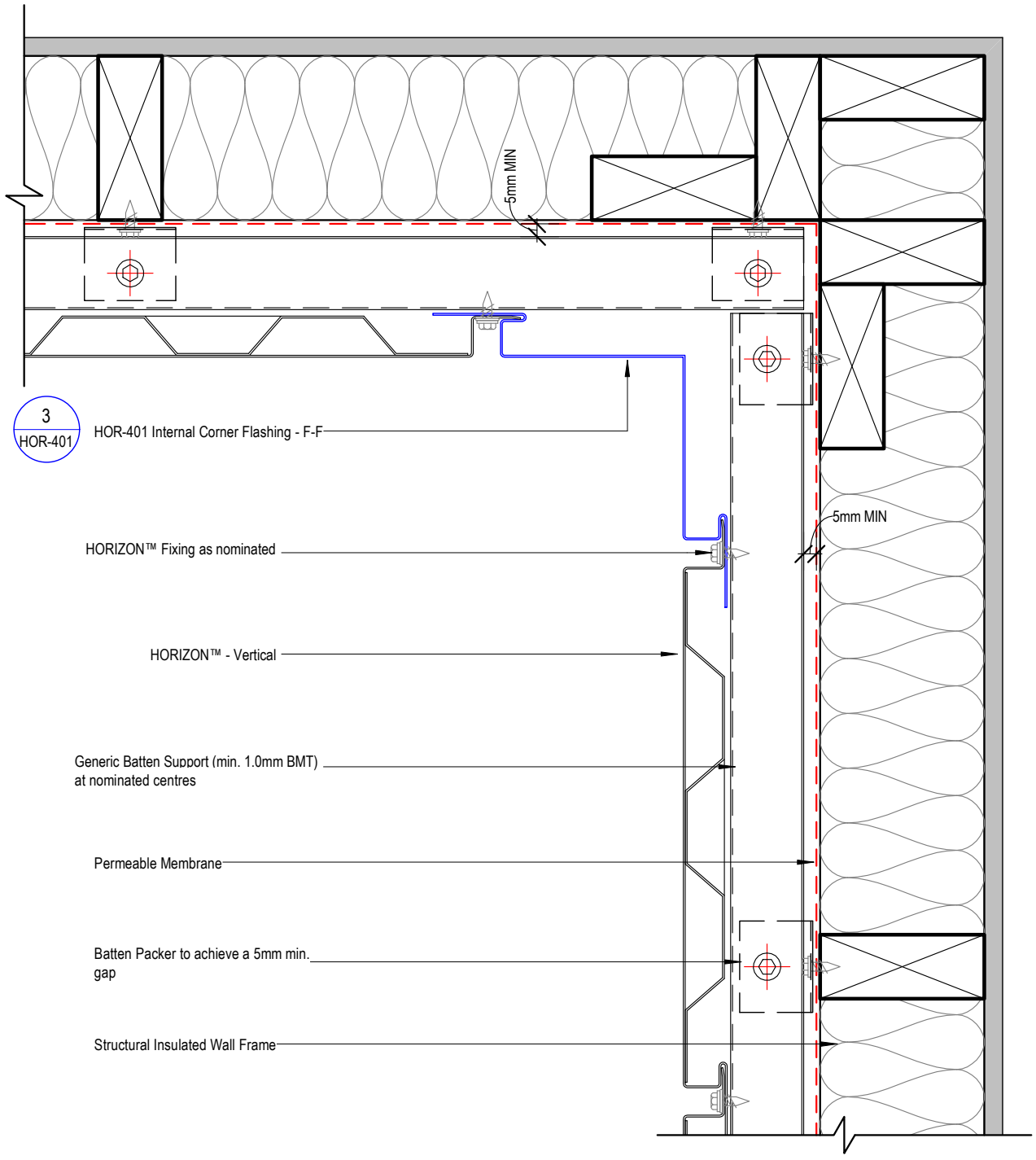


FIGURE A.4-1:

Wall Closure Detail – LYSAGHT HORIZON® Panel – Horizontal Fix - H06-01

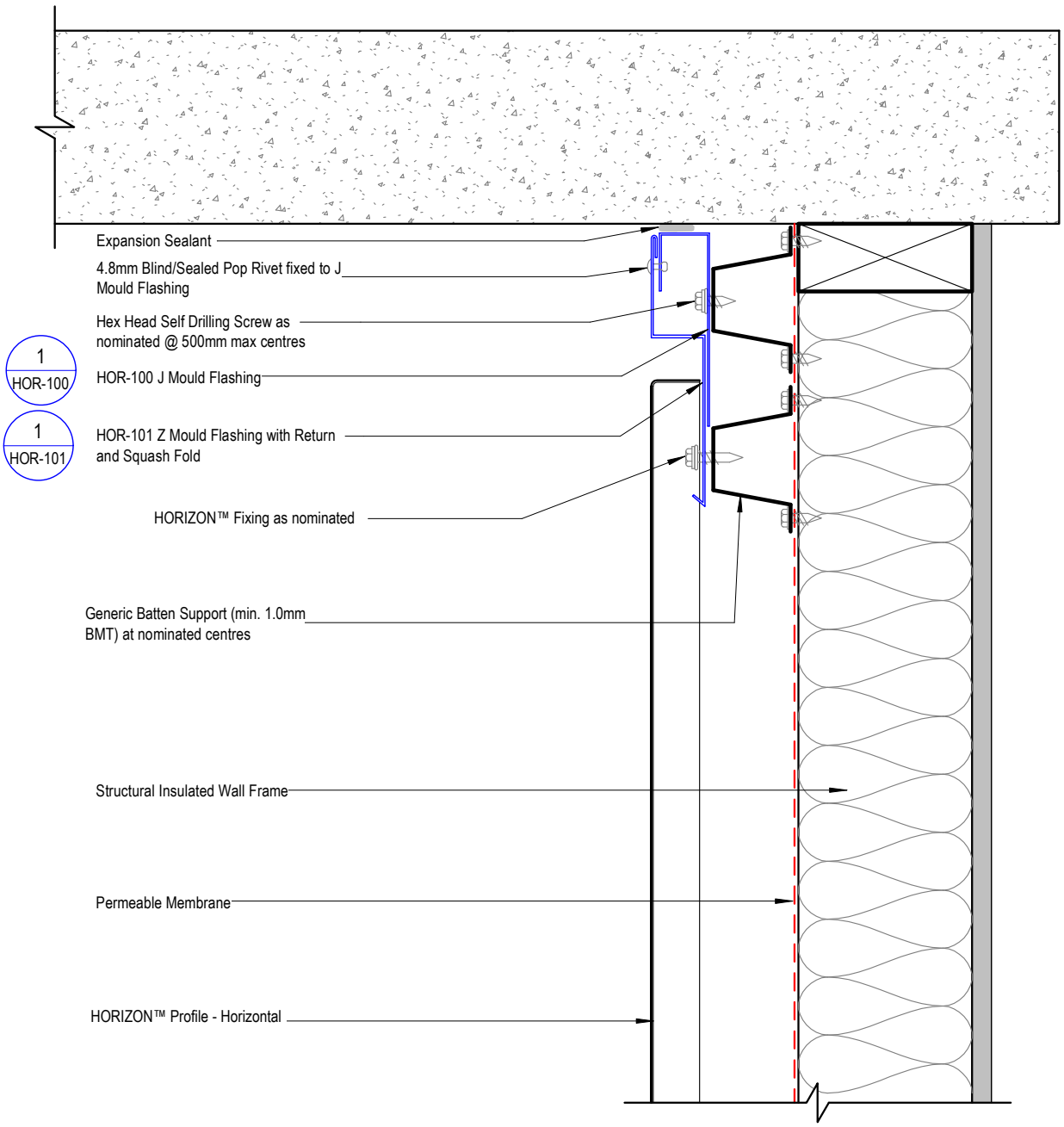


FIGURE A.4-2:

Wall Closure Detail – LYSAGHT HORIZON® Panel – Vertical Fix – H06-02

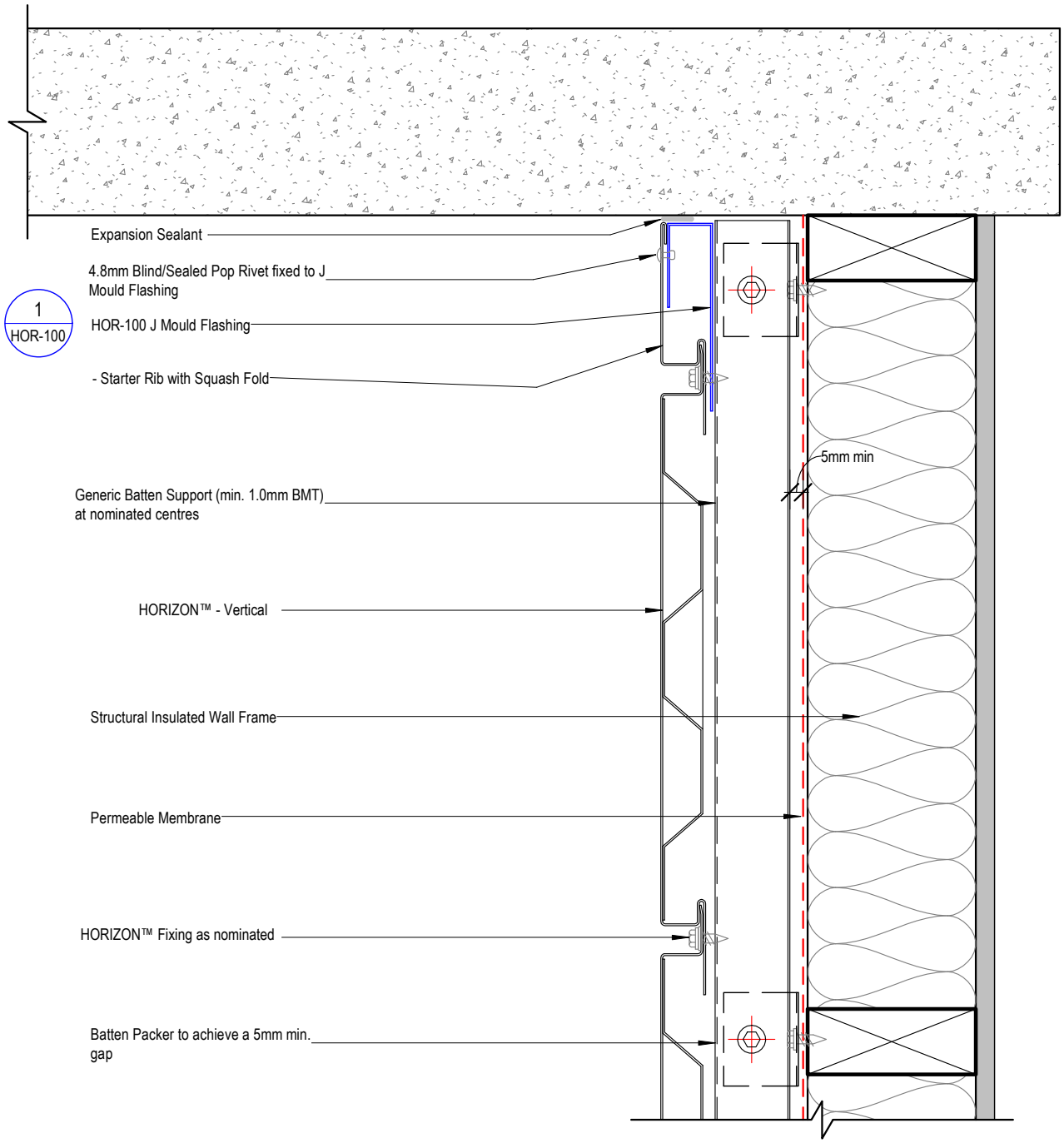


FIGURE A.5-1:

Wall Base Detail – LYSAGHT HORIZON® Panel – Horizontal Fix - H07-01

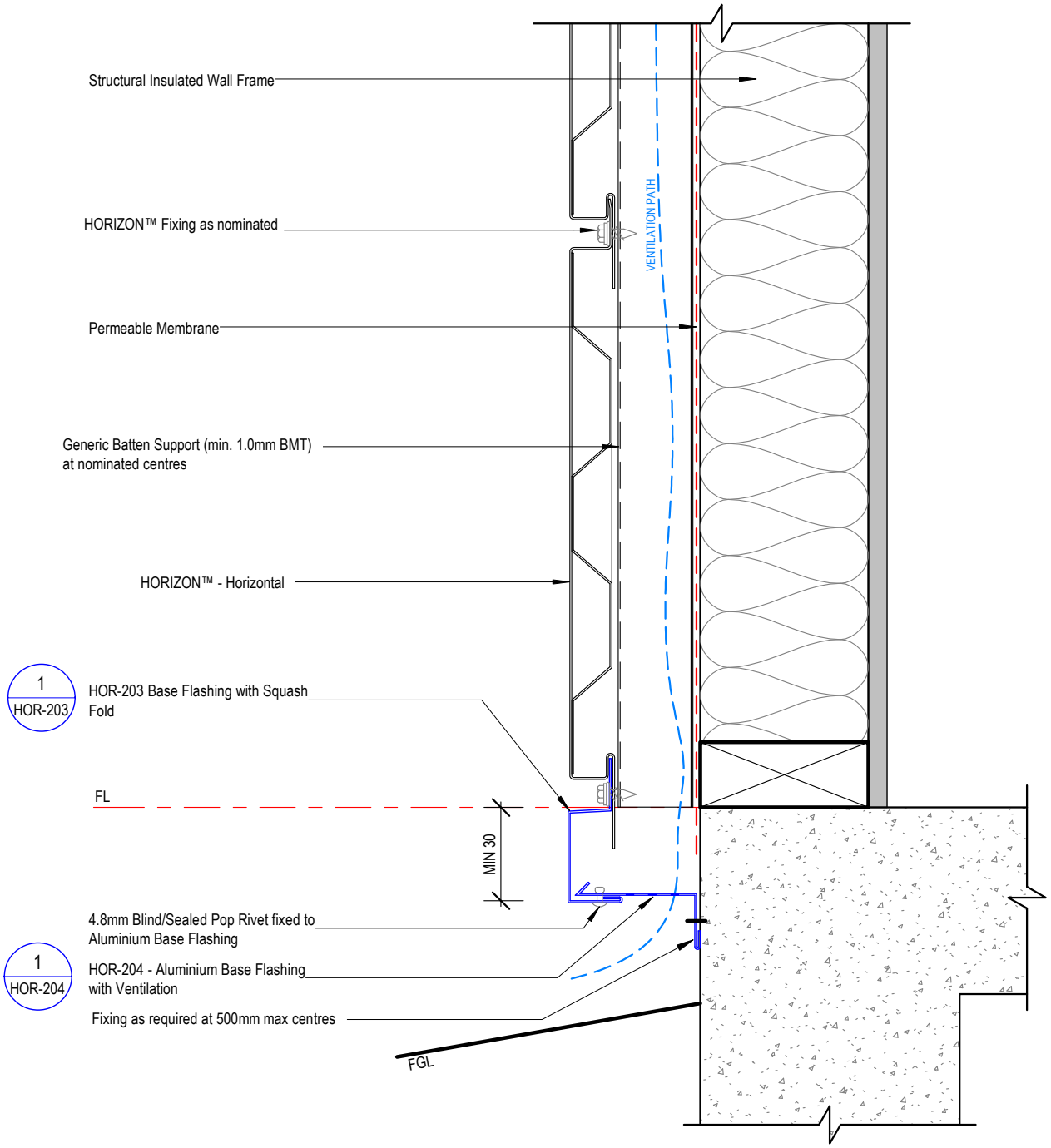


FIGURE A.5-2:

Wall Base Detail – LYSAGHT HORIZON® Panel – Vertical Fix – H07-02

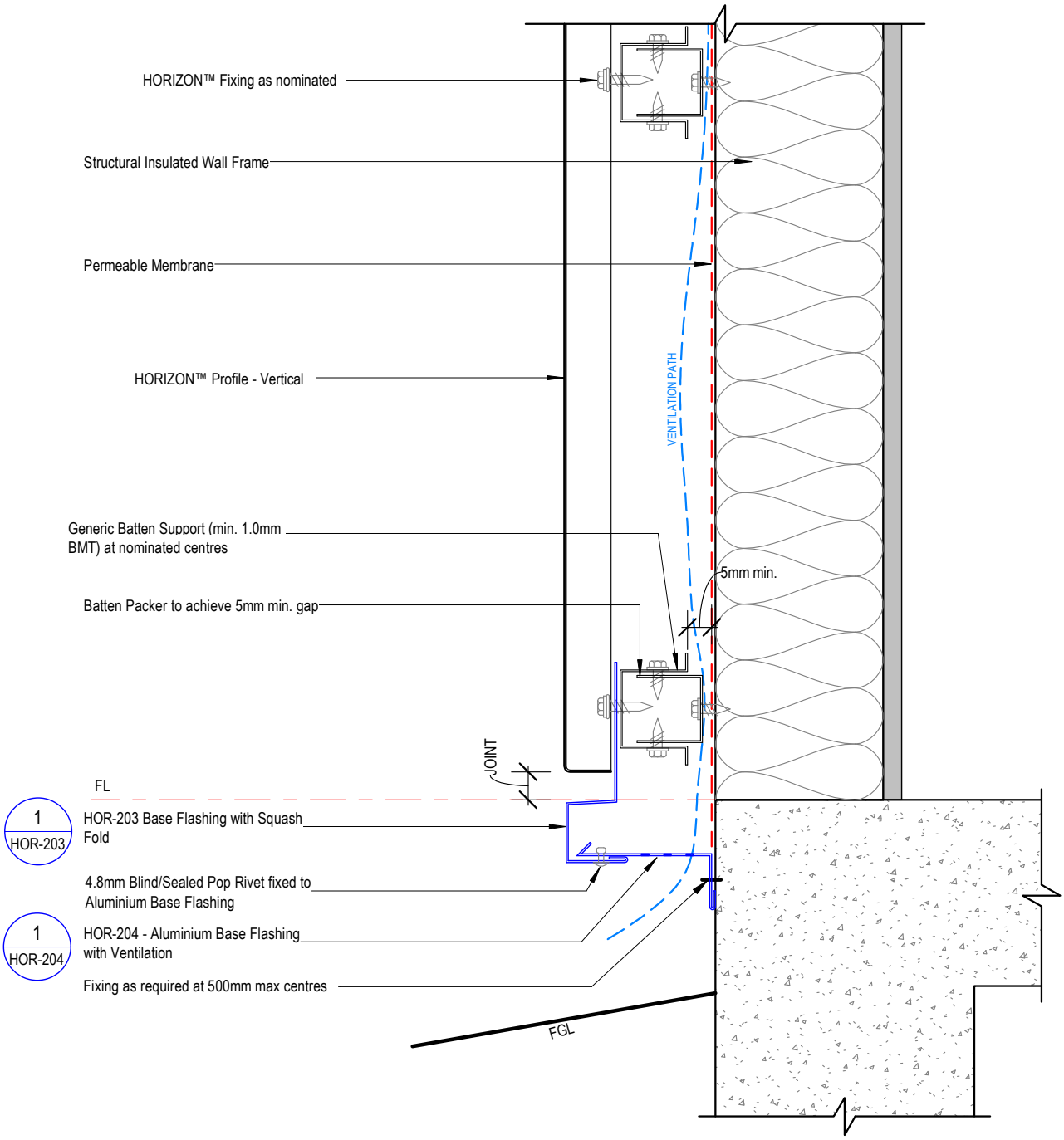


FIGURE A.6-1:

Top of Wall Eave Detail – Zero Overhang – LYSAGHT HORIZON® Panel – Horizontal Fix - H08-01

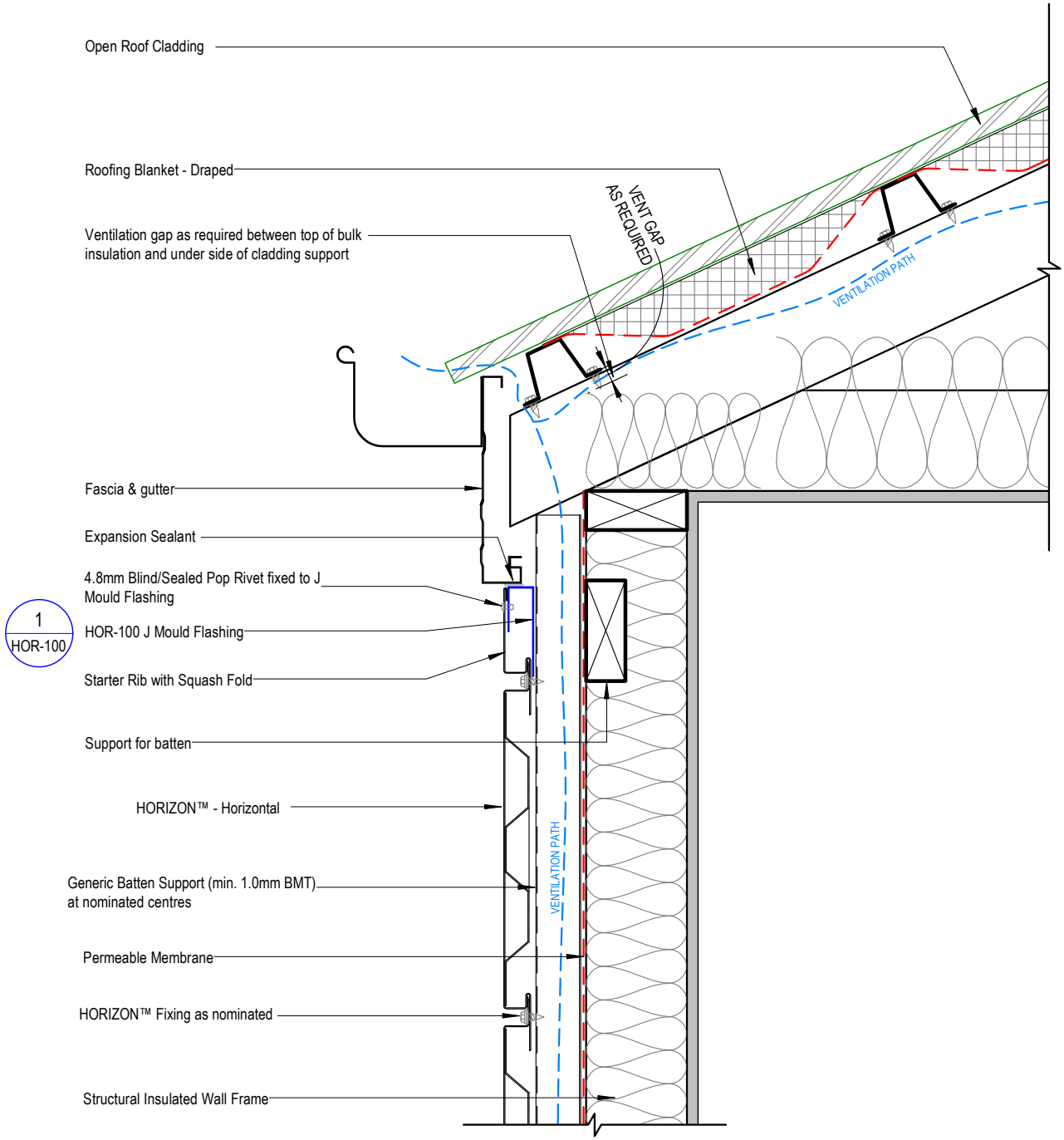


FIGURE A.6-2:

Top of Wall Eave Detail – Zero Overhang – LYSAGHT HORIZON® Panel – Vertical Fix – H08-02

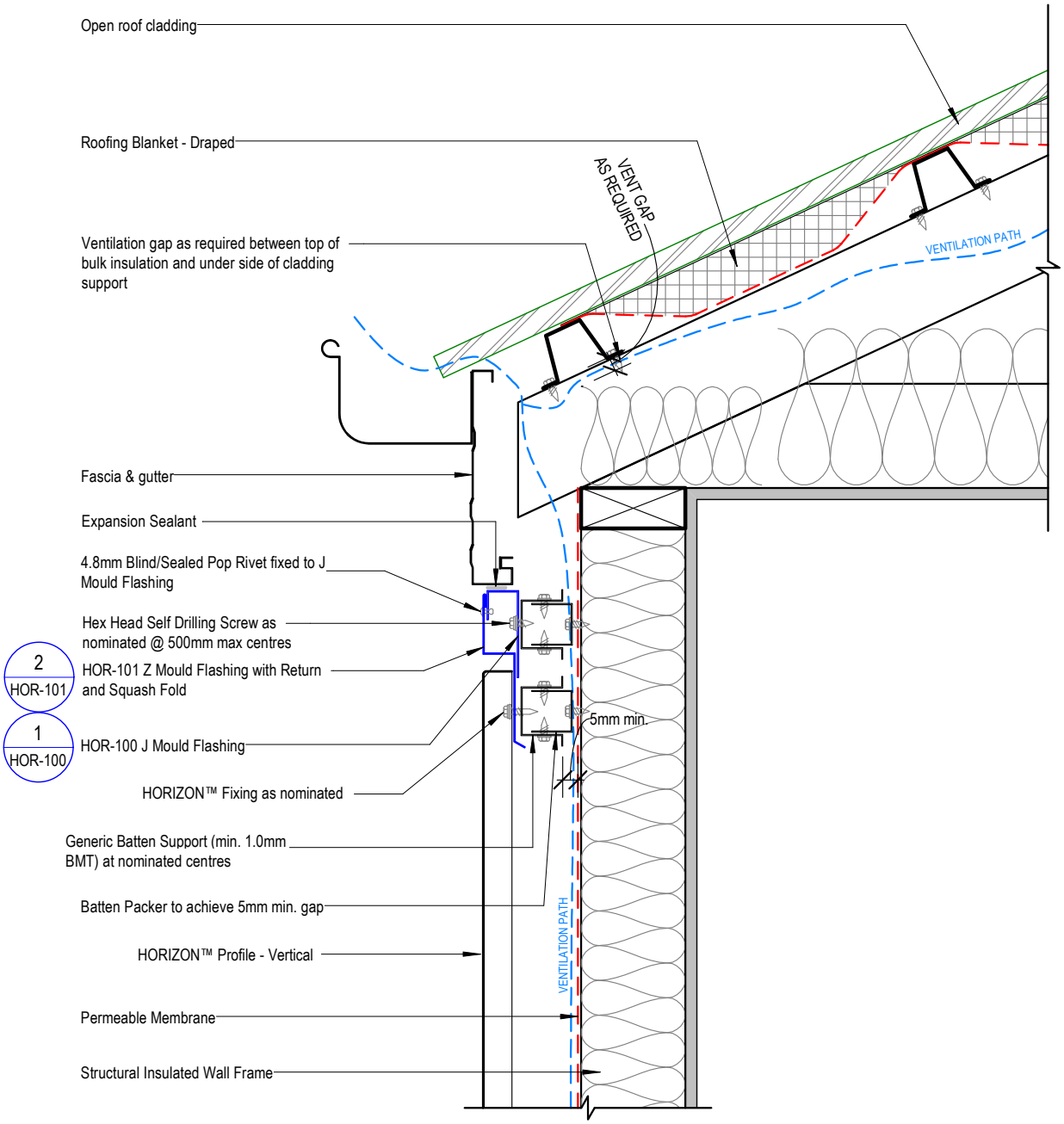


FIGURE A.6-3:

Top of Wall Eave Detail – Overhang – LYSAGHT HORIZON® Panel – Horizontal Fix - H08-03

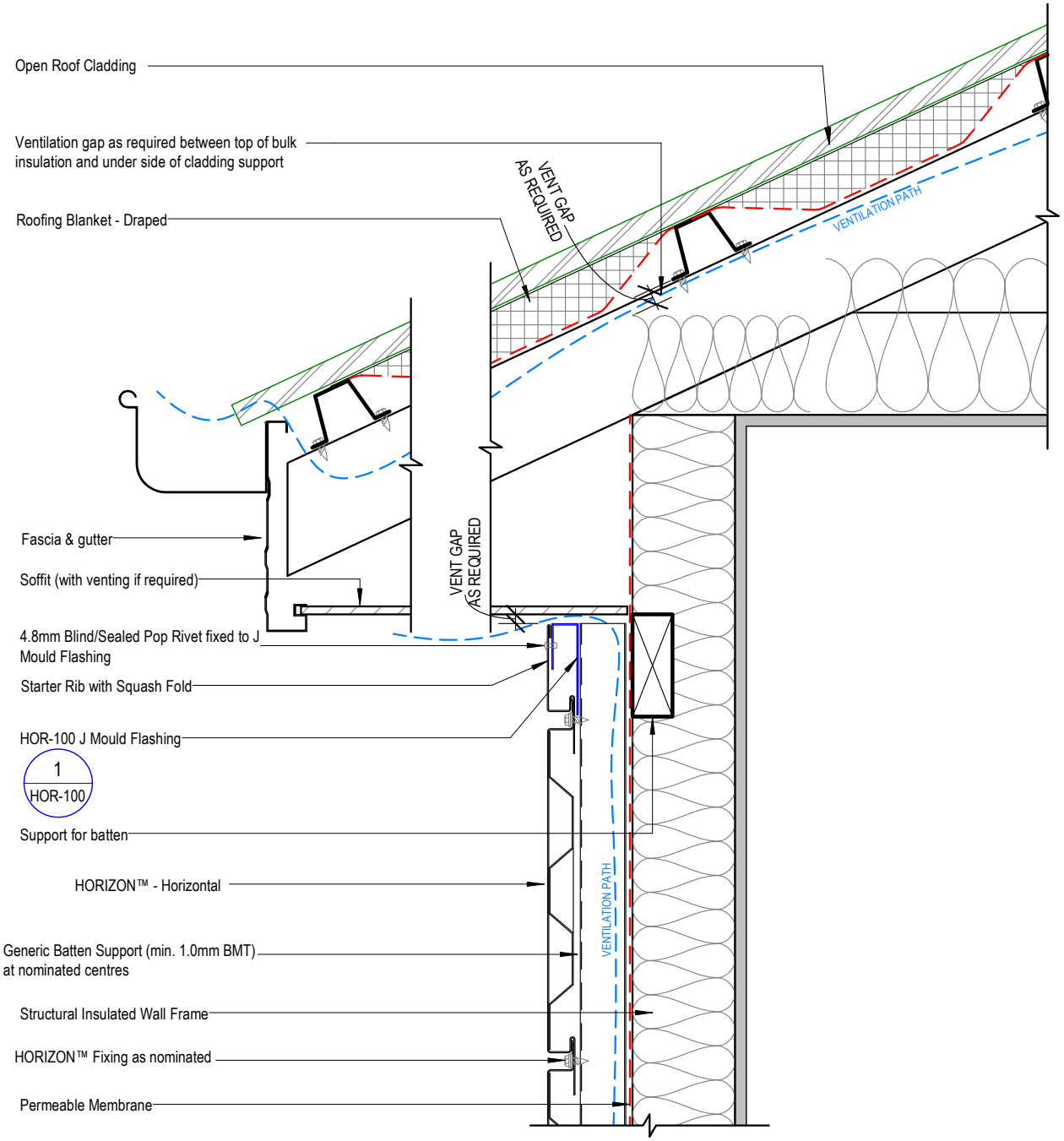


FIGURE A.6-4:

Top of Wall Eave Detail – Overhang – LYSAGHT HORIZON® Panel – Vertical Fix – H08-04

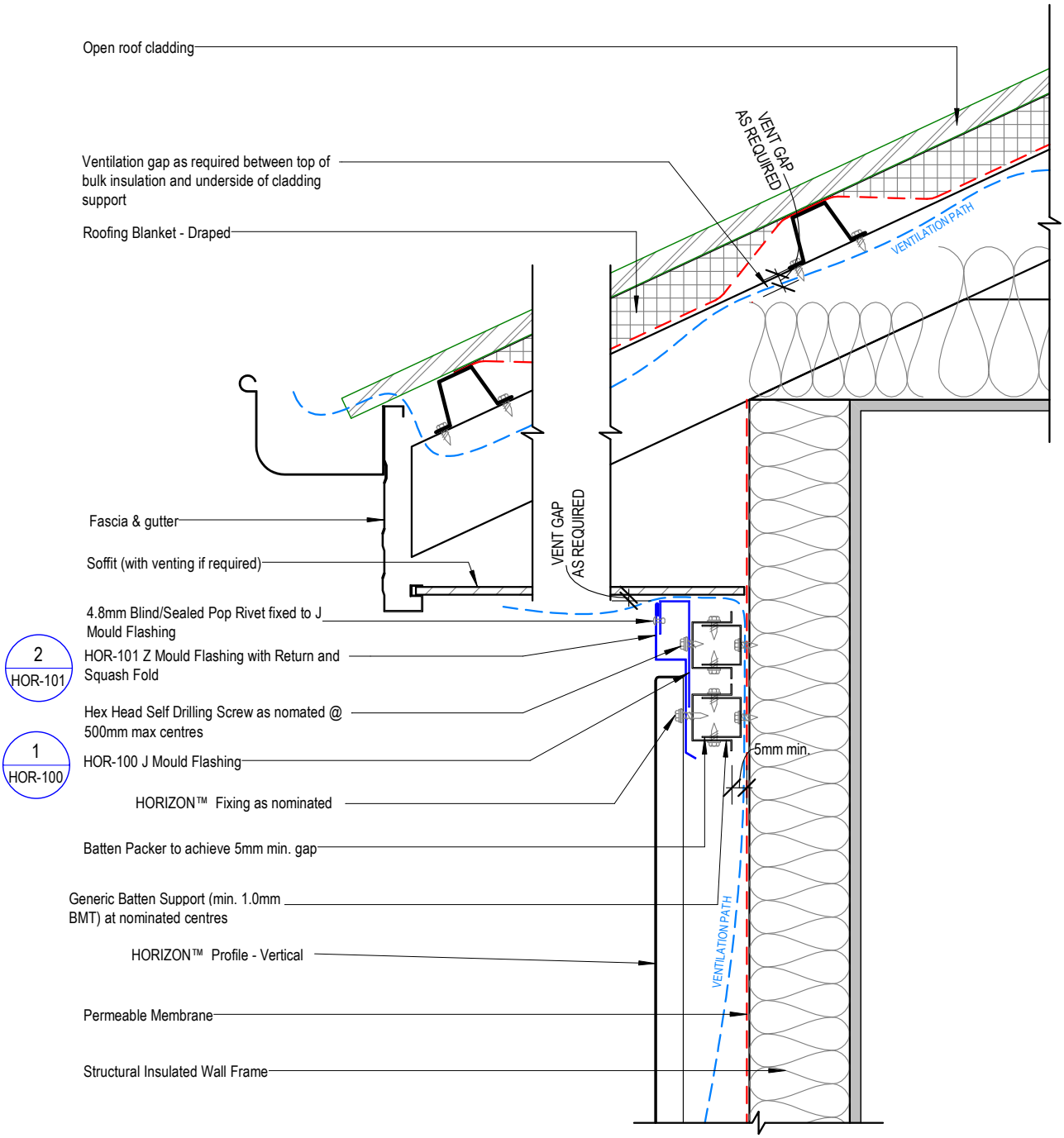


FIGURE A.7-1:

Window Jamb Detail – LYSAGHT HORIZON® Panel – Horizontal Fix - H09-02

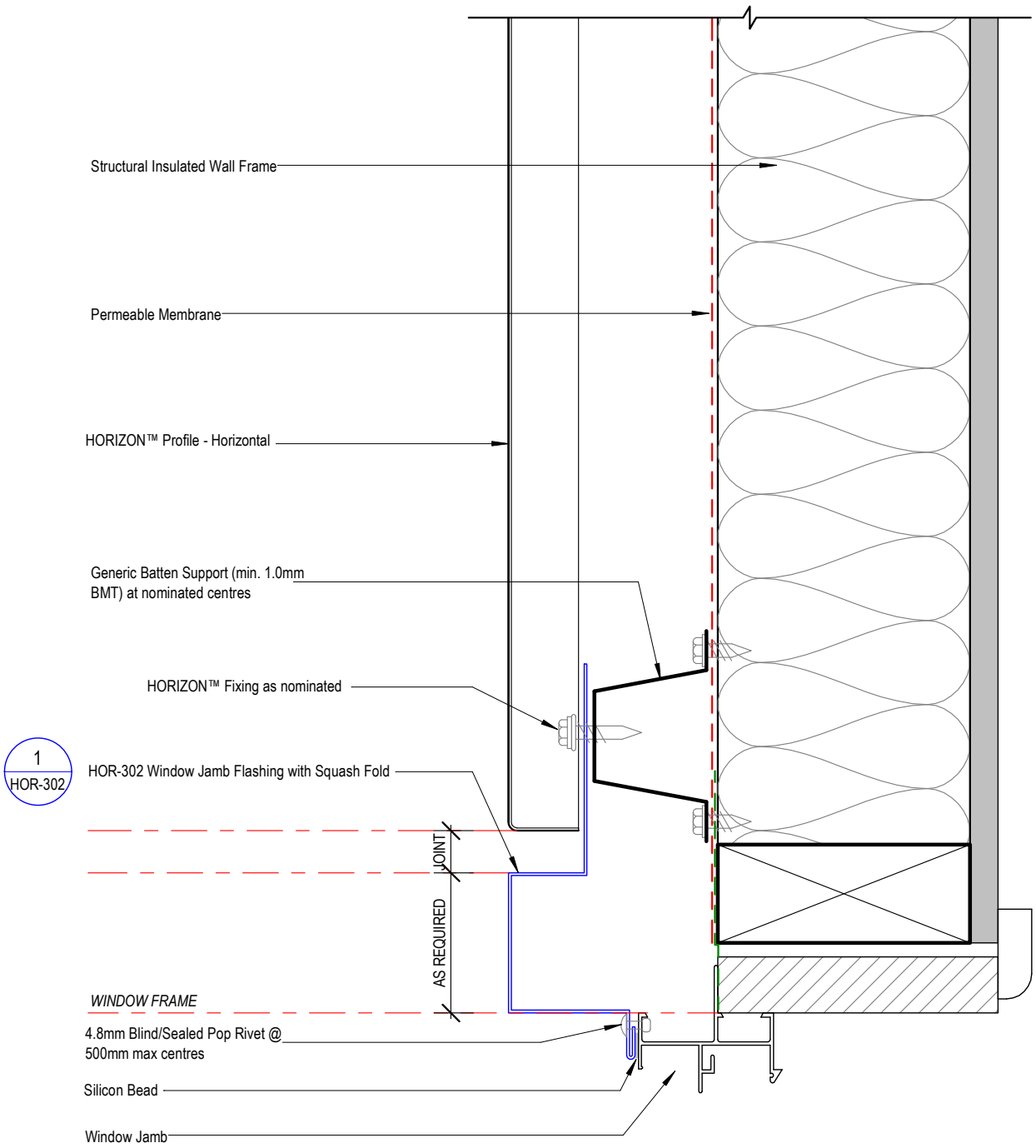


FIGURE A.7-2:

Window Jamb Detail – LYSAGHT HORIZON® Panel – Vertical Fix – Female - H09-01

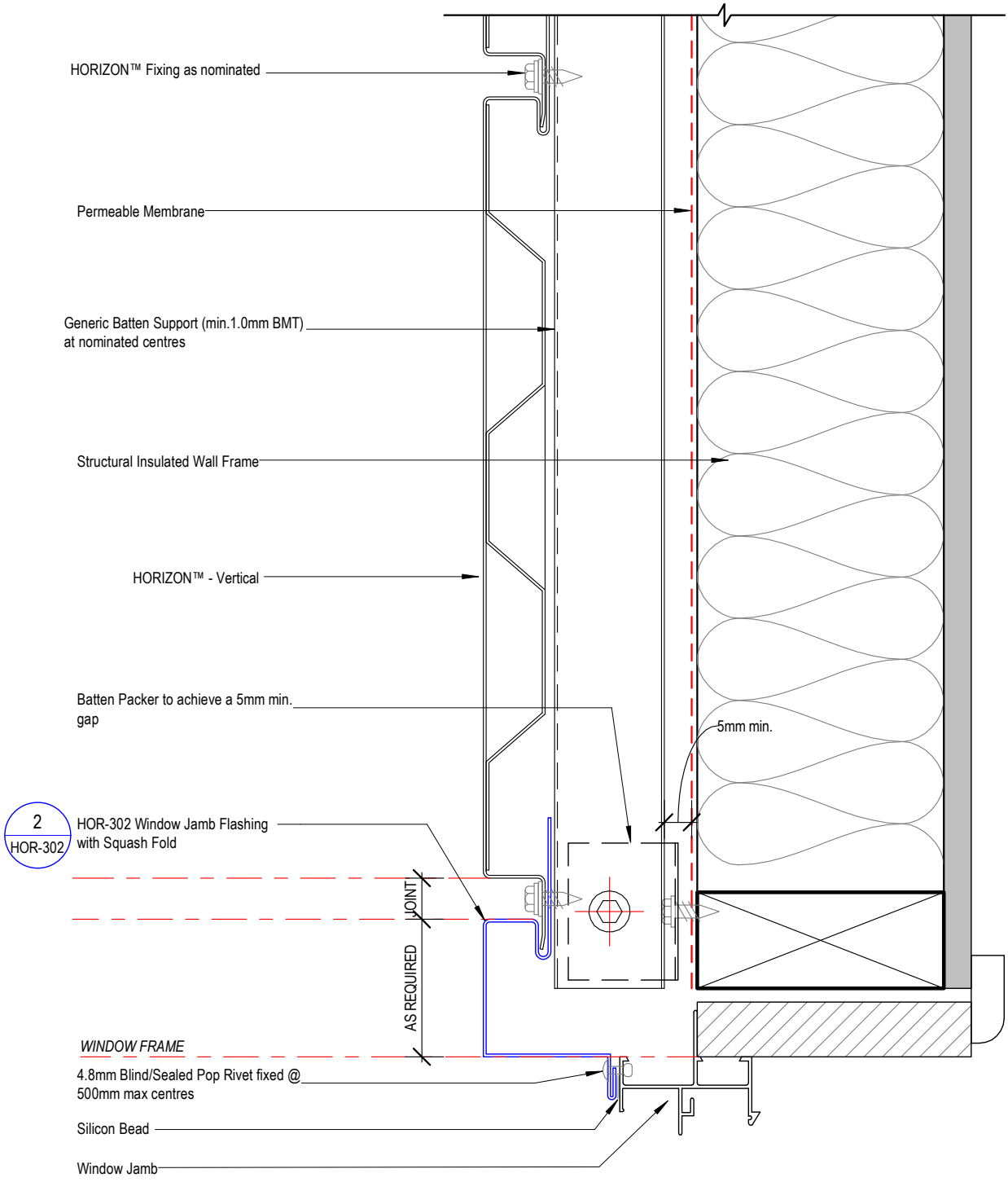


FIGURE A.7-3:

Window Jamb Detail – LYSAGHT HORIZON® Panel – Vertical Fix – Male - H09-03

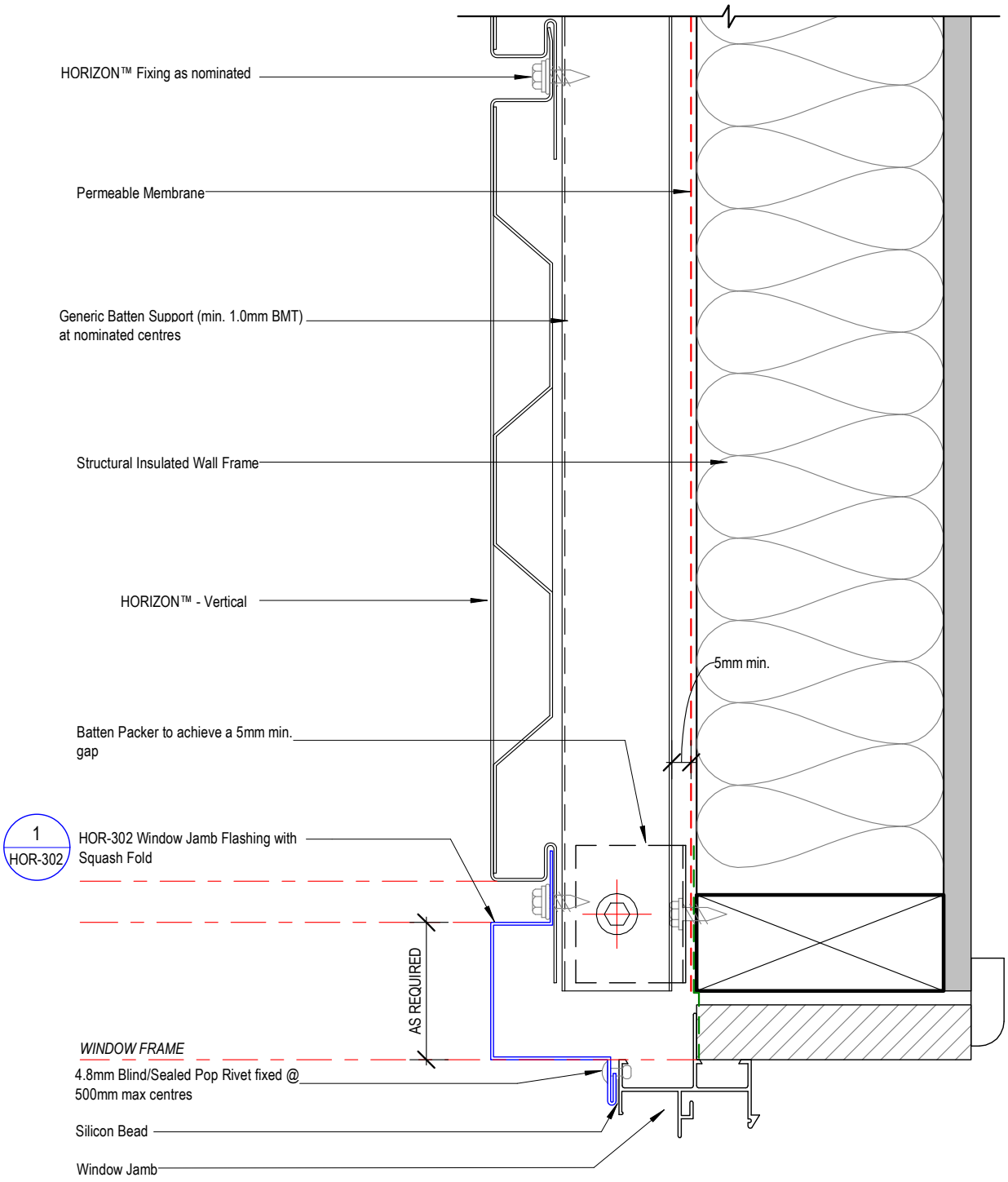


FIGURE A.8-1:

Window Sill Detail – LYSAGHT HORIZON® Panel – Horizontal Fix - H09-05

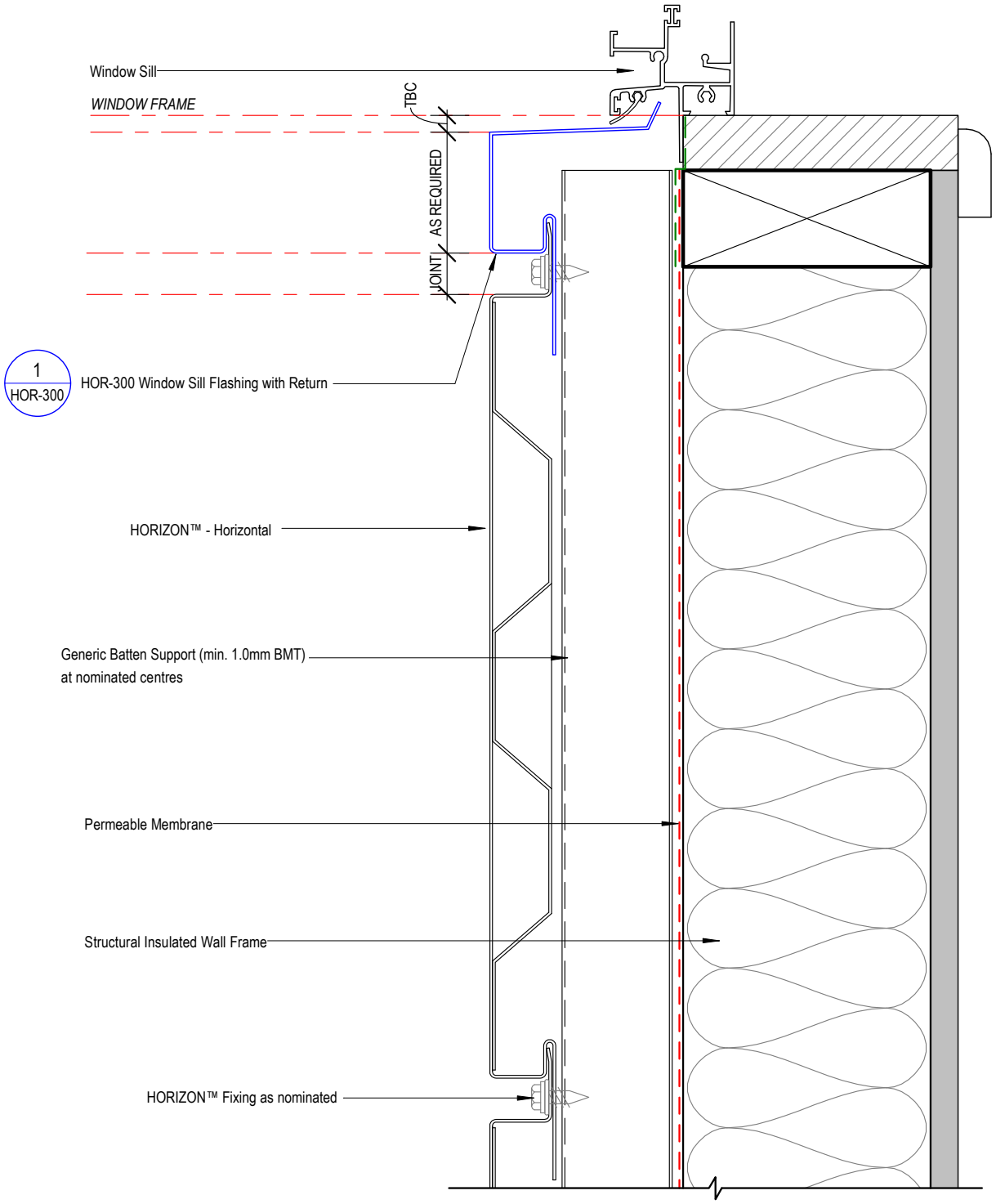


FIGURE A.8-2:

Window Sill Detail – LYSAGHT HORIZON® Panel – Vertical Fix – Male - H09-04

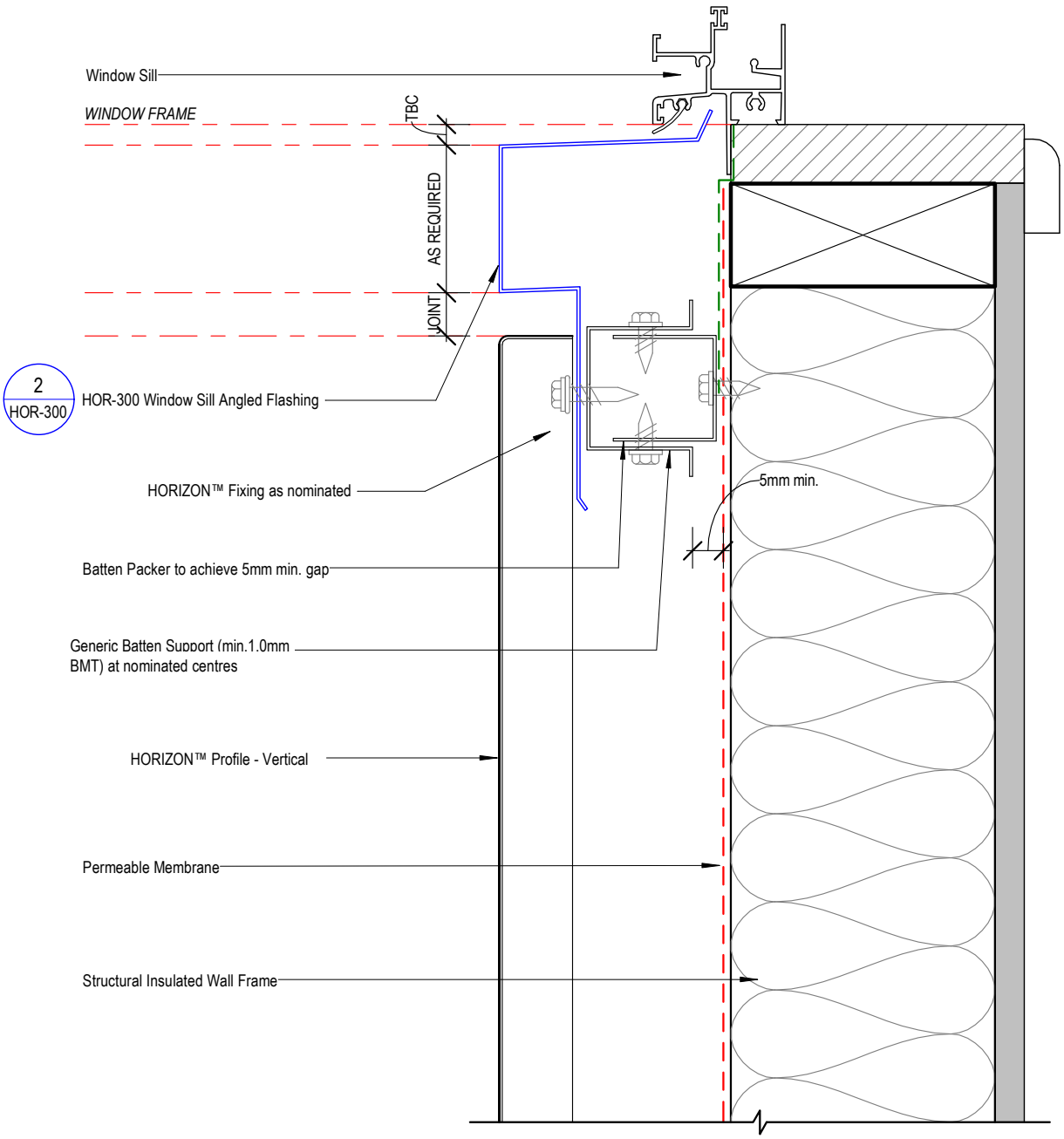


FIGURE A.9-1:

Window Head Detail – LYSAGHT HORIZON® Panel – Horizontal Fix - H09-08

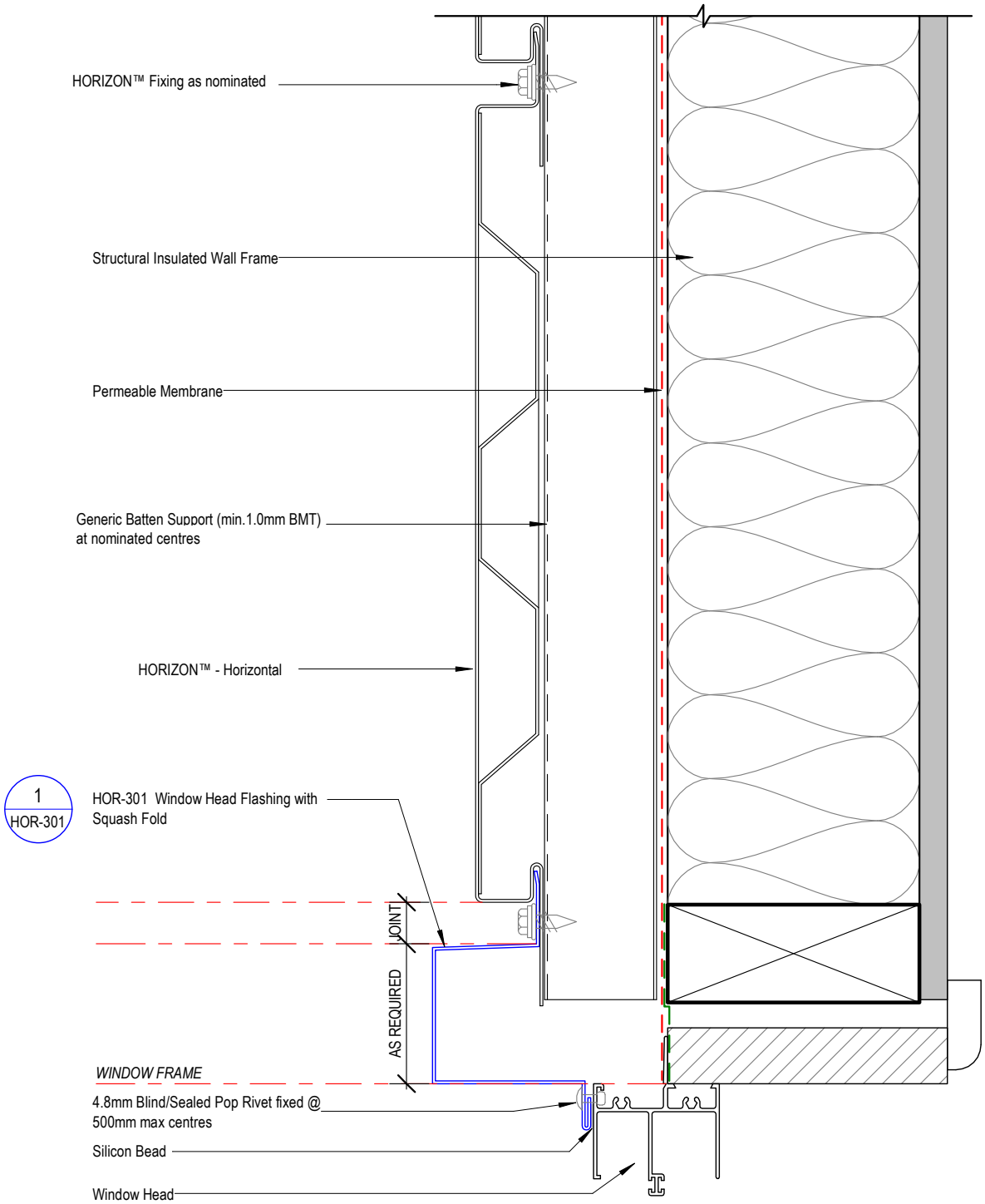


FIGURE A.9-2:

Window Head Detail – LYSAGHT HORIZON® Panel – Vertical Fix – Option 1 - H09-06

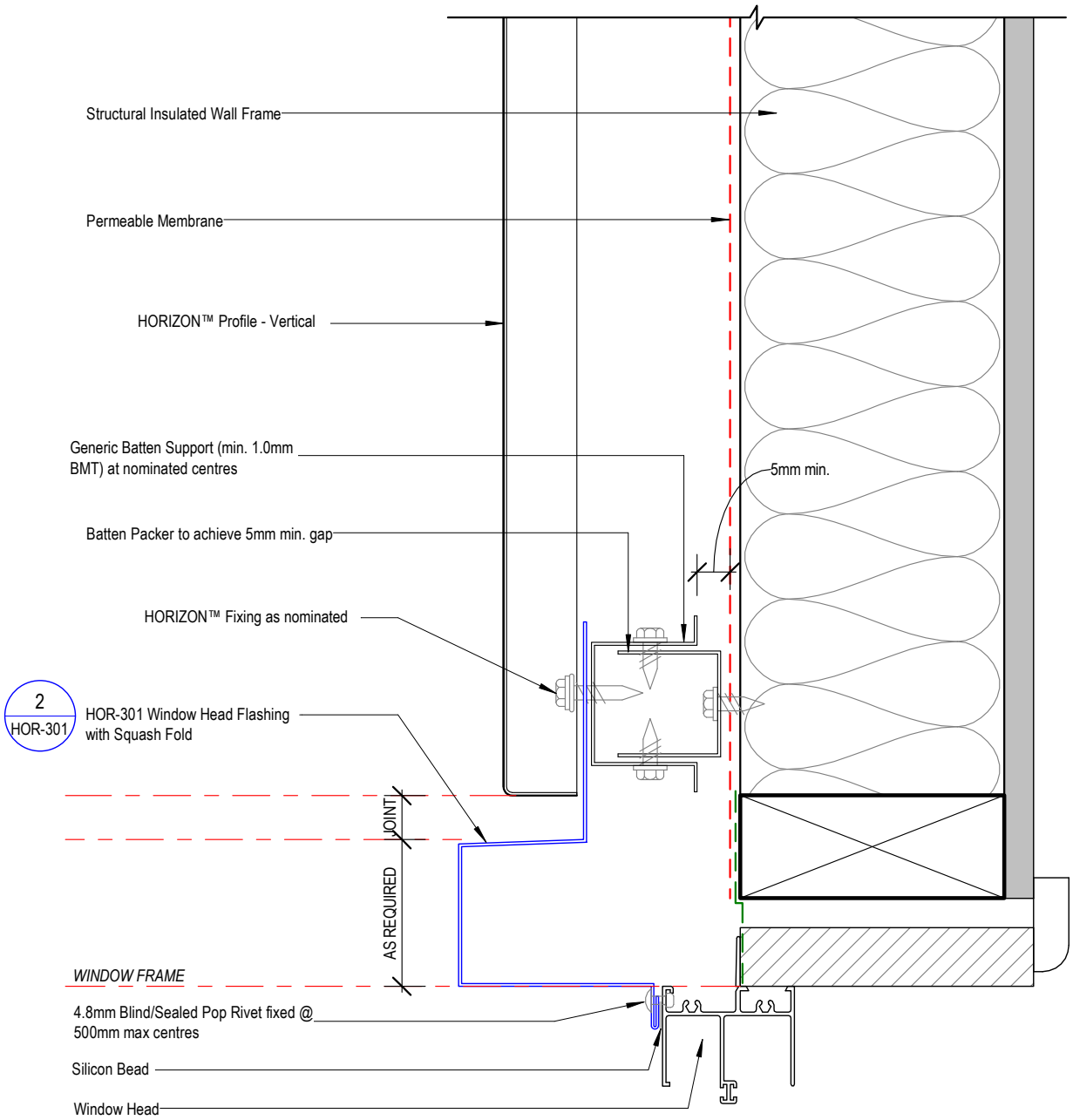


FIGURE A.9-3:

Window Head Detail – LYSAGHT HORIZON® Panel – Vertical Fix – Option 2 - H09-07

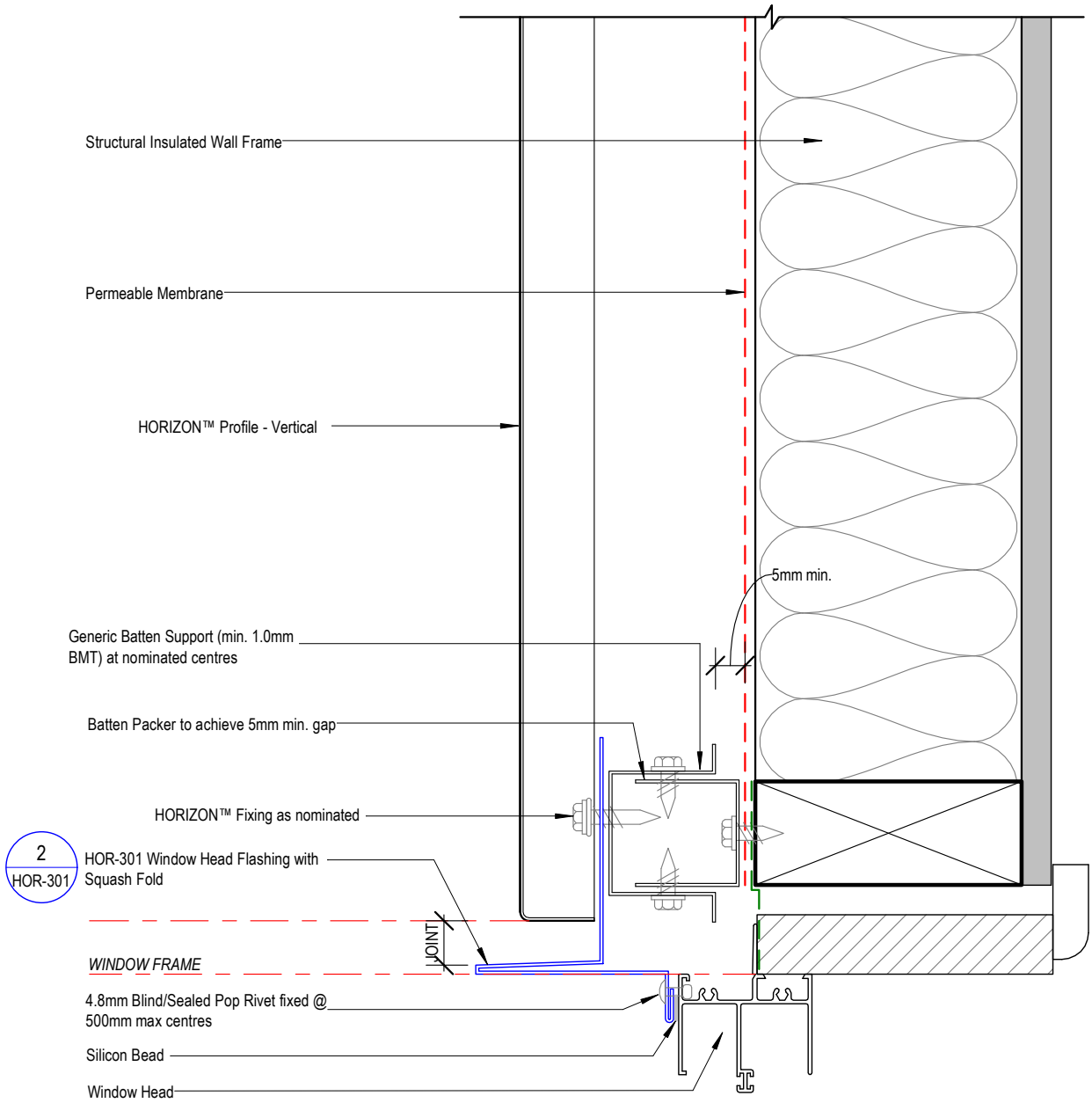


FIGURE A.10-1:

Parapet Wall Detail – LYSAGHT HORIZON® Panel – Horizontal Fix – H10-01

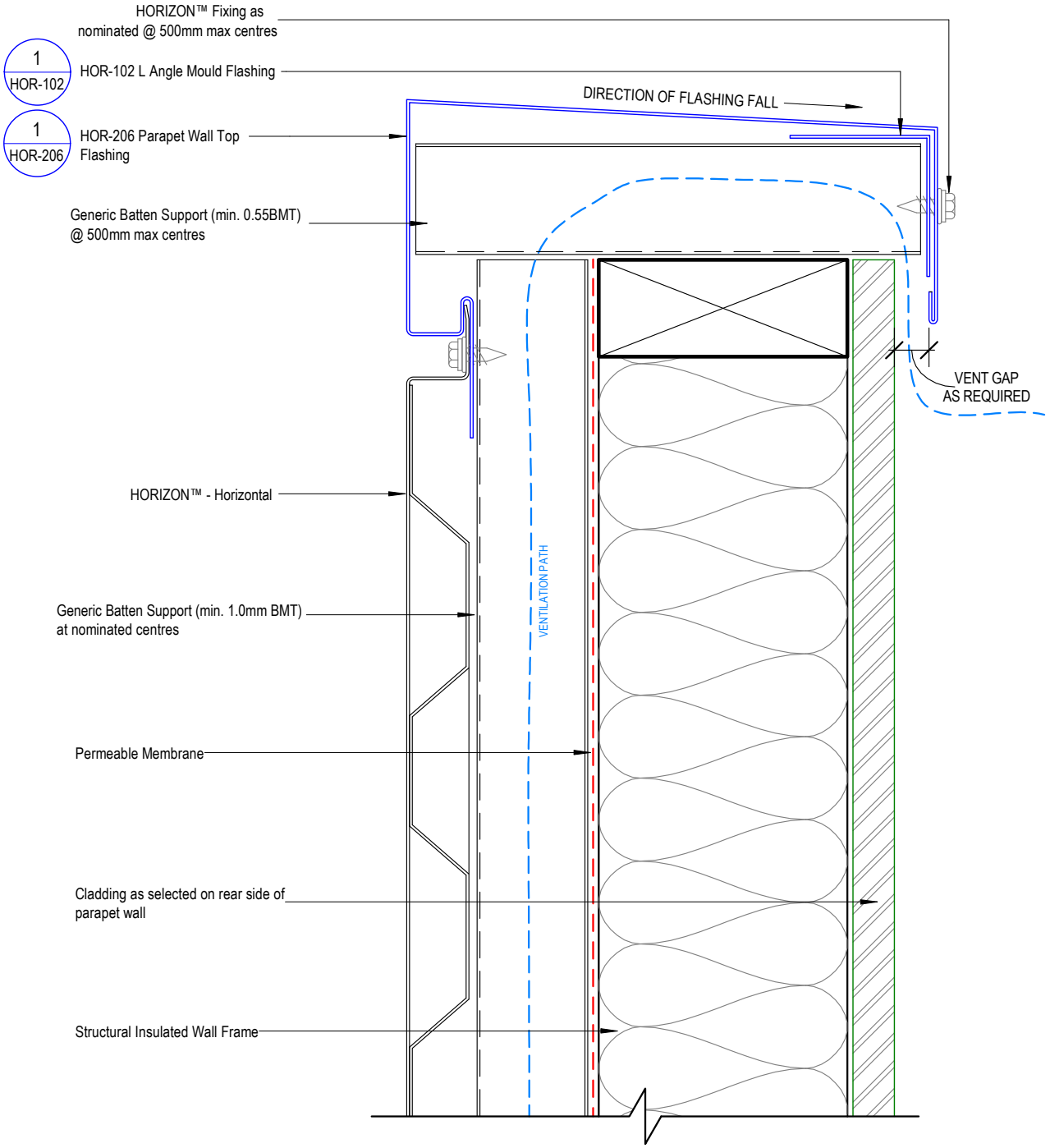


FIGURE A.10-2:

Parapet Wall Detail – LYSAGHT HORIZON® Panel – Vertical Fix – H10-02

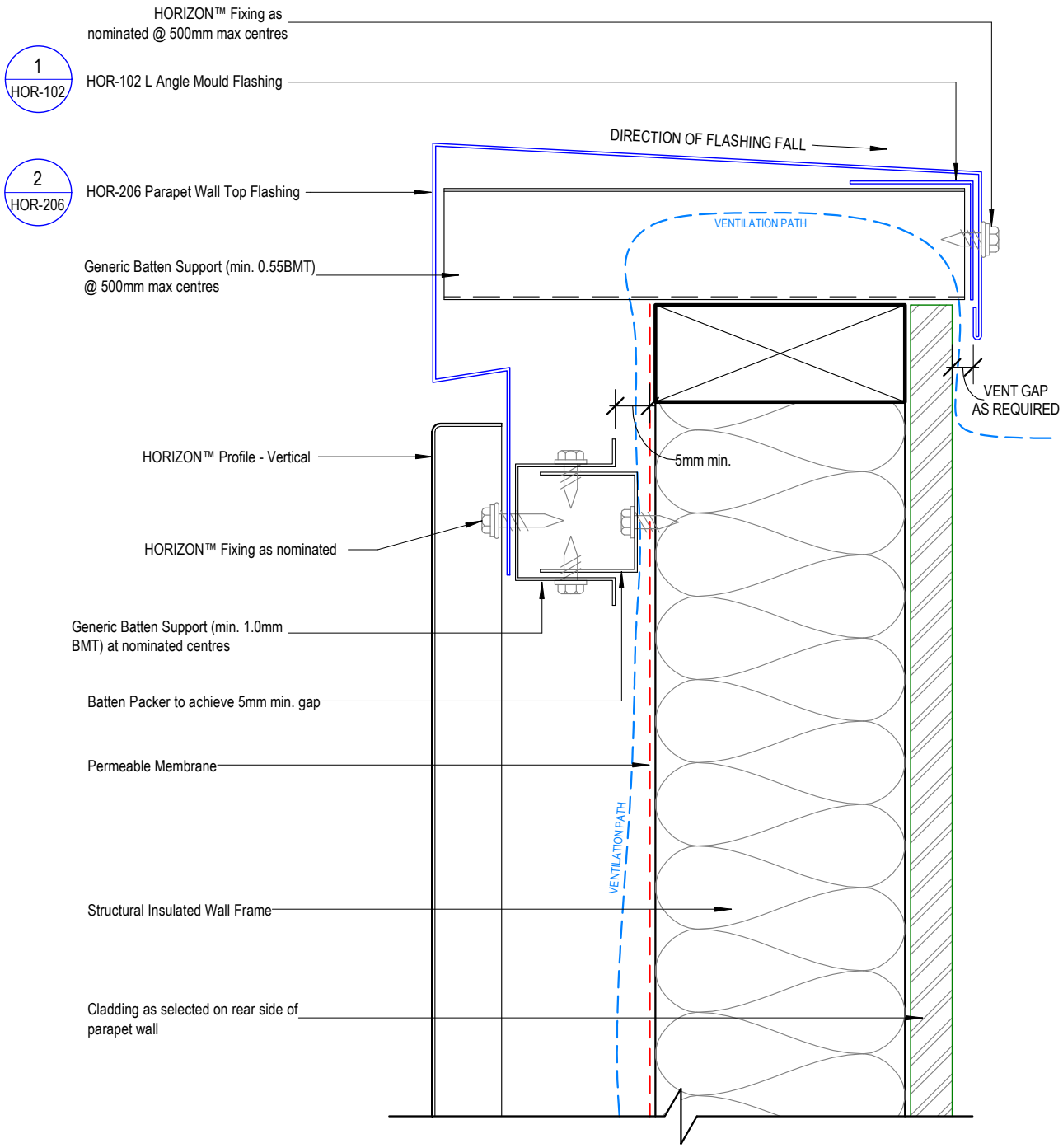


FIGURE A.11-1:

Wall to Typical Roof Transition Detail – LYSAGHT HORIZON® Panel – Horizontal Fix – Side View – H10-03

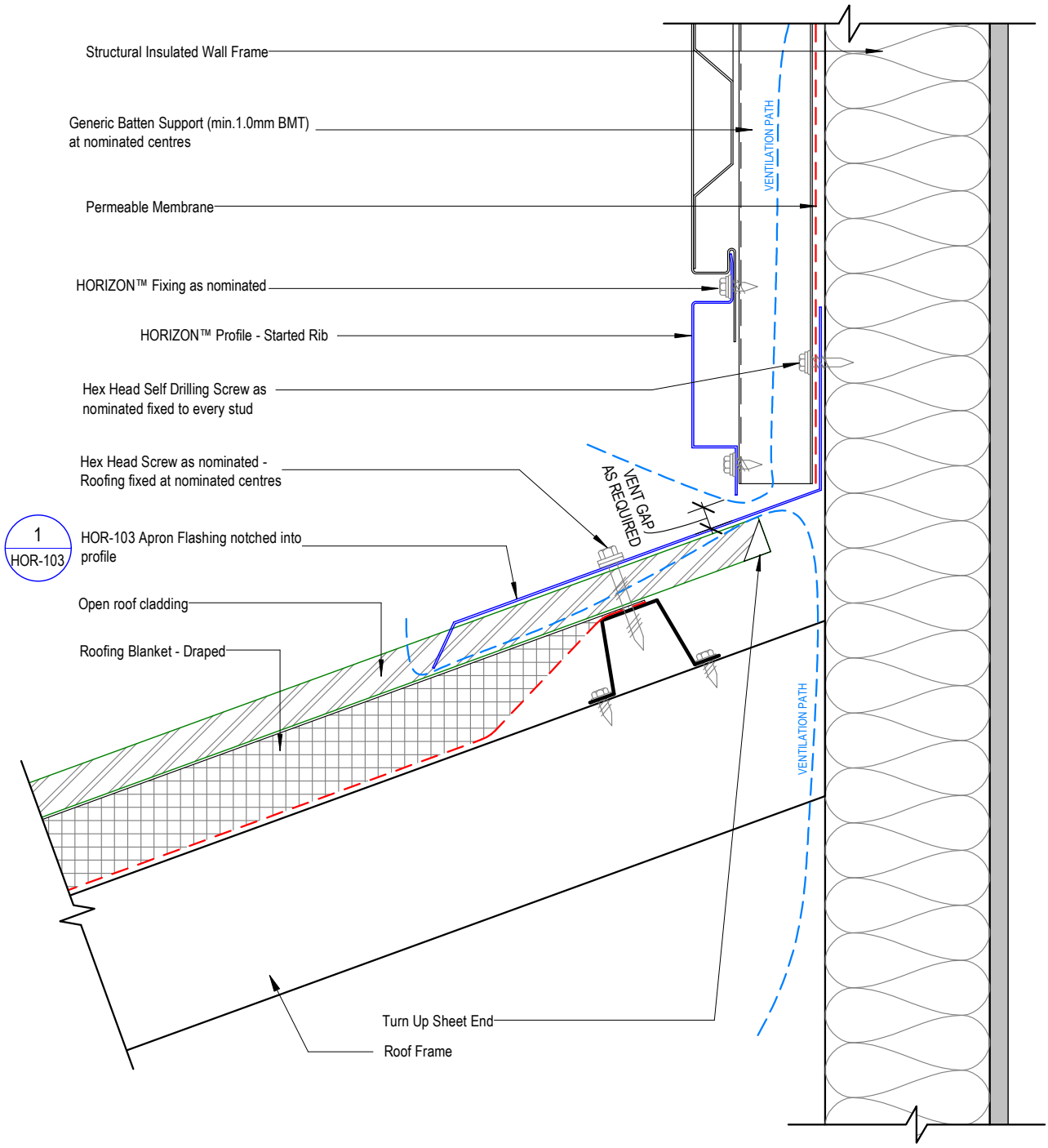


FIGURE A.11-2:

Wall to Typical Roof Transition Detail – LYSAGHT HORIZON® Panel – Vertical Fix – Side View – H10-04

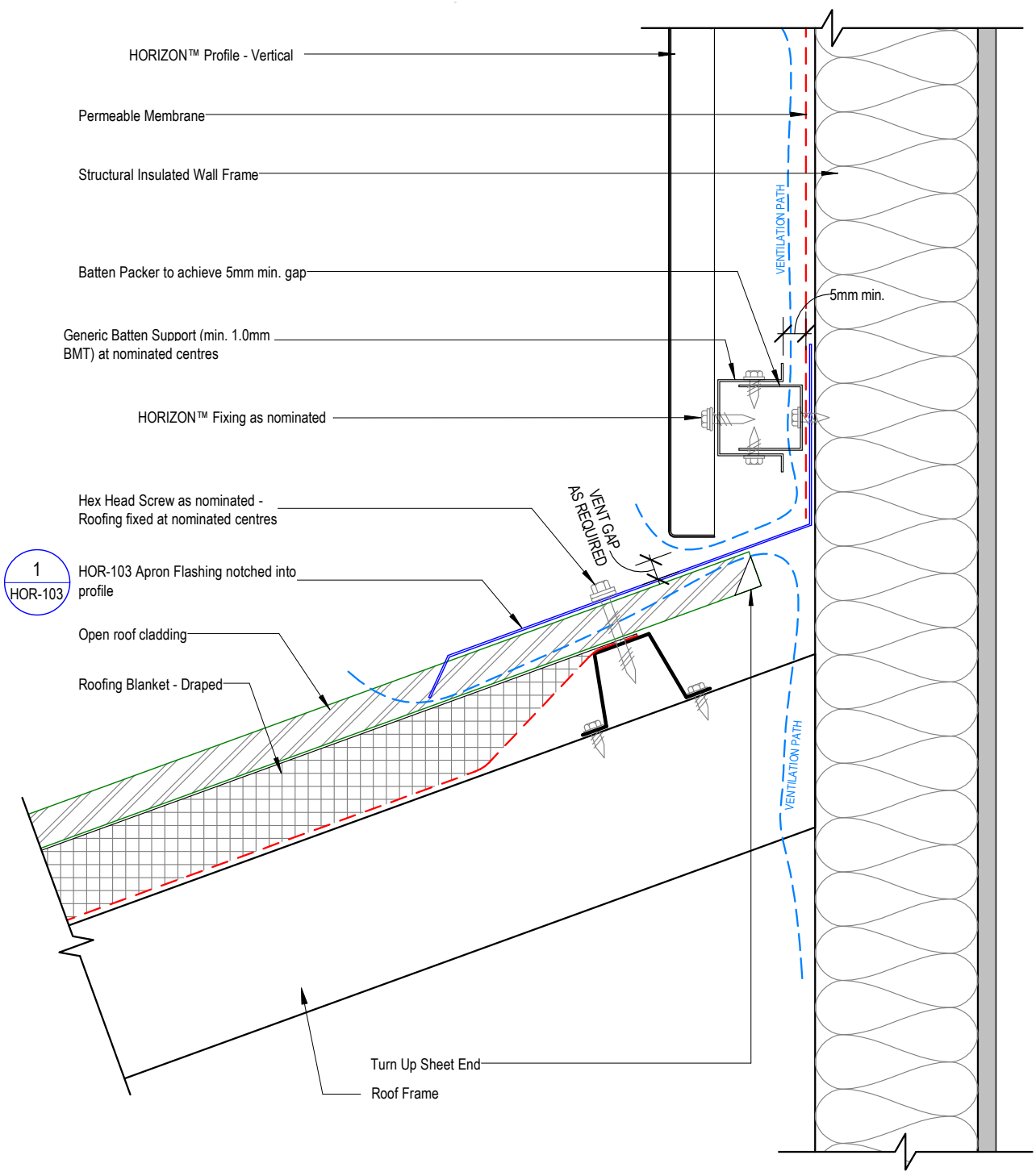


FIGURE A.12-1:

Party Wall Detail – LYSAGHT HORIZON® Panel – Horizontal Fix - H10-05

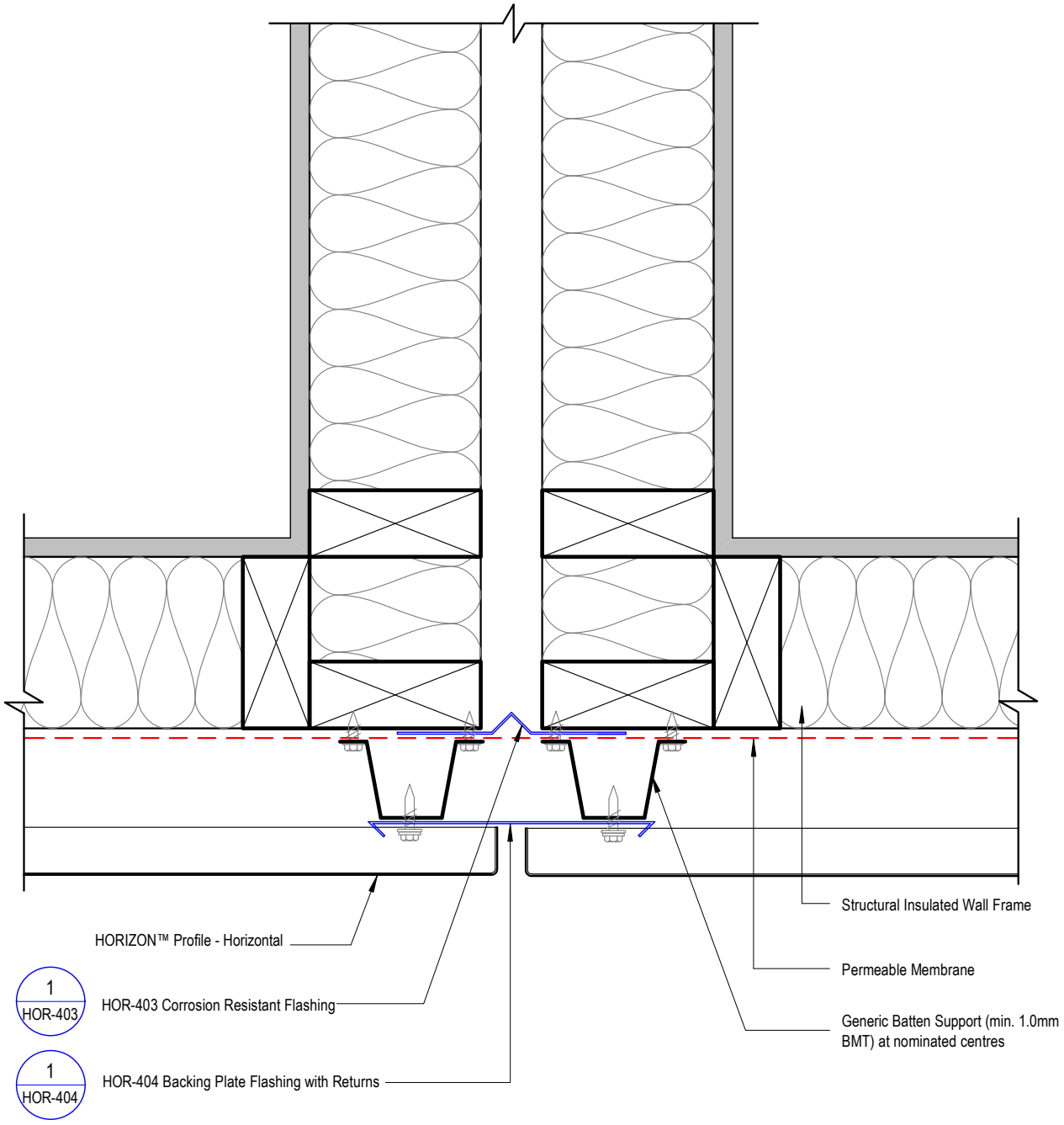


FIGURE A.13-1:

Wall to Soffit Transition Detail – LYSAGHT HORIZON® Panel – Horizontal Fix – H10-06

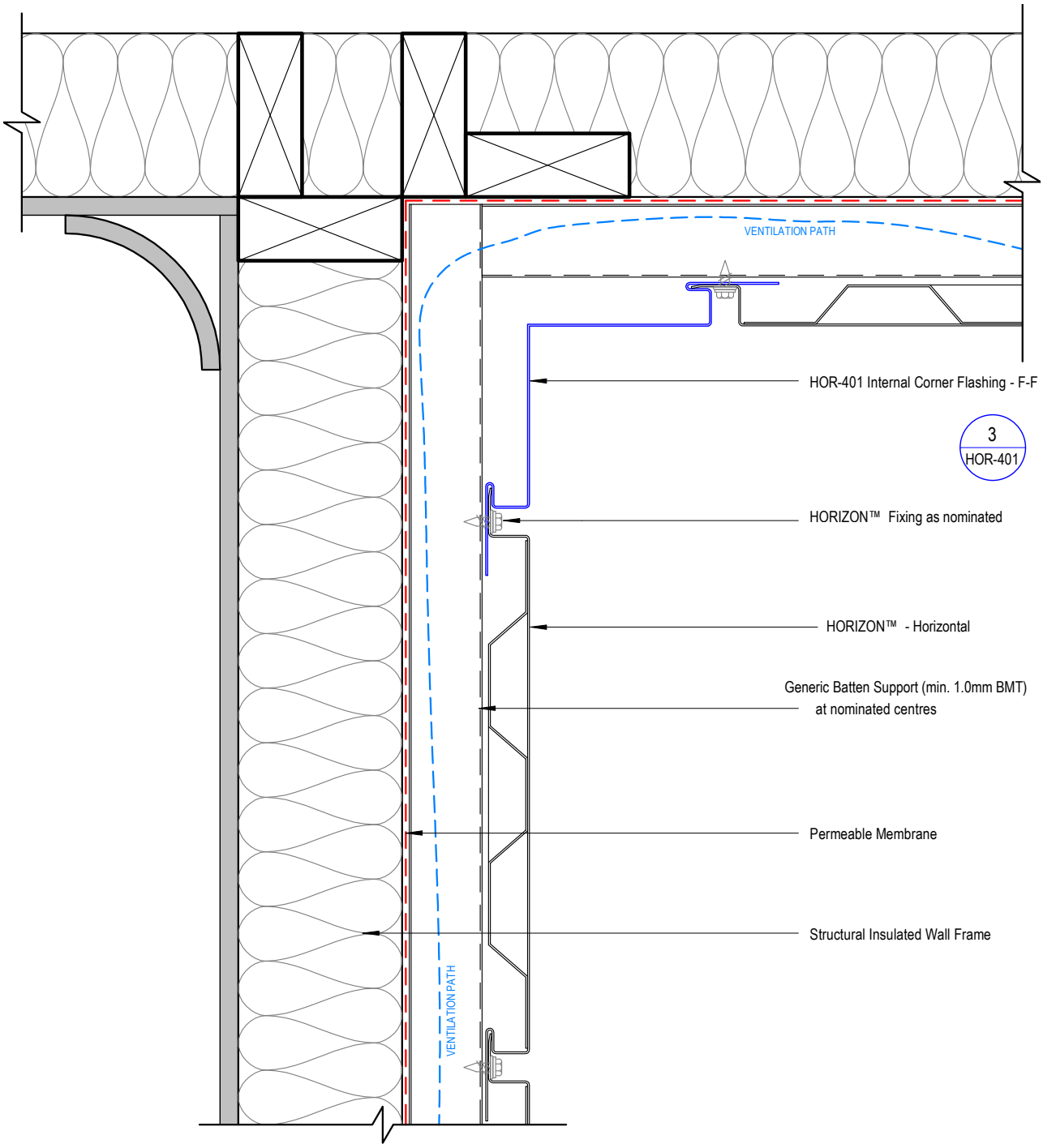


FIGURE A.13-2:

Wall to Soffit Transition Detail – LYSAGHT HORIZON® Panel – Vertical Fix – Option 1 – H10-07a

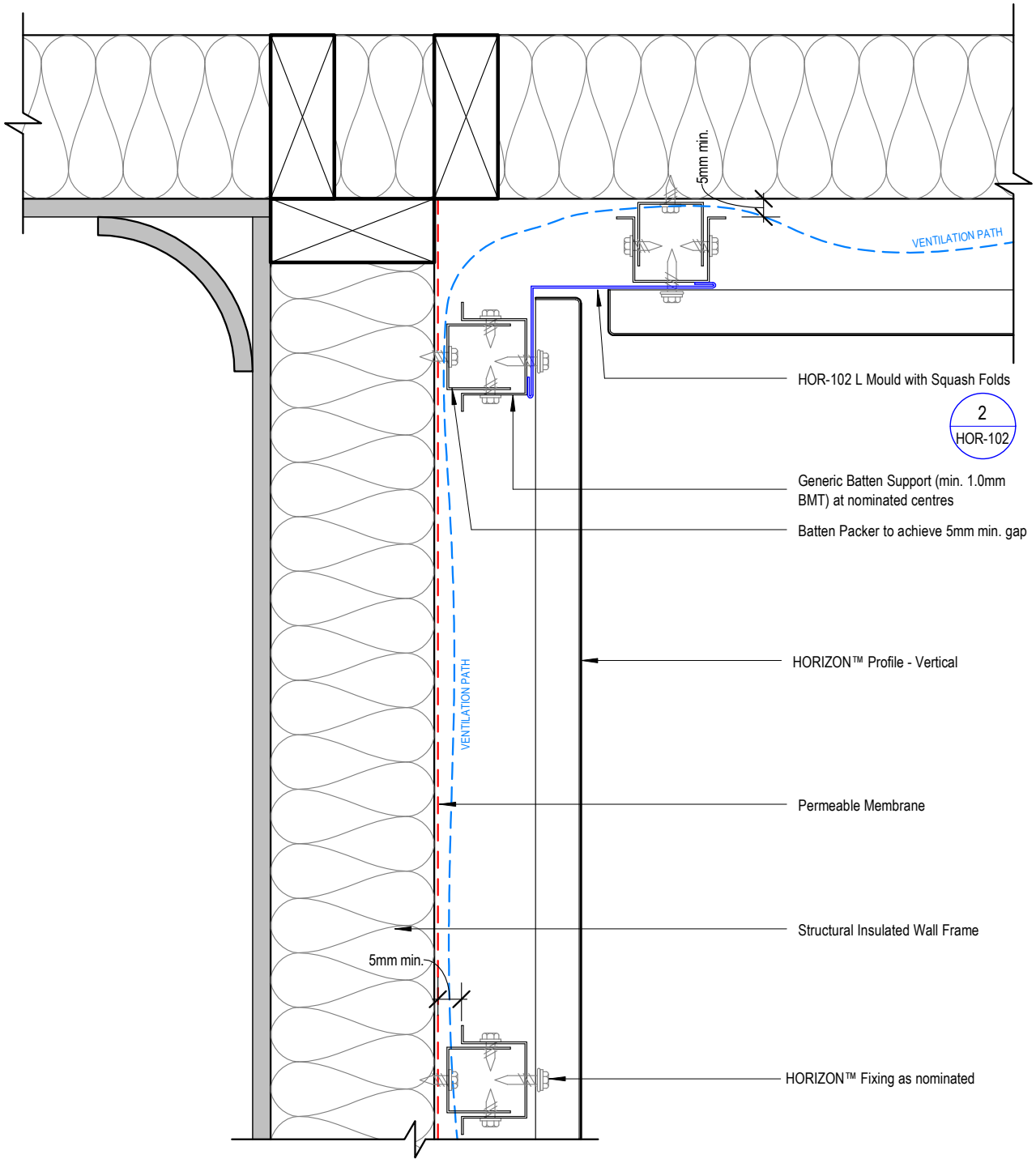


FIGURE A.13-3:

Wall to Soffit Transition Detail – LYSAGHT HORIZON® Panel – Vertical Fix – Option 2 – H10-07b

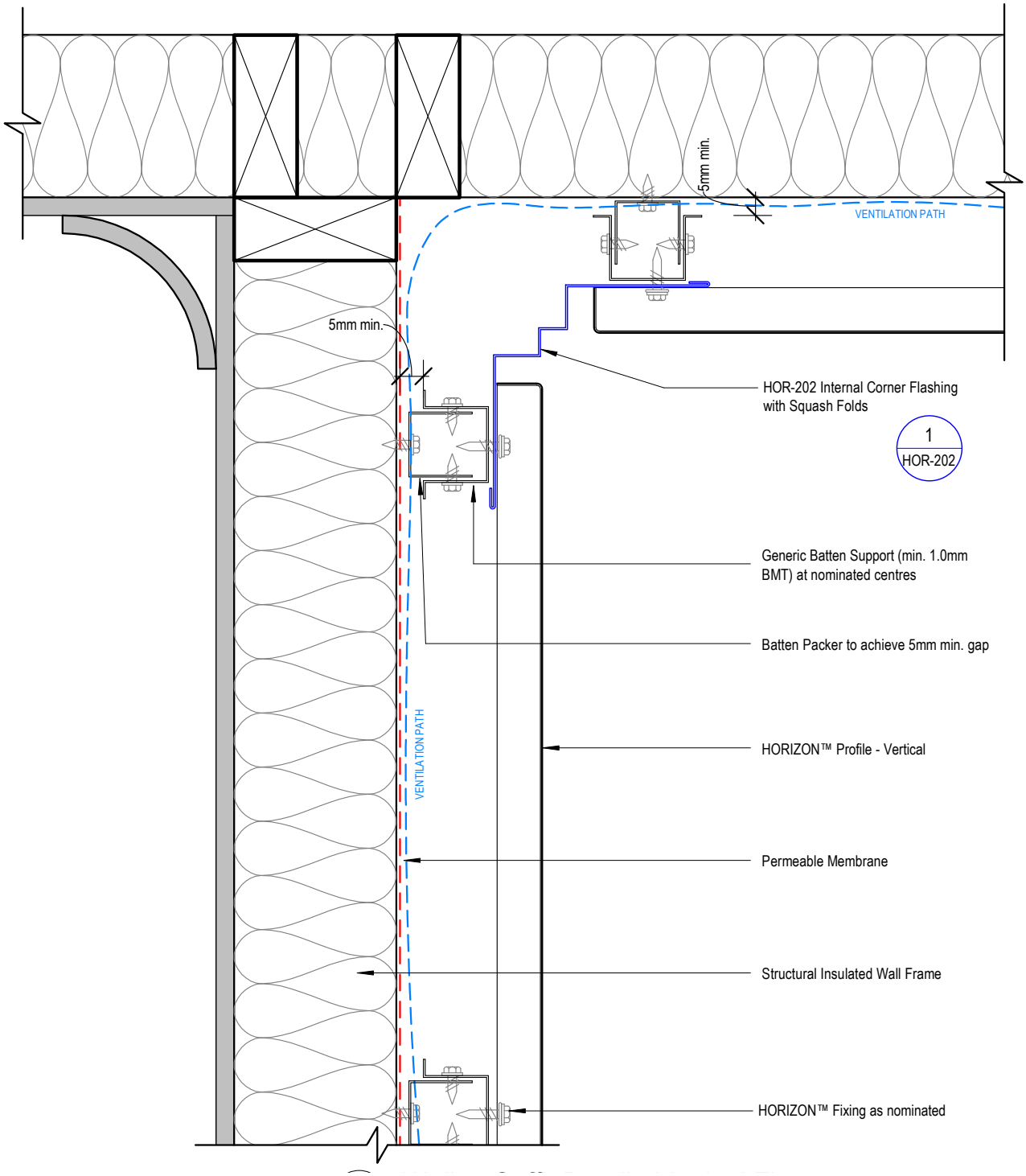
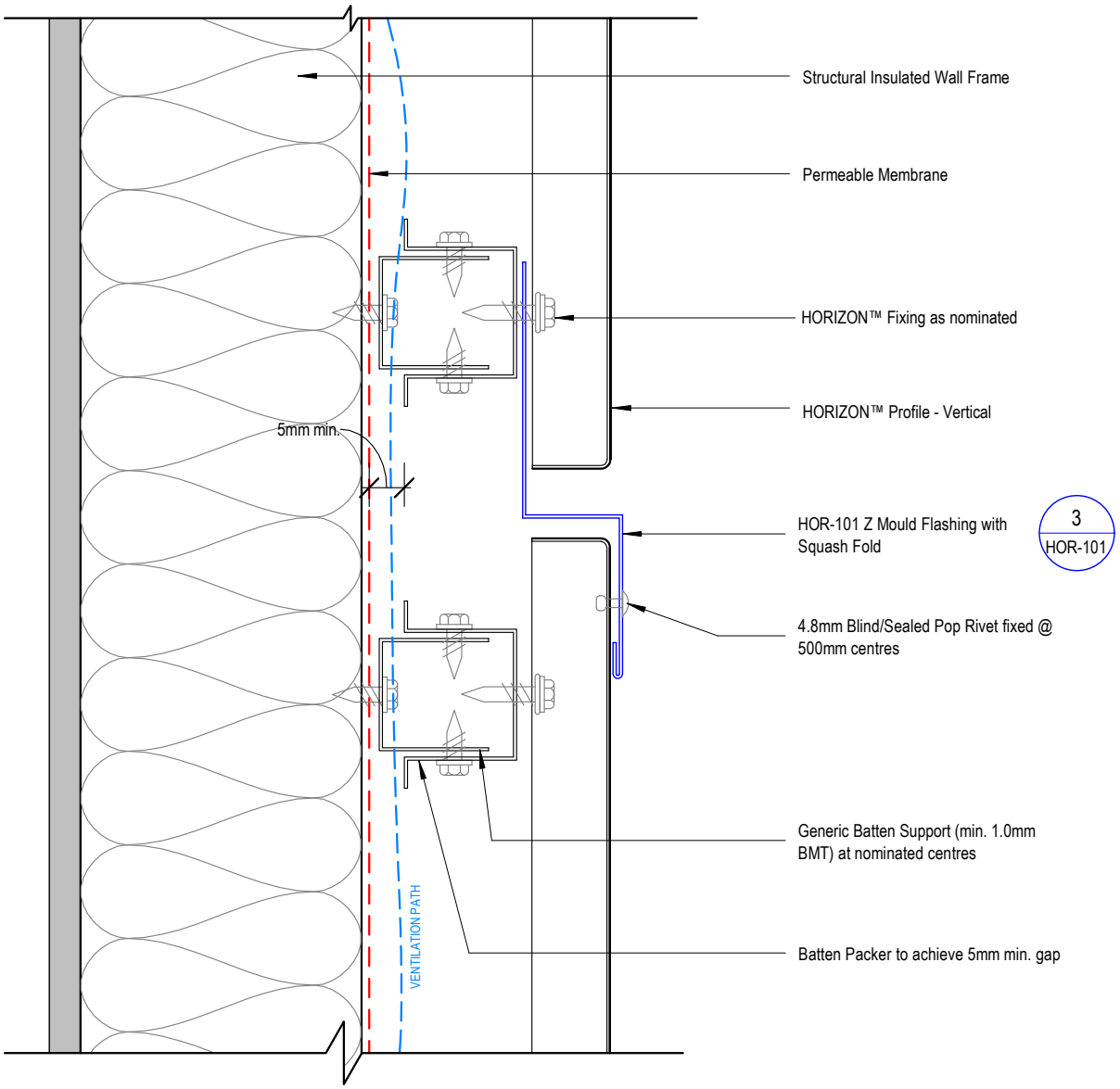


FIGURE A.14-1:

Wall Sheet Joint Detail – LYSAGHT HORIZON® Panel – Vertical Fix – Section View – H10-08



APPENDIX B: TYPICAL FLASHINGS FOR LYSAGHT HORIZON®

FIGURE B-1:

HOR-100 - J Mould Flashing

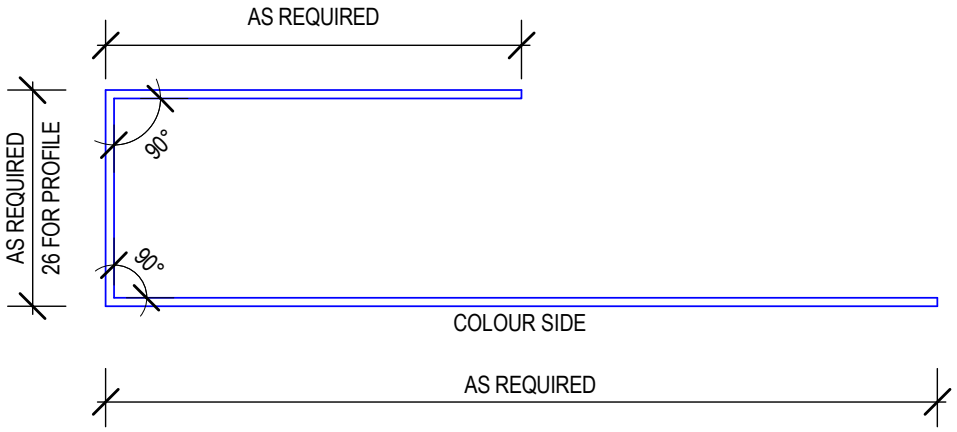
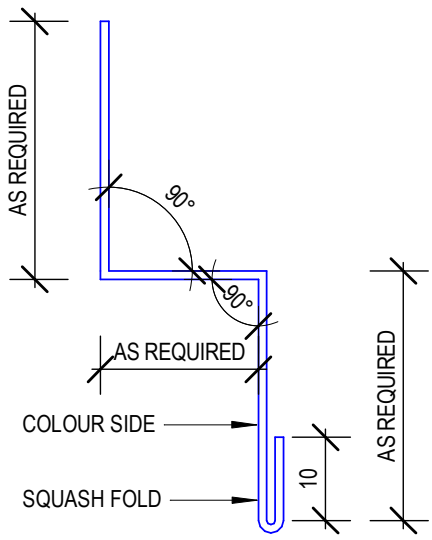


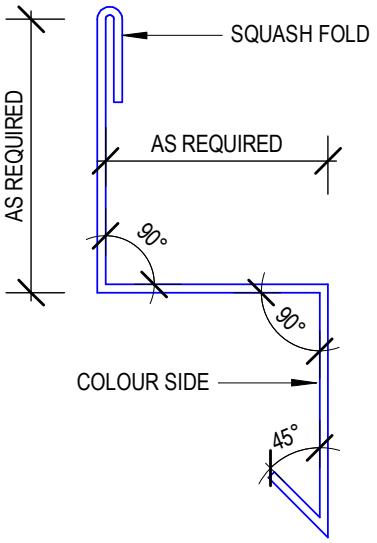
FIGURE B-2:

HOR-101 - Z Mould Flashings

HOR-101 – Z Mould Flashing
with Squash Fold



HOR-101 – Z Mould Flashing
with Squash Fold and Return (left)



HOR-101 – Z Mould Flashing
with Squash Fold and Return (right)

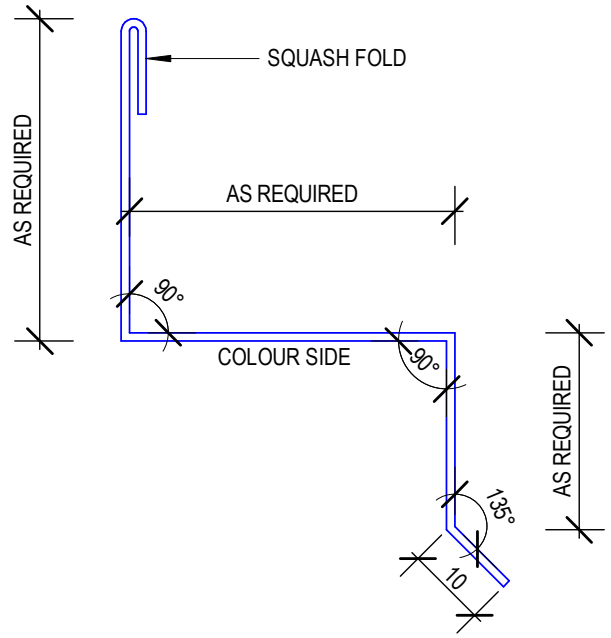
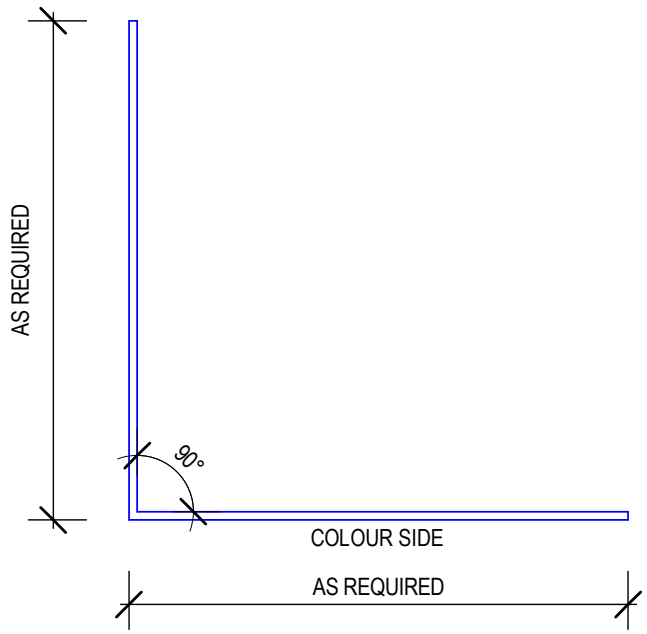


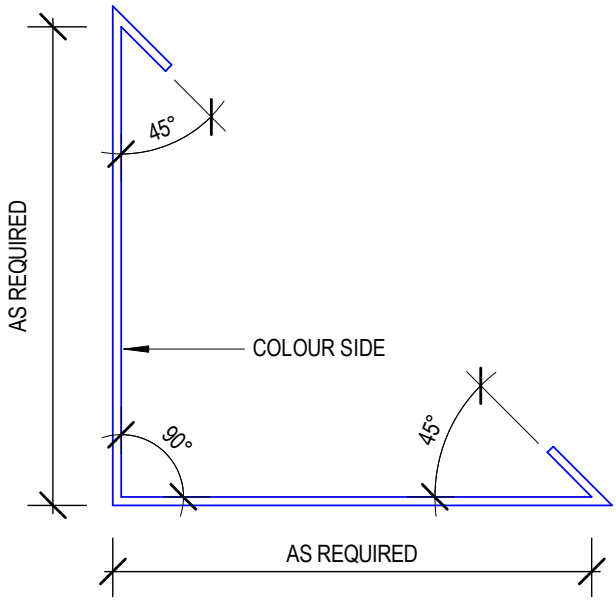
FIGURE B-3:

HOR-102 - L Mould Flashings

HOR-102 - L Mould Flashing



HOR-102 - L Mould Flashing
with Returns



HOR-102 - L Mould Flashing
with Squash Folds

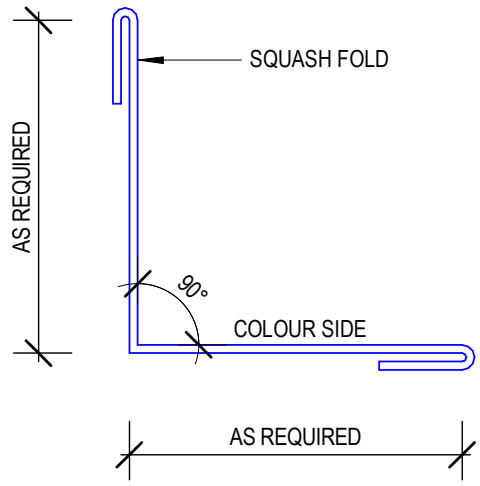


FIGURE B-4:

HOR-103 – Apron Flashing

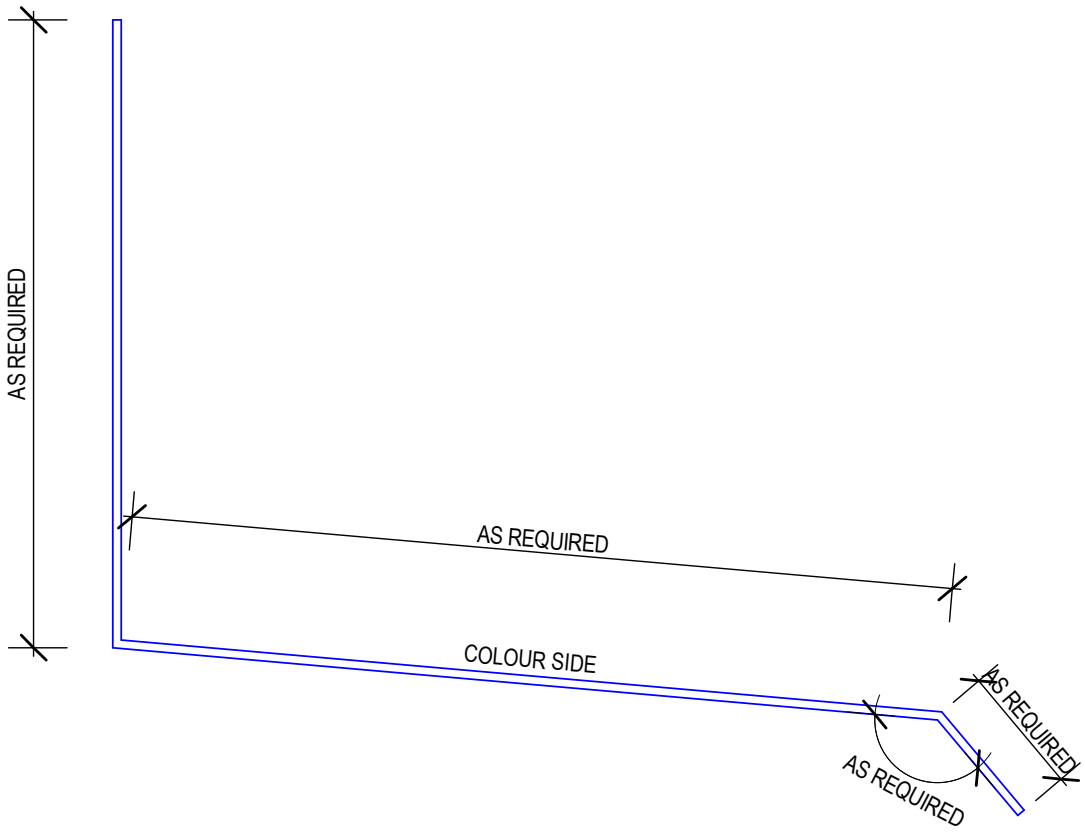


FIGURE B-5:

HOR-104 – U Mould Flashing

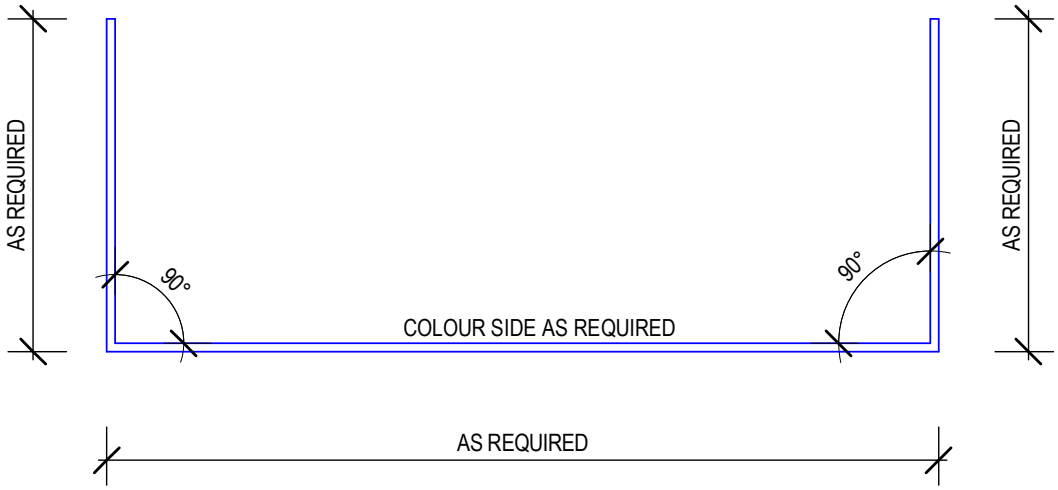


FIGURE B-6:

HOR-200 – External Corner Over Flashing

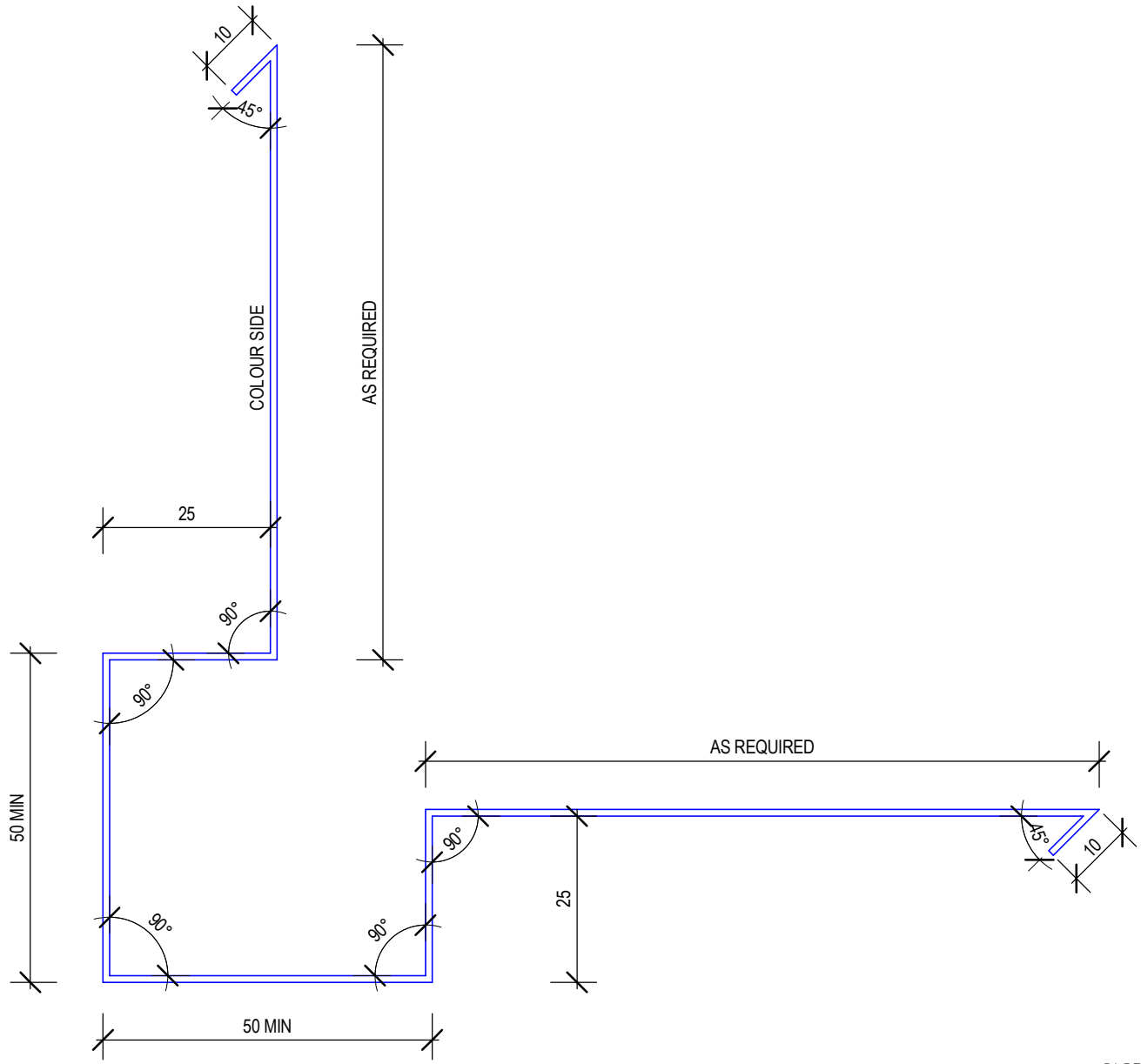


FIGURE B-7:

HOR-201 – Single Return Over Flashing

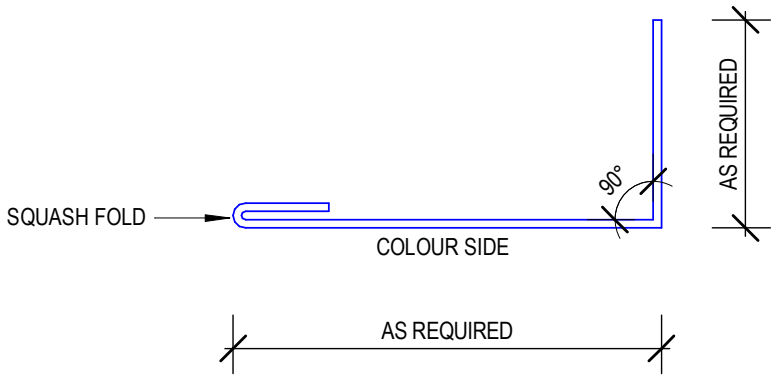
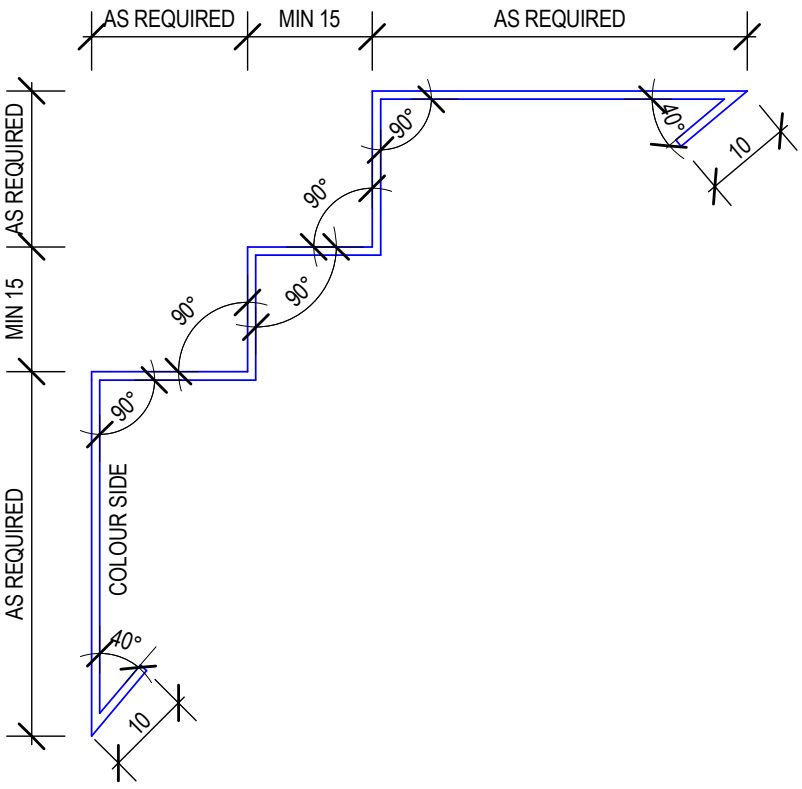


FIGURE B-8:

HOR-202 – Internal Corner Flashings

HOR-202 – Internal Corner
Flashing with Return



HOR-202 – Internal Corner
Flashing with Squash Folds

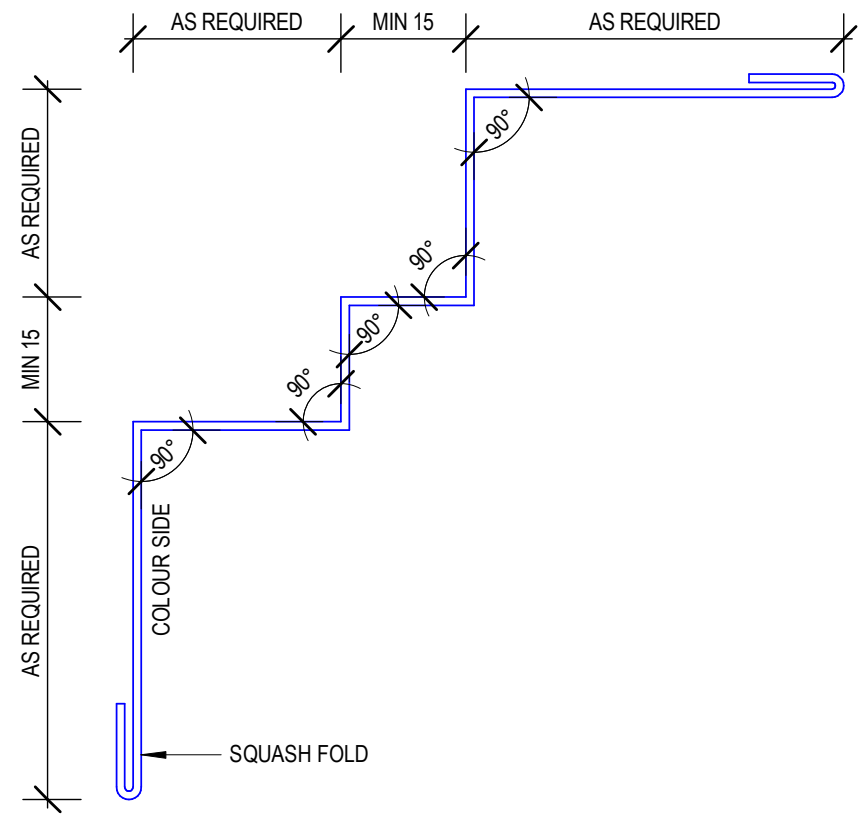


FIGURE B-9:

HOR-203 – Base Flashing with Squash Fold

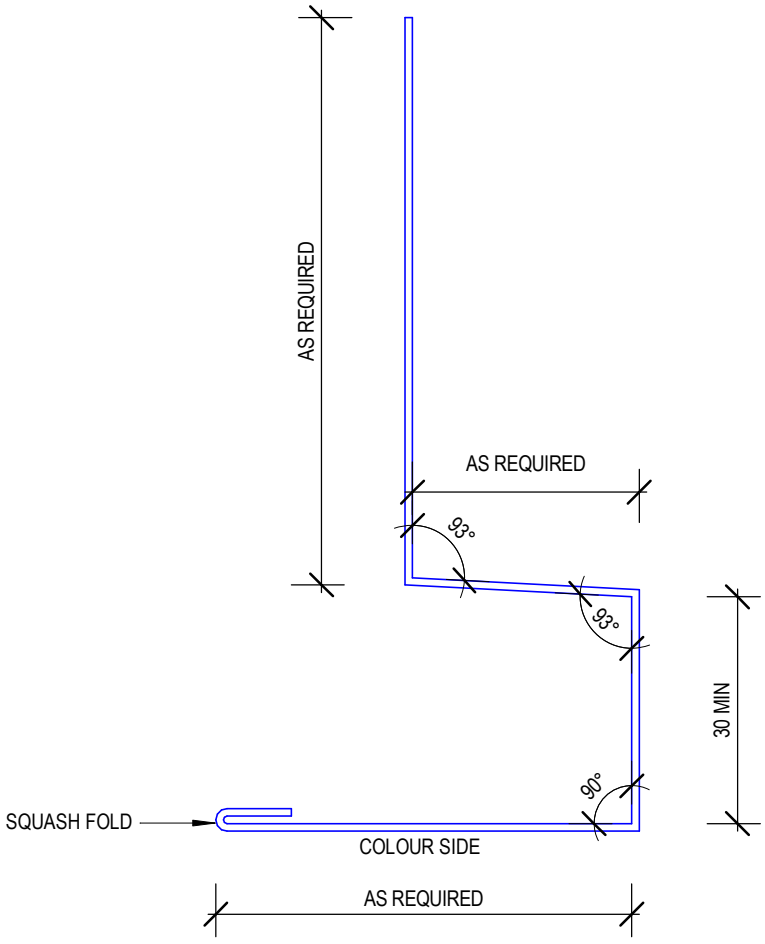


FIGURE B-10:

HOR-204 – Aluminium Base Flashing with Ventilation

Note: Material to be 5000 Series 0.9mm BMT Aluminium H32
Ventilated aluminium base flashing may not be supplied by Lysaght, and can be sourced externally.

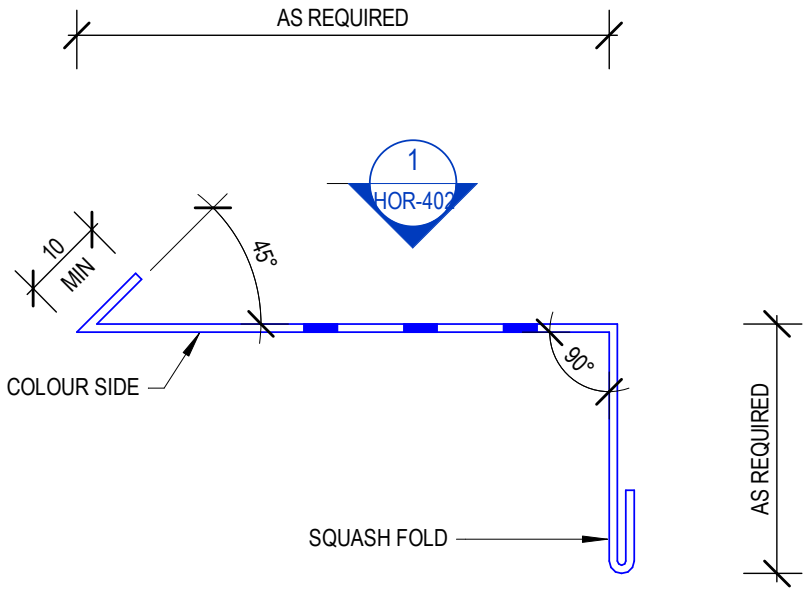
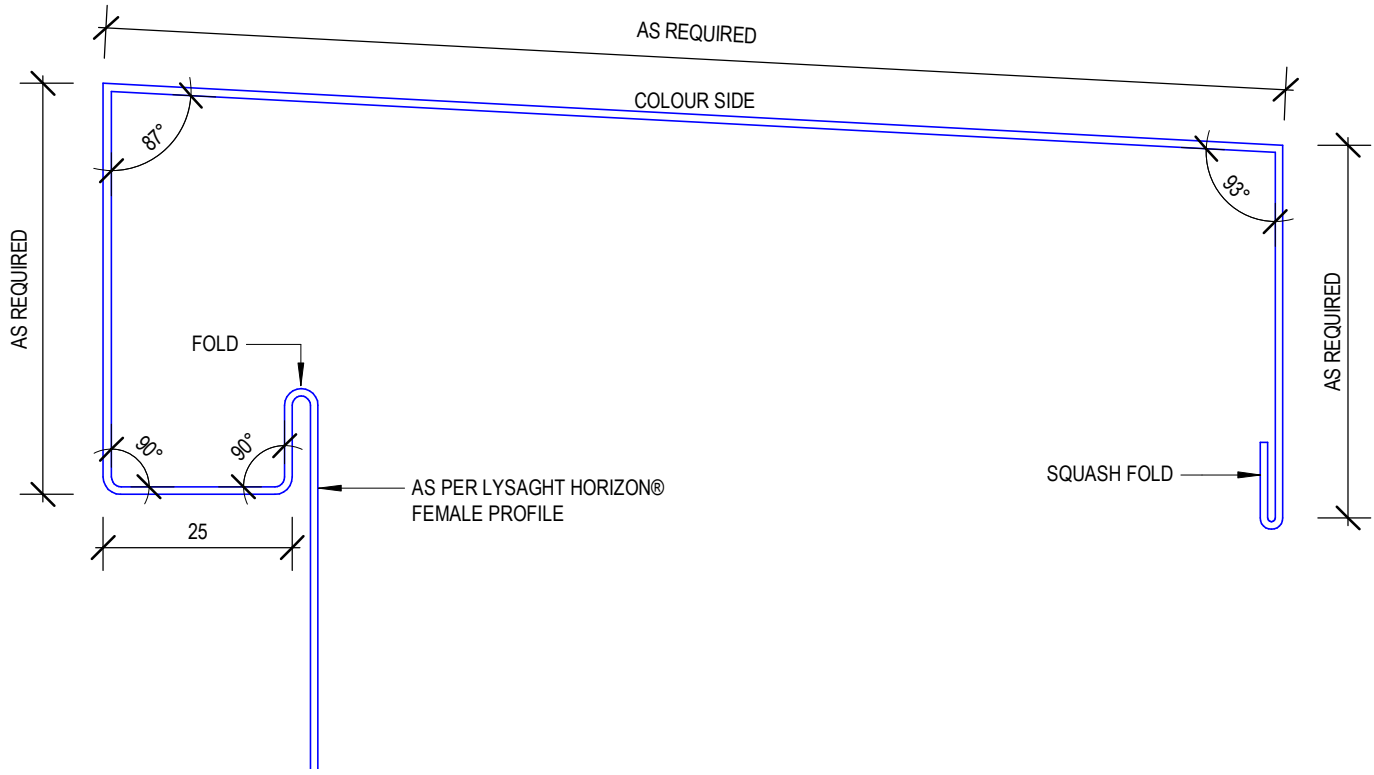


FIGURE B-11:

HOR-206 – Parapet Top Flashings

HOR-206 – Parapet Top Flashing
with Female Return and Squash Fold



HOR-206 – Parapet Top Flashing
with Return and Squash Fold

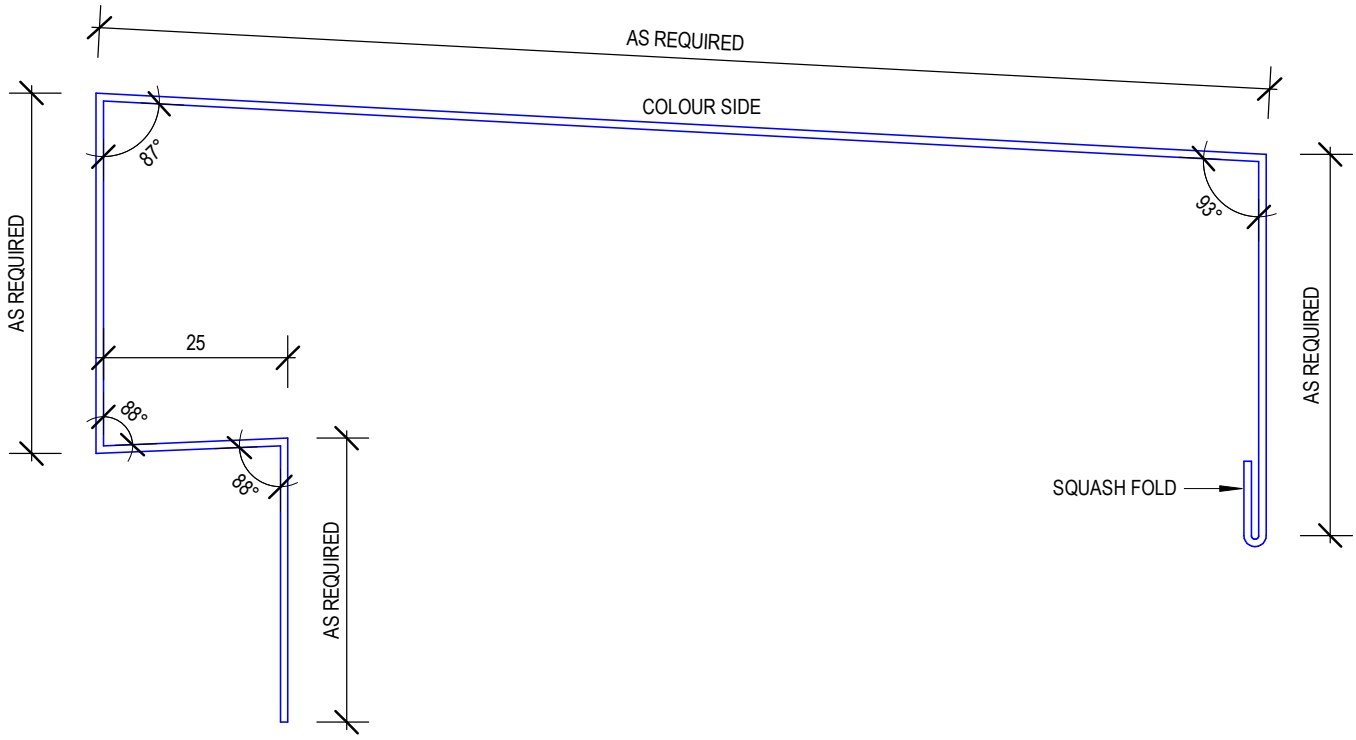
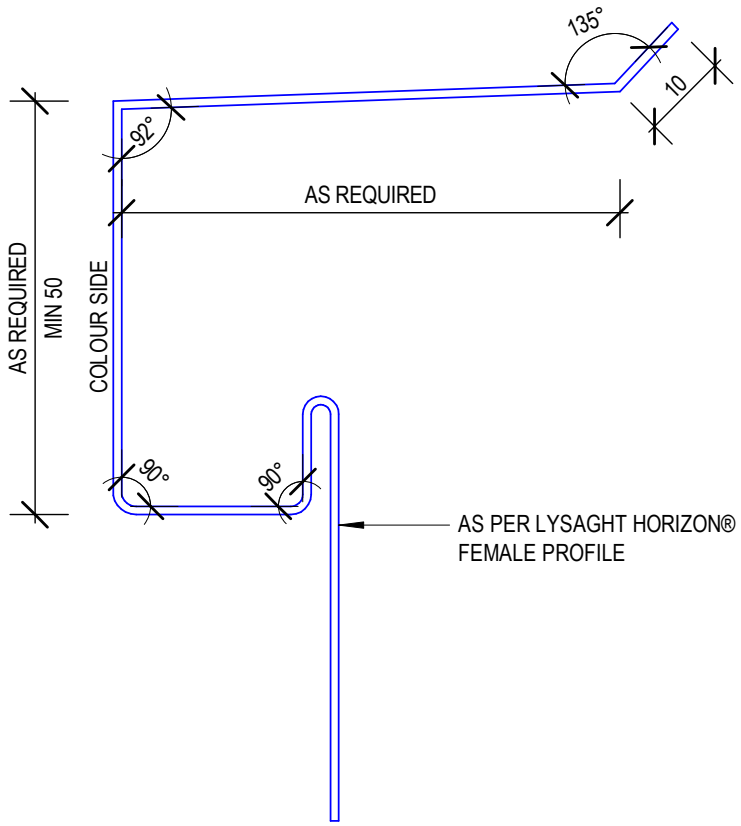


FIGURE B-12:

HOR-300 – Window Sill Flashings

HOR-300 – Window Sill Flashing
with Female Return



HOR-300 – Window Sill Angled
Flashing with Return

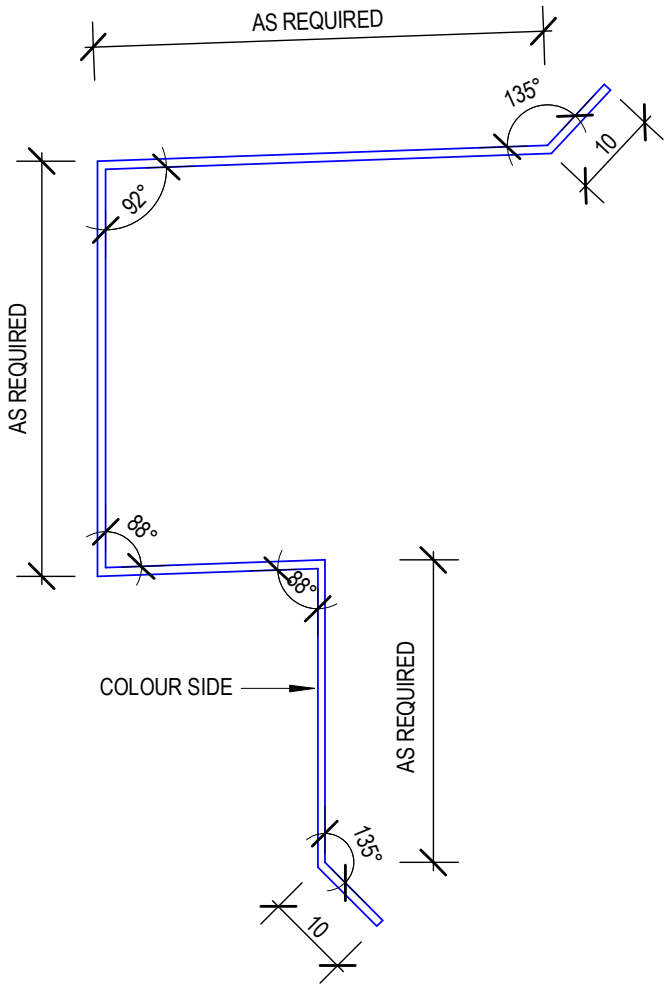
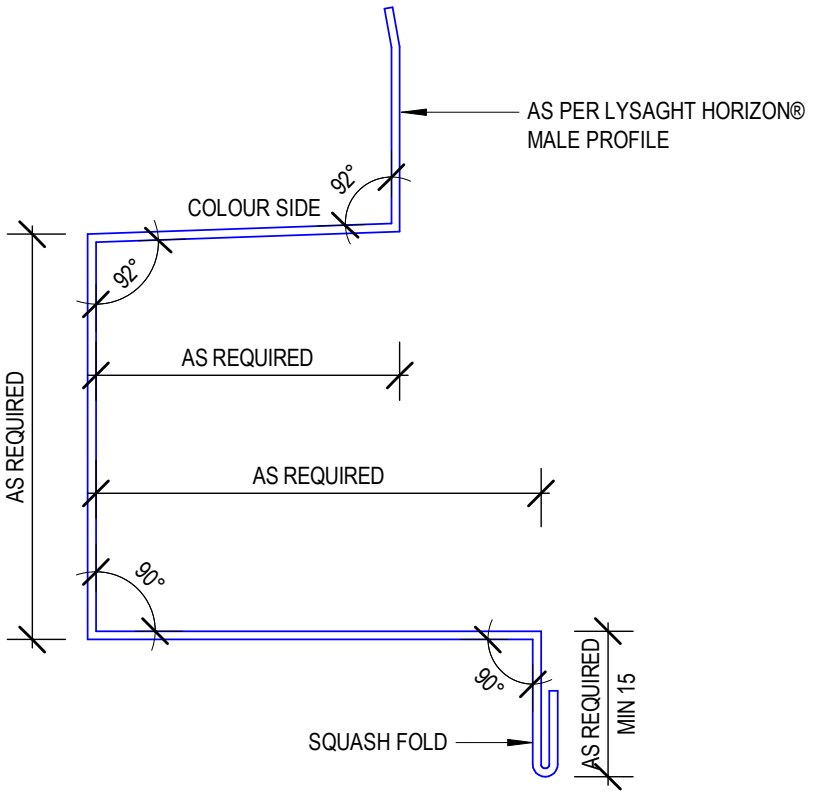


FIGURE B-13:

HOR-301 – Window Head Flashings

HOR-301 – Window Head Male
Profile Flashing with Squash Fold



HOR-301 – Window Head Flashing
with Squash Fold

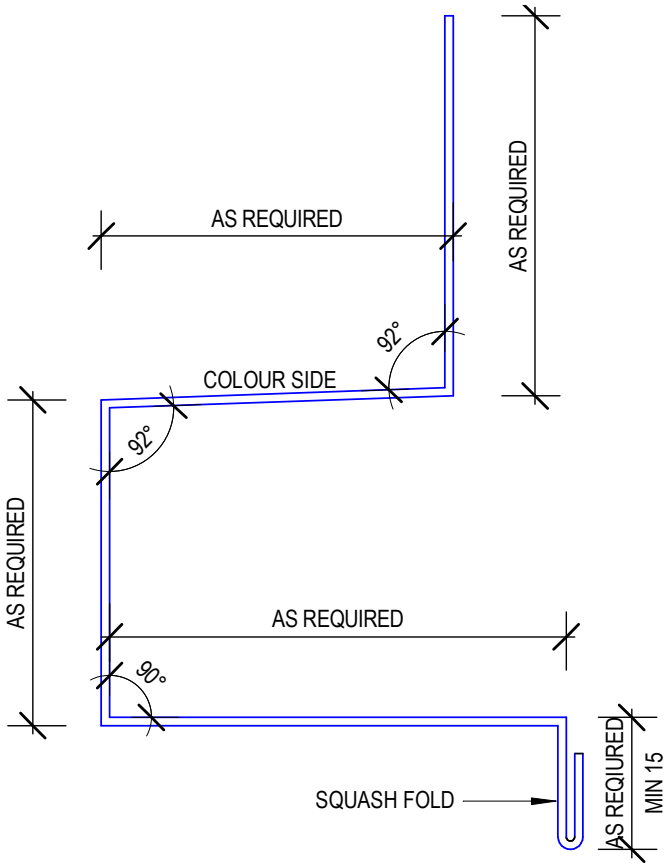
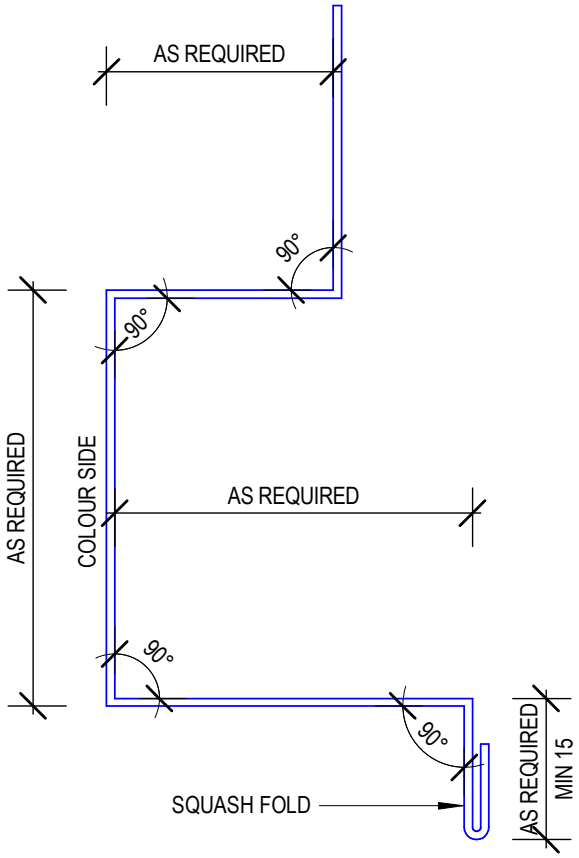


FIGURE B-14:

HOR-302 – Window Jamb Flashings

HOR-302 – Window Jamb Flashing
with Squash Fold



HOR-302 – Window Jamb Female
Flashing with Squash Fold

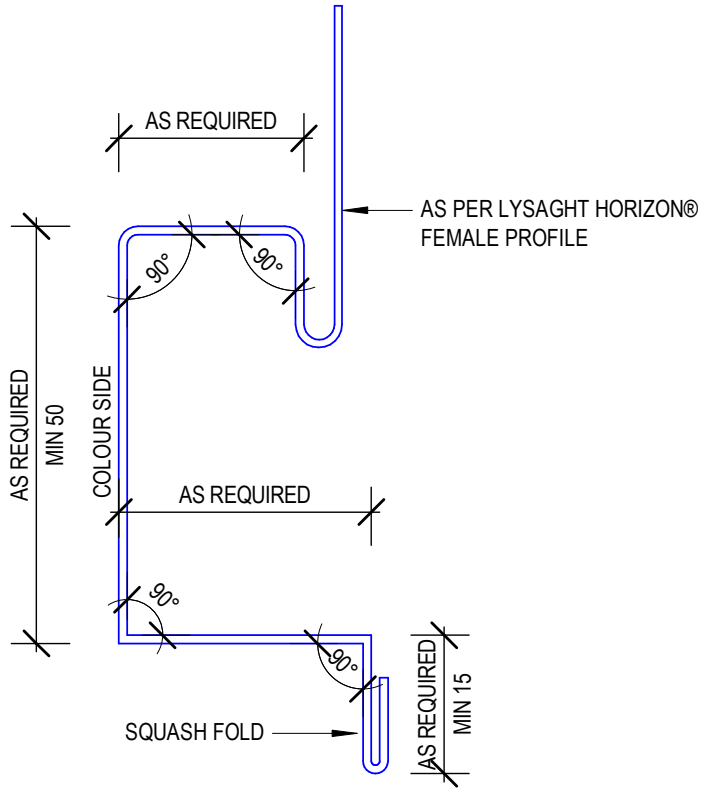
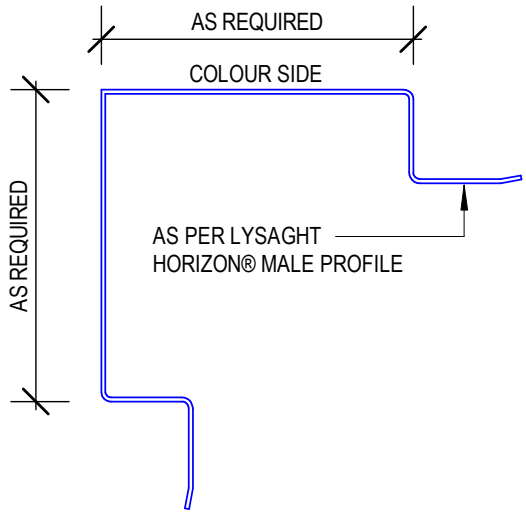


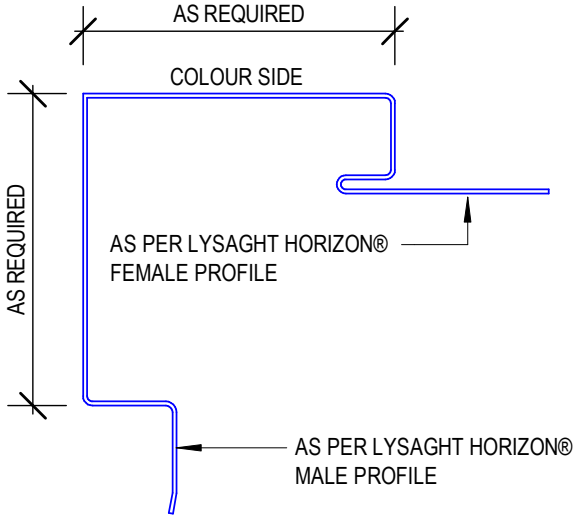
FIGURE B-15:

HOR-400 – External Corner Panels

HOR-400 – External Corner Details
– Male Male



HOR-400 – External Corner Panels
– Female Male



HOR-400 – External Corner Panels
– Female Female

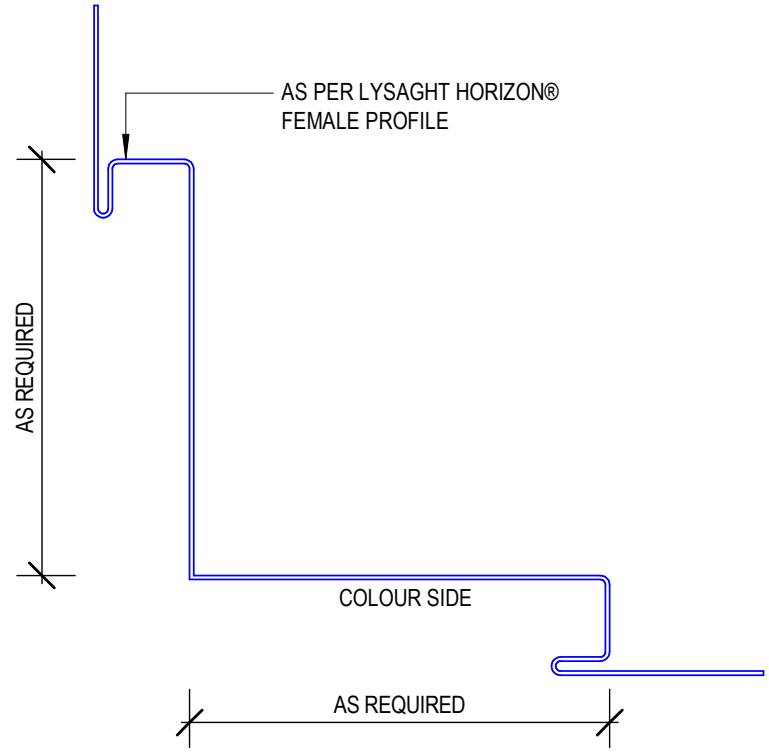
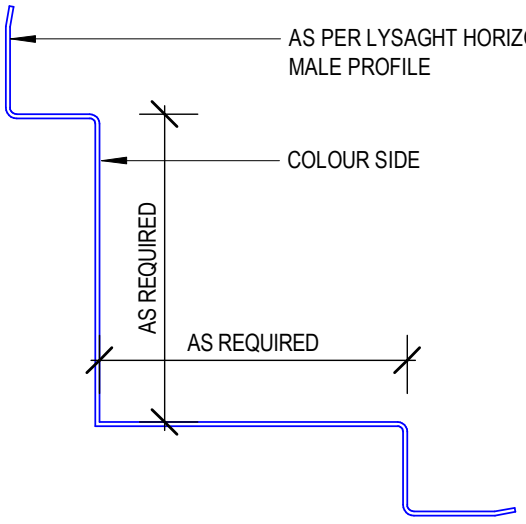


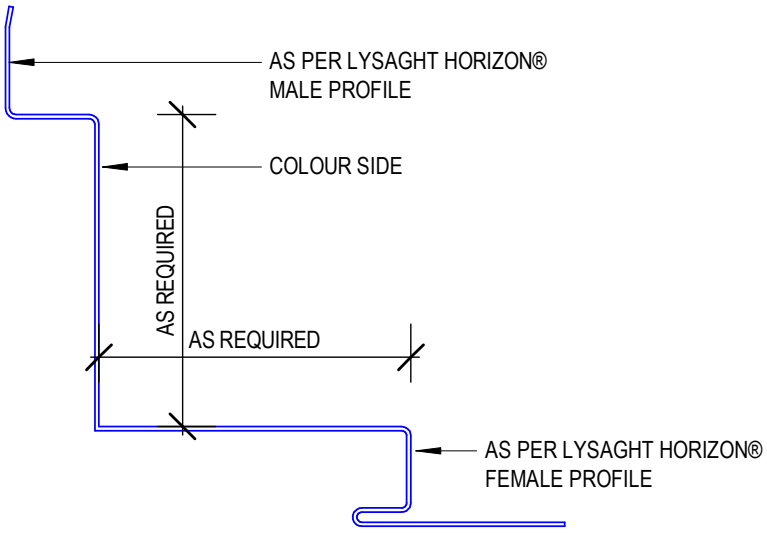
FIGURE B-16:

HOR-401 – Internal Corner Panels

HOR-401 – Internal Corner Details
– Male Male



HOR-401 – Internal Corner Panels
– Female Male



HOR-401 – Internal Corner Panels
– Female Female

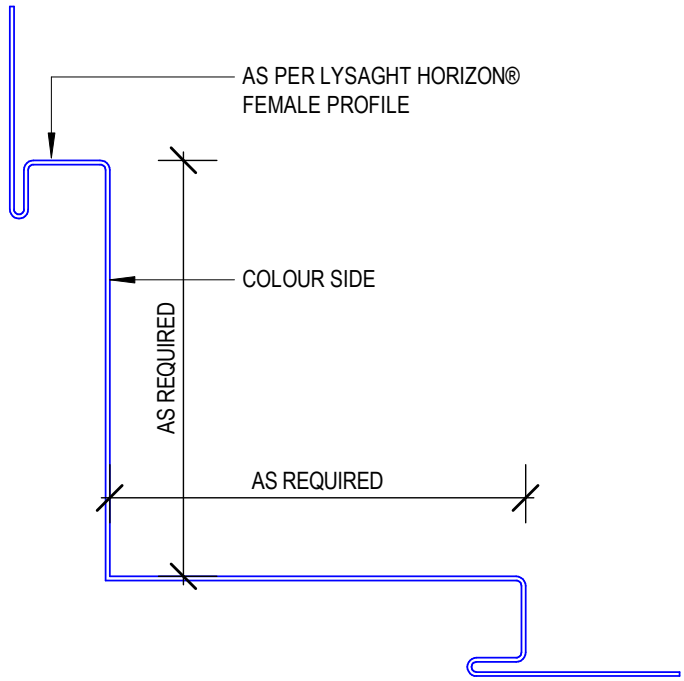


FIGURE B-17:

HOR-402 – Perforation Detail

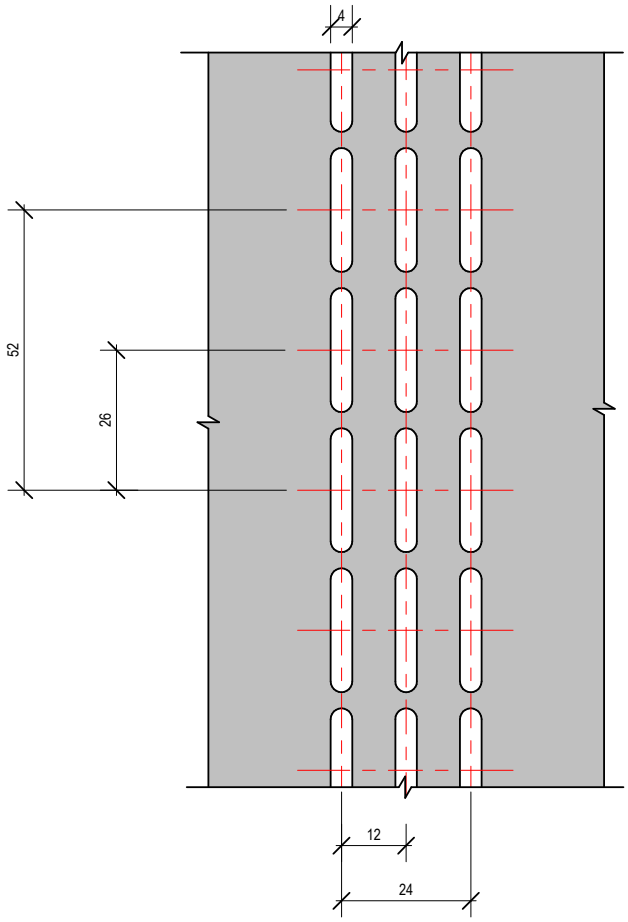


FIGURE B-18:

HOR-403 – Corrosion Resistant Flashing

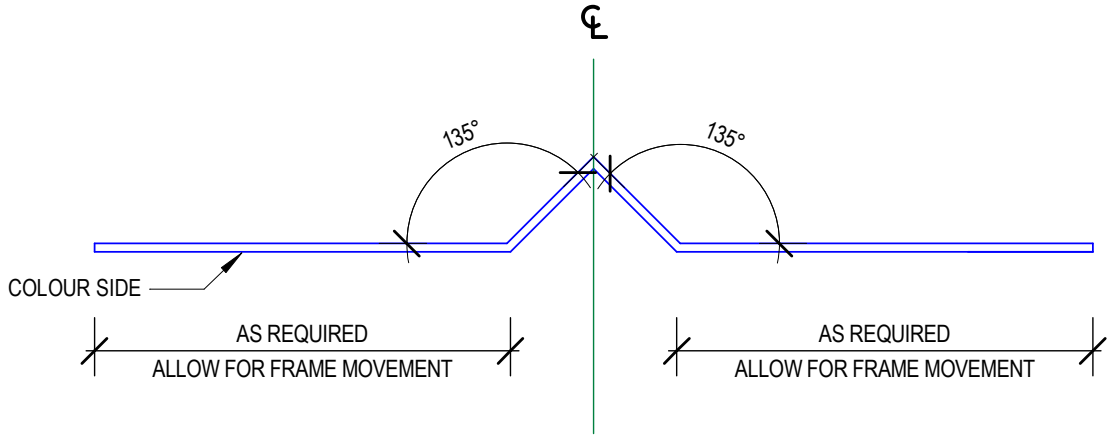
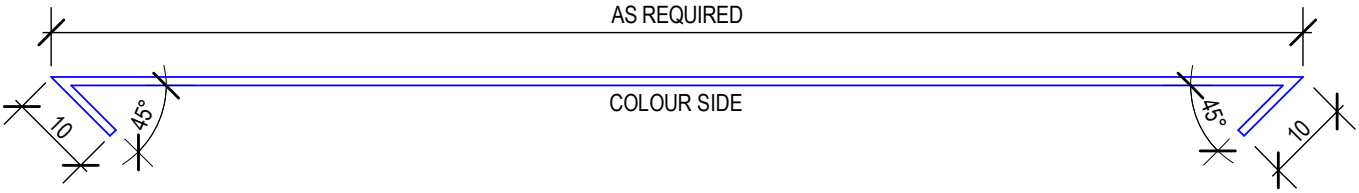


FIGURE B-19:

HOR-404 – Backing Plate Flashing with Returns



APPENDIX C: CERTIFICATE OF TEST AS/NZS 1530.3:1999

THE CERTIFICATE OF TEST BELOW IS AN ADDENDUM TO CSIRO REPORT FNE 12929-A

Certificate of Test

QUOTE No.: NE8656 **REPORT No.: FNE12929C**

AS/NZS 1530.3:1999 SIMULTANEOUS DETERMINATION OF IGNITABILITY, FLAME PROPAGATION, HEAT RELEASE AND SMOKE RELEASE

TRADENAME: Horizon Panel

SPONSOR: BlueScope Steel Pty Ltd
27 Sterling Road
MINCHINBURY NSW 2770
AUSTRALIA

DESCRIPTION OF SAMPLE: The sponsor described the tested specimen as a coated steel panel with penetration and joint configurations detailed in the report FNE12929-A figure 1. The specimen contained a painted steel sheet face and corrugated steel backing. The painted steel face contained an aluminium-zinc-magnesium coating on both sides and was comprised of seven layers detailed on the report FNE12929-A section 2.6. The corrugated steel sheet backing contained an aluminium-zinc-magnesium coating on both sides and was comprised of five layers detailed on the report FNE12929-A section 2.6.

The steel sheet face and corrugated steel sheet backing were adhered together using a silyl modified polymer adhesive (1-mm thick) applied at an application rate of 80-g/m². The configuration of the specimen was a panel with a 160-mm round section cut out, offset by 150mm in axial plane from centre and a 15-mm wide horizontal joint in the middle of the panel.

Nominal thickness of steel sheets:	2.1 mm
Nominal total thickness of panel:	24 mm
Nominal total mass:	10.2 kg/m²
Colour:	woodland grey, monument, surfmist [faces] / grey [back]

The test result only relates to the specimen tested and described in this report. CSIRO was not involved in the design of the specimen configuration, or the selection of materials used to form the test specimen.

TEST PROCEDURE: Six (6) samples were tested in accordance with AS/NZS 1530, Method for fire tests on building components and structures, Part 3: Simultaneous determination of ignitability, flame propagation, heat release and smoke release, 1999. For the test, each sample was clamped to the specimen holder in four places.

RESULTS: The following means and standard errors were obtained:

Parameter	Mean	Standard Error
Ignition Time (min)	N/A	N/A
Flame Spread Time (s)	N/A	N/A
Heat Release Integral (kJ/m²)	N/A	N/A
Smoke Release ($\log_{10}$D)	-4.678	0.971

For regulatory purposes these figures correspond to the following indices:

Ignitability Index (0-20)	Spread of Flame Index (0-10)	Heat Evolved Index (0-10)	Smoke Developed Index (0-10)
0	0	0	0-1

The results of this fire test may be used to directly assess fire hazard, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all fire conditions.

DATE OF TEST: 8 June 2022

Certificate of test issued on the 4th day October 2023 without alterations or additions. This Certificate of Test is an addendum to CSIRO Report FNE12929 issued on the 27th day of July 2022 and reissued as FNE12929-A on 4th day October 2023.

Stephen Smith
Team Leader, Reaction to Fire Laboratory
End of Report

NATA
NATA Accredited Laboratory Number: 165
Corporate Site No 3625
Accredited for compliance with ISO/IEC 17025 – Testing.

CSIRO INFRASTRUCTURE TECHNOLOGIES
14 Julius Avenue, Riverside Corporate Park, North Ryde NSW 2113 AUSTRALIA
Telephone: 61 2 9490 5444 Facsimile: 61 2 9490 5555 www.csiro.au

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AUSTRALIAN STANDARDS

Australian Standard	Definition
AS 1397:2021	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS 1562.1:2018	Design and installation of sheet roof and wall cladding - Part 1: Metal
AS 3959:2018	Construction of buildings in bushfire-prone areas
AS 4040.2-1992 (Rec 2016, Amd 1:2018)	Methods of testing sheet roof and wall cladding, Part 2: Resistance to wind pressures for non-cyclone regions
AS/NZS 1530.3:1999	Methods for fire tests on building materials, components and structures Part 3: Simultaneous determination of ignitability, flame propagation, heat release and smoke release (Reconfirmed 2016)
AS/NZS 2179.1:2014	Specifications for rainwater goods, accessories and fasteners Metal shape or sheet rainwater goods, and metal accessories and fasteners
AS/NZS 2728:2013	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements

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