

PREMIUM ALUMINIUM CLADDING

**DESIGN & INSTALLATION MANUAL
NON-CYCLONIC**



AUSTRALIAN STANDARDS

Australian Standard	Definition
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 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 1170.2:2021	Structural design actions, Part 2: Wind actions
AS 1562.1:2018	Design and installation of sheet roof and wall cladding - Part 1: Metal
AS 4040.0-1992	Methods of testing sheet roof and wall cladding
AS 4040.1-1992 (Reconfirmed 2016)	Methods of testing sheet roof and wall cladding - Method 1: Resistance to concentrated loads
AS 4040.2-1992 (Reconfirmed 2016, Amendment 1:2018)	Methods of testing sheet roof and wall cladding, Part 2: Resistance to wind pressures for non-cyclone regions
AS 4055:2021	Wind loads for housing
SA HB 39:2015	Installation code for metal roof and wall cladding
AS/NZS 3500.3:2021	Plumbing and drainage Part 3: Stormwater drainage
AS 4200.2:2017	Pliable building membranes and underlays Installation
AS 1562.1:2018	Design and installation of sheet roof and wall cladding - Part 1: Metal

Contents

1.0	PERMALITE® Premium Cladding Range	4
1.1	Introduction	4
1.2	Range Profile Overview	4
1.3	Materials	5
1.4	Testing Standards	5
1.5	Wind Forces on Roofs	5
2.0	Material Specification	6
2.1	Thermal Expansion	6
2.2	Combustibility	6
2.3	Environmental Conditions	6
3.0	Design Installation Considerations	7
3.1	Storage and Handling Prior to Use	7
3.2	Walking on Roofs	7
3.3	Minimum Roof Pitch	7
3.4	Support Spacing and Overhang	7
3.5	Maximum Lengths of Roofing	8
3.6	Low Roof Pitches	9
3.7	Oil Canning	9
4.0	Design Criteria	11
4.1	States Wind Pressures	11
4.2	Wind Forces on Roofs	11
4.3	Non-Cyclonic Areas and Cyclonic Areas	12
4.4	Timber and Metal Compatibility	12
4.5	Curving	14
4.6	Colour Availability	15
5.0	ALURE™	16
5.1	ALURE™ Profile Details	16
5.2	High Heat Conditions	16
5.3	ALURE™ Fasteners	16
5.4	Sheets Required	17
5.5	Width Covered	17
5.6	Design Data	17
5.7	Typical Installation Details	19
5.8	ALURE™ Typical Construction Details	20
6.0	PERCIPERE®	40
6.1	PERCIPERE® Profile Details	40
6.2	PERCIPERE® Fasteners	40
6.3	Sheets Required	41
6.4	Width Covered	41
6.5	Design Data	41
6.6	Typical Installation Details	43
6.7	PERCIPERE® Typical Construction Details	45
7.0	PERPETUAL™	66
7.1	PERPETUAL™ Profile Details	66
7.2	PERPETUAL™ Fasteners	66
7.3	Sheets Required	67
7.4	Width Covered	67
7.5	Design Data	67
7.6	Typical Installation Details	69
7.7	PERPETUAL™ Typical Construction Details	72
8.0	AS/NZS 1530.3 Flammability Test Certificate	87

1.0 PERMALITE® PREMIUM CLADDING RANGE

1.1 INTRODUCTION

Choosing the optimum material for your next project should take account of the full lifetime of the material. This will include construction, use, maintenance and disposal. Materials which can be recycled easily and economically, and which do not require landfill disposal should be preferred. Aluminium's formability, high strength-to-weight ratio, corrosion resistance, and ease of recycling make it the ideal material for a wide range of building applications. It is almost uniquely suited for projects in harsh industrial and marine environments.

Aluminium is a long lasting, durable, lightweight alternative to other cladding materials particularly in corrosive environments. Aluminium provides high thermal insulation and minimal maintenance to remain corrosion-free. It is easier to transport and erect because it is significantly lighter than many alternate cladding materials.

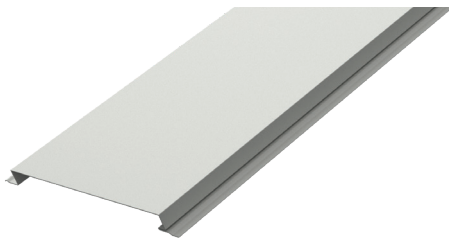
This manual is a guide to the installation of the PERMALITE® aluminium cladding products shown in Section 1.2 Range Profile Overview. We intend that it be used by all trades and professions involved with specifying and applying the PERMALITE® premium cladding range. Reference to this document will allow you to maximise the benefits of PERMALITE® premium claddings in your next project. We refer only to genuine PERMALITE® aluminium products manufactured by Lysaght and marketed under our brand names.

Our recommendations should only be used for our products because they are based on comprehensive testing of our profiles, Base Metal Thicknesses (BMT) and material finishes. Our products are engineered to perform according to our specifications only if they are used in the appropriate conditions and installed to the recommendations in this manual and our other publications. Where we recommend use of third party materials, ensure you check the qualities and capabilities of those products with the relevant manufacturer before use.

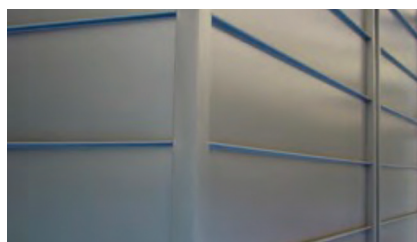
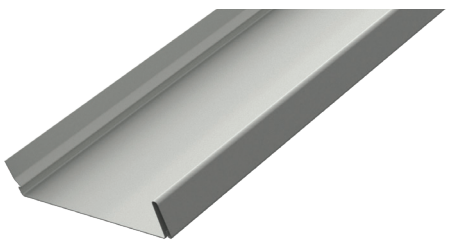
The PERMALITE® premium cladding products are concealed fix systems for both roofing and walling, particularly suited to residential applications, and are designed to provide stunning architectural appearances. This aesthetic appeal combines with 5251 H38 marine grade aluminium to provide outstanding watertightness and durability and stunning aesthetics. The PERMALITE® premium cladding range is suitable for complex roof configurations accommodating smooth transitions between roof planes other building elements.

1.2 RANGE PROFILE OVERVIEW

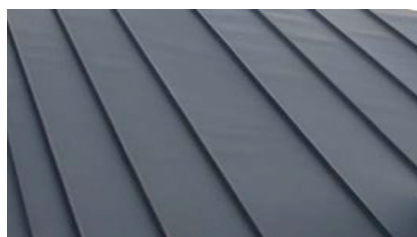
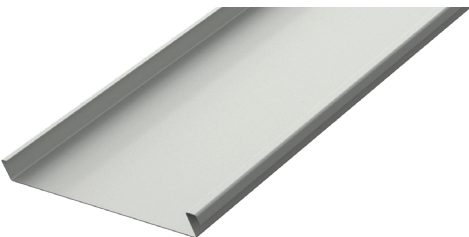
ALURE™ - a contemporary wall-cladding giving the impression of a flat recessed joint providing a stylish and durable solution to any project.



PERCIPERE® - this concealed fix roofing and walling panel is an elegant addition to any project. This fabulous product combines a striking appearance yet simple and manageable installation.



PERPETUAL™ - a classic, versatile, concealed fix solution for both stylish and elegant design. PERPETUAL™ has the ability to be curved, allowing for exceptional clean lines for a striking finish.



1.3 MATERIALS

The full range of architectural panels are manufactured from 0.9mm BMT 5251 marine grade aluminium alloy for outstanding durability and consequently are covered by Lysaght long term warranties (up to 40 years) against corrosion (terms and conditions apply). The system is complemented by a range of standard flashing components manufactured from identical aluminium material to the panel as well as a range of stainless steel fixings and PVC isolation mediums.

1.4 TESTING STANDARDS

AS 1562.1:1992 specifies the design and installation of sheet metal roof and wall cladding. The PERMALITE® premium cladding products referred to in this manual satisfy all the requirements of this Standard, including the ability of the roof to withstand concentrated loads according to AS 4040.1 and wind pressure in non-cyclonic regions according to AS 4040.2.

1.5 WIND FORCES ON ROOFS

Winds create considerable forces on both the topside and the underside of roof cladding, and you must consider these forces in the design and fixing of any roof. The forces are:

- **inward** forces tending to collapse the roof cladding inwards, caused by wind acting directly on the windward side; and
- **outward** forces tending to lift the roof cladding from its framing, and the entire roof structure from the rest of the building. Outward forces can be caused both by uplift from negative wind pressures, outside the building; and by positive wind pressure inside the building. Generally the greatest wind forces imposed on roofs are due to the outward forces. Because the dead weight of roofing materials is relatively small, the outward forces must be resisted by the roof fasteners.

It is very important that the battens and roof framing are adequately fixed to the rafters and walls, and that under extreme conditions the wall framing is anchored to the footings. Special anchoring provisions may apply in cyclonic areas. Specialist advice should be sought in these circumstances.

2.0 MATERIAL SPECIFICATION

The material specification across the PERMALITE® premium cladding range is as per Table 2.0.1.

Table 2.0.1:

Alloy Mechanical Properties - ALURE™ and PERCIPE®

Alloy	5251
Temper	H38
Minimum Yield Strength, MPa	225
Ultimate Tensile Strength	260
Elongation 0.90 BMT	4%
Coefficient of Thermal Expansion	24 x 10 ⁻⁶ per °C (Approx. 1.2mm/m over 50°C)

Alloy Mechanical Properties - PERPETUAL™

Alloy	5251
Temper	H32
Minimum Yield Strength, MPa	130
Ultimate Tensile Strength	200
Elongation 0.90 BMT	5%
Coefficient of Thermal Expansion	24 x 10 ⁻⁶ per °C (Approx. 1.2mm/m over 50°C)

2.1 THERMAL EXPANSION

Although aluminium has twice the coefficient of expansion of steel, (24 x 10⁻⁶ compared to 12 x 10⁻⁶ °C) the effect of this is often over-estimated.

Usually aluminium cladding is fixed to a steel structure, which, under the same thermal influence, expands or contracts also.

The combination of these factors results in a low relative expansion between the aluminium cladding and the steel structure. It has been observed in practice that the theoretical expansion of an aluminium roof, relative to the steel structure on which it is fixed, is reduced by up to 50%.

Note: As an approximation, aluminium expands 1.2mm/m over 50° temperature change.

2.2 COMBUSTIBILITY

PERMALITE® claddings have been tested to AS/NZS 1530.3 with the following combustibility results:

- Ignitability Index: 0
- Spread of Flame Index: 0
- Heat Evolved Index: 0
- Smoke Developed Index: 2

And as such, complies with clause C1.12 of the Building Code of Australia as a non-combustible material. Refer to Section 8 Flammability Test Certificate.

2.3 ENVIRONMENTAL CONDITIONS

Aluminium products are generally specified for severe environmental conditions such as proximity to breaking surf. Other severe environments include

- Industrial applications,
- Agricultural applications,
- Marine industry applications,
- Intensive animal farming,
- Aquatic centres or other aggressive conditions.

To get the best performance from our products in these conditions, or other unusually corrosive environments, contact your local Lysaght representative.

3.0 DESIGN INSTALLATION CONSIDERATIONS

3.1 STORAGE AND HANDLING PRIOR TO USE

PERMALITE® cladding products require care during handling and installation. Installation damage can be avoided by taking reasonable care and following the recommendations of this manual.

Keep the product dry and clear of the ground. If stacked or bundled product becomes wet, separate it, wipe it with a clean cloth and stack it to dry thoroughly.

Product that has become wet in transport is to be unpacked immediately and each section dried thoroughly prior to repacking. Bundled sections and accessories should not be

Left exposed in the open for any period as water staining may result between any aluminium surfaces in contact with each other. Mill finish aluminium is particularly susceptible to this type of staining.

Contact with moisture, cement dust, lime or abrasive dust is to be avoided. If not required for immediate use, sections should be neatly stacked off the ground, covered and on a slight slope so that water can drain away. It should be noted that whilst water staining is unsightly it will not affect the structural integrity or durability of the product in any way. Packs of sheet stored on the roof must be placed over trusses or purlin supports.

3.2 WALKING ON ROOFS

It is important that you walk on roofing carefully, to avoid damage to either the roofing or yourself. Generally, keep your weight evenly distributed over the soles of both feet to avoid concentrating your weight on either heels or toes. Always wear smooth soft-soled shoes; avoid ribbed soles that pick up and hold small stones, swarf and other objects.

When you walk across the ribs, walk over or close to the roofing supports (usually over fastener locations.) Be careful when moving between supports. Do not walk in the pan immediately adjacent to flashings or translucent sheeting. Walk at least one pan away.

Temporary plank walkways should be provided while other trades walk on the roof (high traffic areas).

Always take particular care when walking on wet or newly laid sheets — particularly on steeply pitched roofs.

3.3 MINIMUM ROOF PITCH

For product installed in roofing applications the minimum recommended roof pitch is set out in **Table 3.3.1**.

Table 3.3.1:

Minimum Roof Pitch

Product	Min Roof Pitch	Min Length (m)	Max Recommended* Length (m)
ALURE™	N/A Wall cladding only	1	8
PERCIPERE®	3 degree*	1	8
PERPETUAL™	3 degree*	1	8

*Longer lengths may be available but allowance must be made for thermal expansion and contraction.

3.4 SUPPORT SPACING AND OVERHANG

The maximum recommended support spacing's for end and internal spans shown in this manual are based on data in accordance with AS 1562.1:2018 Design and installation of sheet roof and wall cladding: Metal, and AS 4040.1:1992 Methods of testing sheet roof and wall cladding—Resistance to concentrated loads.

The roof support spacing's in the tables are recommended to produce adequate performance of claddings under concentrated loading (incidental or maintenance) and consider resistance to wind pressure and maintenance foot traffic.

For roofing, the wind pressure considered is based on:

- Building up to 10m high in region B
- Terrain Category 3
- $M_s = 0.85$, $M_I = 1.0$, $M_t = 1.0$ with
- $C_{pe} = -0.9$, $C_{pi} = 0.20$
- $kl = 2.0$ for end spans and $kl = 1.5$ for internal spans

The maximum overhang for the PERMALITE® premium cladding range is generally 100mm. The overhang is the projection of the sheet past a support. For roofs the maximum overhang is a guide and is based on a nominal incidental load applied adjacent to the free edge. All roof overhangs should be treated as a non-trafficable area.

The walling spans consider resistance to wind pressure only.

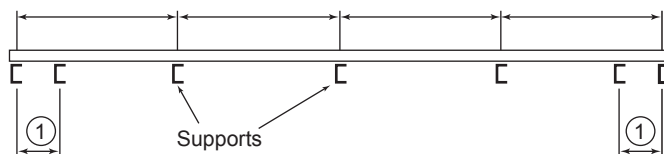
The pressure considered is based on:

- Building up to 10m high in region B
- Terrain Category 3
- $M_s = 0.85$, $M_I = 1.0$, $M_t = 1.0$ with
- $C_{pe} = -0.65$, $C_{pi} = 0.20$
- $kl = 2.0$ for end spans and $kl = 1.5$ for internal spans

These spacing may vary by serviceability and strength limit states for particular projects.

Figure 3.4.1:

Cladding Spans



3.5 MAXIMUM LENGTHS OF ROOFING

The valleys (or pans) of roofing have to carry water to the gutters. If in heavy rain, the valleys overflow, water can flow into the roof through the side-laps and flashings.

Factors affecting waterproof and drainage capacity of the laps of a profile include:

- the width and depth of the valleys or pans;
- the pitch of the roof—rain flows faster on a steeper pitch;
- rainfall intensity for the geographical area;
- the length of the roof from ridge to gutter; and
- penetrations that cause nearby valleys to carry extra rain diverted from valleys obstructed by the penetration (Figure 3.5.1).

The maximum recommended roof lengths for drainage for each profile are given in Table 3.5.1, which sets out maximum roof lengths for drainage measured from ridge to gutter.

It must be noted penetrations alter the flow of water on a roof. Thus, for design around penetrations you need to use an effective roof length as calculated in the example at Figure 3.5.1.

An additional consideration for wide flat panned sheeting profiles is oil canning. To minimise the effect of oil canning it is recommended that sheet length be kept below 8m.

Figure 3.5.1:

Example of calculating effective roof lengths where penetrations alter the flow of water on a roof.

Note: A suitably qualified engineer is recommended for calculating/checking roof design and flow design.

Table 3.5.1:

Maximum sheet lengths for roof drainage

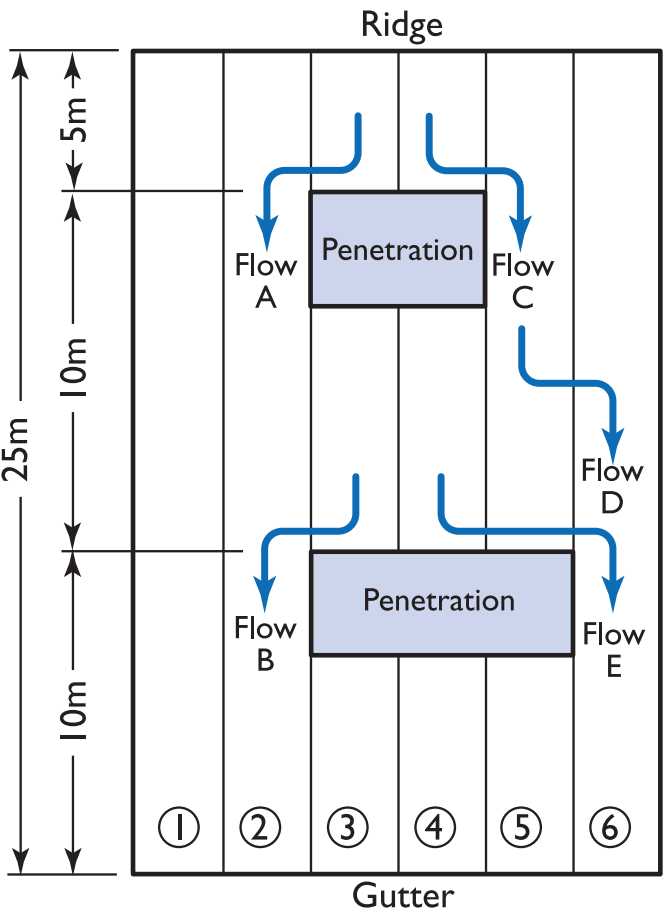
Roof Sheet Profile	Peak Rainfall intensity (mm/hr)	Roof Slope					
		1 in 50* (1°)	1 in 30 (2°)	1 in 20 (2°)	1 in 12 (5°)	1 in 7.2 (7.5°)	1 in 6 (10°)
Roof Sheet run from ridge to gutter (m)							
PERPETUAL™ 325mm Cover	100	221	276	323	402	479	551
	150	148	184	215	268	320	367
	200	111	138	161	201	240	276
	250	89	110	129	161	192	220
	300	74	92	108	134	160	184
	400	55	69	81	101	120	138
	500	44	55	65	80	96	110
PERCIPERE® 265mm Cover	100			160	199	238	273
	150			107	133	158	182
	200			80	100	119	137
	250			64	80	95	109
	300			53	66	79	91
	400			40	50	59	68
	500			32	40	48	55

Notes:

- Some lengths in this table may exceed the maximum allowable transport length.
- Data are based on work of CSIRO and Lysaght.
- For peak rainfall intensities in your locality, reference NCC or Table 3.5.2

For intermediate roof slope, use linear interpolation between values of the same category. Sheet lengths greater than 8m are not recommended due to thermal expansion and contraction.

For roof pitch ≤2°, capillary action in the laps of panels is possible.



Valley	Effective length
1	25m (Base length)
2	Base length + A + B = 25 + 5 + 10 = 40m
6	Base length + C + D + E = 25 + 5 + 15 + 10 = 55m (Worst case used for design)

Table 3.5.2:

Regional Design Rainfall intensity

	ARI once in 20 years mm/hr	ARI once in 100 years mm/hr
ACT		
Canberra	143	193
Gungahlin	137	179
Tuggeranong	148	210
New South Wales		
Albury	139	180
Broken Hill	143	219
Goulburn	121	156
Kiama	226	319
Newcastle	226	316
Orange	142	186
Sydney	200	262
Avalon, Sydney	206	278
Campbelltown, Sydney	167	222
Penrith, Sydney	180	244
Windsor, Sydney	175	223
Tweed Heads	252	330
Wollongong	217	308
North Territory		
Alice Springs	166	239
Darwin	233	274
Katherine	216	250
Queensland		
Bamaga	252	298
Brisbane	234	305
Ipswich, Brisbane	211	278
Victoria Point, Brisbane	245	320
Bundaberg	265	340
Cairns	229	278
Cloncurry	218	278
Innisfail	248	301
Mackay	250	316
Mt Isa	199	260
Noosa Heads	258	331
Rockhampton	229	300
Toowoomba	203	268
Townsville	235	300
Weipa	239	283
South Australia		
Adelaide	124	184
Gawler, Adelaide	110	158
Mt Gambier	103	144
Murray Bridge	120	178
Port Augusta	133	199
Port Pirie	122	181
Yorketown	155	166
Burnie	128	180
Flinders Island	122	166
Tasmania		
Hobart	85	116
Launceston	90	121
Queenstown	94	120
St Marys	146	203

Victoria		
Ballarat	131	188
Benalla	146	194
Geelong	102	144
Horsham	120	173
Lakes Entrance	145	198
Melbourne	132	187
Hastings, Melbourne	177	145
Sorrento, Melbourne	106	140
Mildura	142	218
Stawell	130	186
Western Australia		
Albany	125	178
Broome	232	287
Bunbury	147	199
Derby	211	156
Geraldton	138	193
Kalgoorlie	137	204
Perth	130	172
Joondalup, Perth	133	180
Midland, Perth	122	163
Port Hedland	168	230
Tom Price	138	182

3.6 LOW ROOF PITCHES

Unless there is adequate positive fall in a roof, there is danger of ponding, which can lead to a reduced service life, or reduced rainwater capacity. Reduced service life is of particular importance in more severe environments.

Roof slopes lower than the recommended minimum may be available subject to enquiry and will be dependent upon the roof application and building details. Lower roof slopes may require additional provisions to be adhered to. Please call your nearest service centre for advice.

3.7 OIL CANNING

Architectural light gauge steel cladding products with wide flat surfaces may be subjected to oil canning. The oil canning feature can be defined as perceived waviness in the flat zone of a metal cladding when view at certain angles. The visual impact of oil canning is affected by the angle of light across the flat surface and this can be different at different times of the day and seasons.

Internal stresses within the metal can cause a waviness in the surface of the profile. There are many ways that the effects of oil canning can be minimised however due to the inherent nature of metal it can not necessarily be removed completely. Some of the common causes of oil canning are;

3.7.1 PROFILE DIMENSIONS

The thinner the gauge of metal used and the wider the flat pan section of the profile the more evident oil canning will be. Conversely the thicker the material and the narrower the flat pan the less evident oil canning will be.

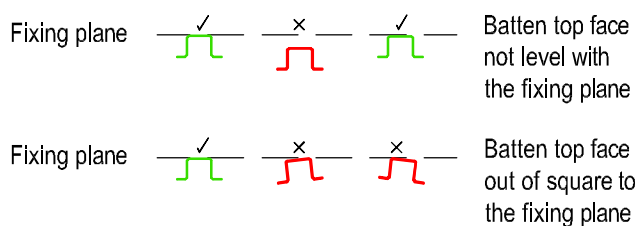
3.7.2 MANUFACTURING

The very nature of the manufacturing process of the profile can lead to oil canning. Any additional stresses put in the metal by way of shaping the metal or by slitting the coil can cause oil canning.

3.7.3 SUBSTRUCTURE

Any unevenness in the supporting substructure or any movement in the substructure will increase the effects of oil canning. The flat panned type cladding products when fixed to supports as specified in this publication will be structurally adequate. However, when used on walls and roof slopes that are visible by pedestrian traffic, these types of cladding products require consideration of the “in-service” aspect of aesthetics.

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. Consequently, for aesthetics, these type of products require a support system that is installed plumb, level (uniform) and square to provide a suitable fixing plane for the wall cladding / panel to minimise the potential of pan oil-canning from support plane irregularity, installer activity or thermal effects.



Consequently the batten supports must also be of suitable rigidity and thickness to ensure a straight edge and the batten packed appropriately to minimise deviation from the straight edge and the fixing plane. Consideration should be given to using a minimum of 1mm BMT batten material.

3.7.4 CONNECTION DETAILING

Taking care with the connection details of the profile will assist in the effects of the oil canning, as often uneven stresses at the fastening points will exacerbate the oil canning effect. By allowing for expansion and contraction of the material the effects of oil canning will be minimised. This can be done by utilising by slotted holes sliding brackets and thermal breaks. It is important that if you are not familiar with detailing products that are prone to oil canning that you discuss with your local Lysaght representative ways to minimise the effects.

To prevent clip fixed wall cladding from sliding downward in the fixing clips, you should pierce-fix through each sheet under the flashing or capping, along the top of the sheets.

3.7.5 MATERIAL FINISH

The colour and finish of the material chosen will also affect the oil canning in the profile. Profiles of a dark colour make oil canning more obvious to the eye, as well as increasing the solar absorption of the material the thermal expansion and contraction of the material will also increase. The surface finish, i.e. a gloss or matt finish, will also affect the appearance of the oil canning. The higher the gloss finish the more the obvious the oil canning will be to the eye.

3.7.6 WEATHER

The weather plays a major role in the appearance of oil canning. The change in temperature on the surface of the profile will impact on the thermal expansion of the profile. Even though there may not a large temperature difference in the ambient temperature there can be significant differences in temperature on the surface of the metal. A profile may be subjected to early morning frost, but by being positioned in full sun the surface temperatures can easily reach over 50°C during the day. There are many factors that can adjust the temperature experienced by the profile from the colour of the profile to location, orientation and shielding.

3.7.7 LIGHT

Light will impact on how noticeable oil canning is. Some days and times of day the oil canning may be more noticeable than others. The orientation that the light is reflecting off the waviness of the oil canning effects the way it is perceived by the eye.

3.7.8 HANDLING & STORAGE

Due care needs to be taken with all profiles especially those with large flat pans. Any additional stress put on the material will increase the likeness of oil canning appearing in the pans. Oil canning is generally an aesthetic issue and structural integrity is typically not affected. In the absence of specific contract requirements oil canning should not be the sole grounds for panel rejection.

See Lysaght Product Advisory Bulletin PAB05 for more details on the subject of oil canning in metallic sheets.

4.0 Design Criteria

The PERMALITE® premium cladding range is designed based on the criteria of the following Australian standards and industries guide:

- AS/NZS 1170.2 Structural design actions Part 2: Wind actions
- AS 1562.1 Design and installation of sheet roof and wall cladding Part 1: Metal
- AS 4040.0 Methods of testing sheet roof and wall cladding Part 0: Introduction, list of methods and general requirements
- AS 4040.1 Methods of testing sheet roof and wall cladding Method 1: Resistance concentrated loads
- AS 4040.2 (incorporating amendment No.1) Methods of testing sheet roof and wall cladding Method 2: Resistance to wind pressures for non-cyclone regions
- AS 4055 Wind Loads For Housing
- SA HB 39 Handbook - Installation code for metal roof and wall cladding

4.1 STATES WIND PRESSURES

The PERMALITE® premium cladding range benefits from the full benefits of the latest methods for modelling wind pressures. The Wind Pressure capacities are determined by full scale tests conducted at Lysaght's NATA-registered testing laboratory, using the direct pressure-testing rig.

Testing was conducted in accordance with AS 1562.1 for general compliance, AS 4040.1 for resistance to concentrated load, AS 4040.2 for resistance to non-cyclonic wind pressures. The pressure capacities for serviceability are based on a deflection limit of $(\text{span}/120) + (\text{maximum fastener pitch}/30)$. The pressure capacities for strength have been determined by testing the cladding to failure (ultimate capacity). These pressures are applicable when the cladding is fixed to specified minimum supporting member or above.

4.2 WIND FORCES ON ROOFS

Winds create considerable forces on both the topside and the underside of roof cladding, and you must consider these forces in the design and fixing of any roof. The forces are:

- **inward** forces tending to collapse the roof cladding inwards, caused by wind acting directly on the windward side; and
- **outward** forces tending to lift the roof cladding from its framing, and the entire roof structure from the rest of the building. Outward forces can be caused both by uplift from negative wind pressures, outside the building; and by positive wind pressure inside the building.

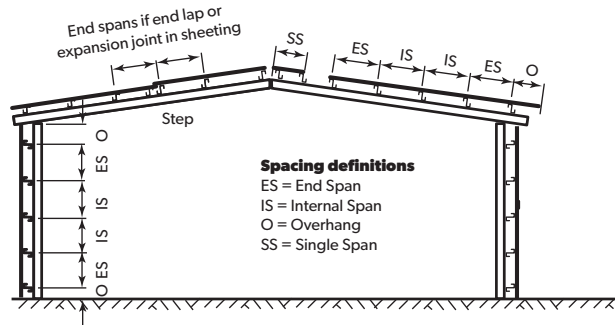
Generally the greatest wind forces imposed on roofs are due to the outward forces. Because the dead weight of roofing materials is relatively small, the outward forces must be resisted by the roof fasteners.

It is very important that the battens and roof framing are adequately fixed to the rafters and walls, and that under extreme conditions the wall framing is anchored to the footings. Special anchoring provisions may apply in cyclonic areas. Specialist advice should be sought in these circumstances.

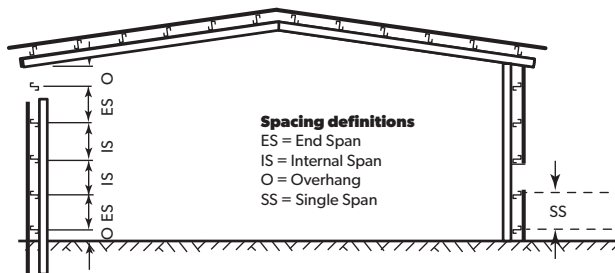
Figure 4.2.1:

Spans types for Roofing and Walling

Roofing & Walling Profiles

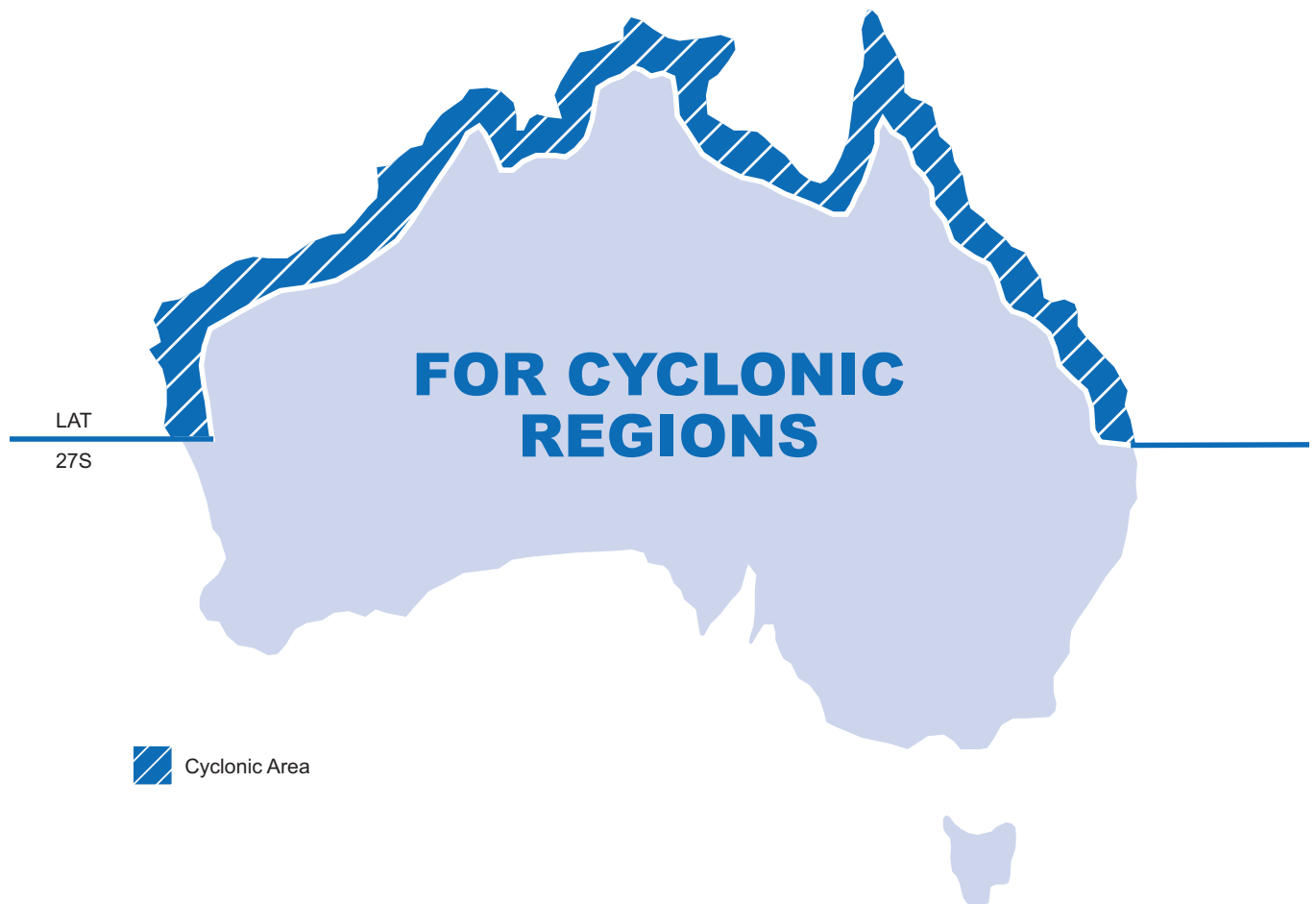


Walling Profiles Only



4.3 NON-CYCLONIC AREAS & CYCLONIC AREAS

Non-cyclonic areas and cyclonic areas of Australia are defined and detailed in AS/NZS 1170.2 Structural design actions Part 2: Wind actions and AS 4055 Wind Loads For Housing.



4.4 TIMBER AND METAL COMPATIBILITY

Under no circumstances should galvanised steel, ZINCALUME® steel, lead, copper, brass, or copper alloys be placed in contact with aluminium, nor should you permit water run-off from these materials to discharge onto aluminium sheets.

Care must be taken to avoid contact with building materials such as unseasoned or chemically treated timber, lime cement, concrete, mortar or plaster during construction and to provide impermeable barriers against long term contact.

In most situations the face of a dissimilar timber support, against which the sheeting is fastened, is to be painted with a moisture-impermeable paint system (such as bituminous paints or similar) or in the case of metal purlins / battens or supports, a good quality (and appropriate width i.e. support width + 20mm) adhesive PVC or polyethylene tape with a minimum thickness of 250 microns.

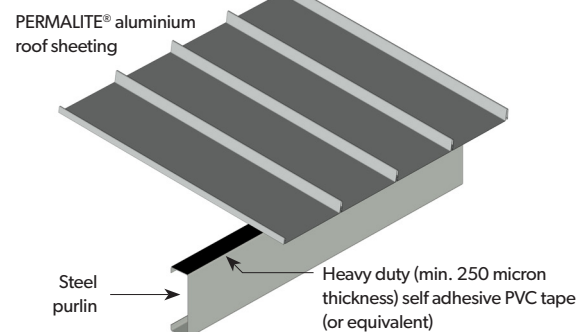
Under severe marine and/or aggressive industrial environments Denso tape or closed cell polyethylene tape should be used to completely fill the sheet/structure interface to avoid moisture retention by capillary action. Lysaght will provide advice in such situations.

If there are doubts about the compatibility of other products being used, seek advice from our technical representative. See tables below for direct contact and rainwater discharge compatibility issues.

Figure 4.4.1:

Isolation of PERMALITE® cladding from incompatible materials

Option 1 - Tape



Option 2 - Sarking

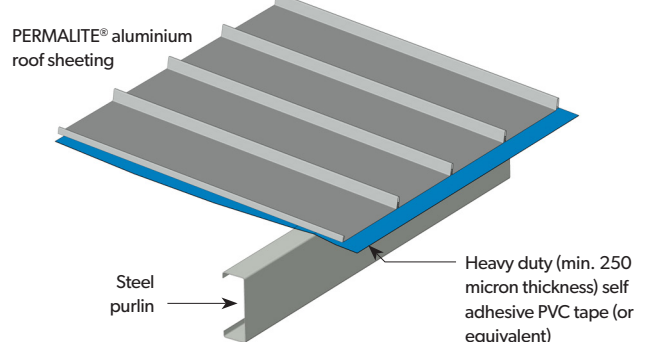


Table 4.4.1:

Compatibility or direct contact between metals or alloys

Roof Drainage System Components & Any Cladding Material	Accessories or Fastener of (Upper Surface)								
	ZINCALUME® STEEL	GALVANISED STEEL	ZINC	COLORBOND® STEEL, COLORBOND® ULTRA STEEL, COLORBOND® METALLIC STEEL	SUPERDURA® STAINLESS STEEL	STAINLESS STEEL	ALUMINIUM ALLOYS	COPPER & COPPER ALLOYS ⁽¹⁾	LEAD
ALUMINIUM ALLOYS	NO ⁽⁴⁾	NO	YES	NO	NO	YES	YES	NO	NO
ZINCALUME® STEEL	YES	YES	YES	YES	NO	NO	NO	NO	NO
GALVANISED STEEL	YES	YES	YES	YES	NO	NO	NO	NO	NO
ZINC	YES	YES	YES	YES	NO	NO	YES	NO	NO
COLORBOND® STEEL, COLORBOND® ULTRA STEEL, COLORBOND® METALLIC STEEL	YES	YES	YES	YES	NO	NO	NO	NO	NO
SUPERDURA® STAINLESS STEEL	NO	NO	NO	NO	YES	YES	NO	NO	NO
STAINLESS STEEL	NO	NO	NO	NO	YES	YES	NO	NO	NO
COPPER & COPPER ALLOYS ⁽¹⁾	NO	NO	NO	NO	NO	NO	NO	YES	NO
LEAD	NO	NO	NO	NO	NO	NO	NO	YES	YES

⁽¹⁾ Monel - copper/nickel alloy.⁽²⁾ For further guidance refer to AS/NZS 3500.3⁽³⁾ Fixings only.⁽⁴⁾ Our experience is that these materials are not compatible in extremely corrosive environments, so our advice differs from AS/NZS 3500.3**Table 4.4.2:**

Acceptability of drainage from an upper to a lower metal surface

Lower roof drainage system material	Upper cladding or roof drainage system material									
	ZINCALUME® STEEL	GALVANISED STEEL	ZINC	COLORBOND® STEEL, COLORBOND® ULTRA STEEL, COLORBOND® METALLIC STEEL	SUPERDURA® STAINLESS STEEL	STAINLESS STEEL	ALUMINIUM ALLOYS	COPPER & COPPER ALLOYS ⁽¹⁾	LEAD	GLAZED ROOF TILES, GLASS & PLASTIC
ALUMINIUM ALLOYS	NO	NO	YES ⁽³⁾	NO ⁽³⁾	YES	YES	YES	NO	NO	YES
ZINCALUME® STEEL	YES	YES	YES	YES	YES	YES	YES ⁽³⁾	NO	NO	YES
GALVANISED STEEL	NO	YES	YES	NO	NO	NO	NO	NO	YES	NO
ZINC	YES	YES	YES	NO	NO	NO	NO	NO	YES	NO
COLORBOND® STEEL, COLORBOND® ULTRA STEEL, COLORBOND® METALLIC STEEL	YES	YES	YES	YES	YES	YES	YES	NO	NO	YES
SUPERDURA® STAINLESS STEEL	YES	NO	NO	YES	YES	YES	YES	YES	YES	YES
STAINLESS STEEL	YES	NO	NO	YES	YES	YES	YES	YES	YES	YES
COPPER & COPPER ALLOYS ⁽¹⁾	YES	NO	NO	YES	YES	YES	YES	YES	YES	YES
LEAD	YES	NO	NO	YES	YES	YES	YES	YES	YES	YES

⁽¹⁾ Monel - copper/nickel alloy.⁽²⁾ For further guidance refer to AS/NZS 3500.3⁽³⁾ Our experience is that these materials are not compatible in extremely corrosive environments, so our advice differs from AS/NZS 3500.3

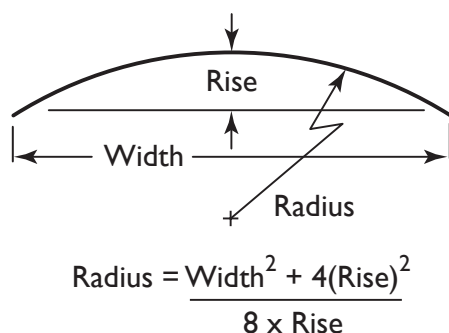
4.5 CURVING

4.5.1 SPRING-ARCHED ROOF

Sheets in a spring-arched (convex) roof are curved in a radius from eave to eave. PERPETUAL™ can be spring-curved over a plywood backing for an arched roof. Table 4.5.1.1 shows the acceptable radii. The top face of all supports must accurately follow and be tangential to the radius of the arch. The radius of curvature can be calculated from the formula in Figure 4.5.1.1.

Figure 4.5.1.1:

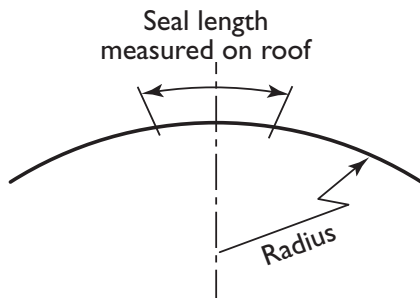
Calculation of radius.



At the crest of an arch the roof is flat, which is obviously below the specified minimum roof pitch. Therefore side-laps should be sealed over the crest of the arch until there is sufficient pitch to give adequate drainage. The length of seal is shown in Figure 4.5.1.2.

Figure 4.5.1.2:

Seal length for side-laps on spring-arched roof.



PERPETUAL™ (325mm cover)
(minimum roof pitch 1°) = 0.035 x radius

Over the supports very slight lip wave or slight crease marks may appear in the pans or valleys when subjected to foot traffic or at minimum radius. They don't affect strength and will usually not be seen from the ground.

Profiles with wide pans are susceptible to local buckling (oil canning) of the pans and this should be carefully considered.

Aside from aesthetic considerations, an oil canned pan may retain water which could lead to discolouration and/or deterioration of the sheet coating and also contributes to thermally induced roof noise. In some projects oil-canning in the pans has been acceptable. Each sheet is first fixed to one side of the roof, and then pulled down to be fixed to the other side. Alternate sheets are laid from opposite sides of the roof.

Table 4.5.1.1:

Curving Capabilities

Profile	Mini Radii Longitudinal			Mini Radii Transverse (Walling)	
	Roll Curve (m)	Spring Arched Convex/Concave (m)	Max Support Spacing at Min Radius (mm)	Transverse Spring/Arched Convex/Concave (m)	Max Support Spacing at Min Radius - Transverse Spring Curve (m)
PERCIPERE®	N/A	N/A	N/A	1.5**	Full ply support
PERPETUAL™ (325mm cover)	0.6	50*	Full ply support with fixed clips at 150mm c/c throughout curve	1.5	Full ply support with clip spacings as per table 7.5.2
ALURE™	N/A	N/A	N/A	1.5/1.8**	Curved Battens at 450mm

* Oil canning maybe an issue to be considered

** For Transverse Convex walling applications PERCIPERE® ribs should be pop riveted as per Figure 4.5.2 at max. 500mm c/c

*** Special Care is required in concave applications to avoid paint damage to recess joints whilst installing fixing screws. Wider recess joints should be considered

4.5.2 PRE-CURVED SHEETS

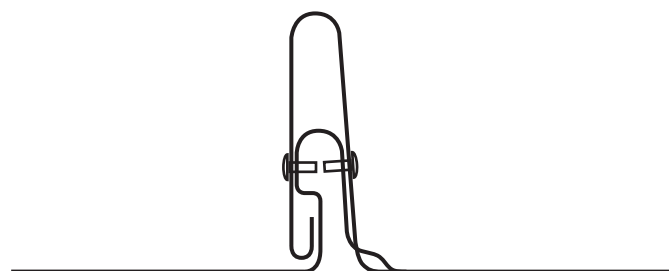
Pre-curving of PERPETUAL™ is available for various applications. Pre-curved roofing is popular for aesthetics or for function (such as a gutter-less eave design).

PERPETUAL™ can be curved to a radius of 0.6m. Because of the spacing of curving rolls, there is usually a straight portion at the end of the sheet beyond the curve (often 500mm). Allow for this in your design. It can be trimmed off if necessary.

If a pre-curved section of cladding is to be joined to a straight section, it is recommended that you order the curved and straight sheets at the same time, asking for them to be matched in production to ensure a quality end-lap. Please note that the profile shapes prevent end lapping of the PERMALITE® architectural panel range.

Figure 4.5.2.1:

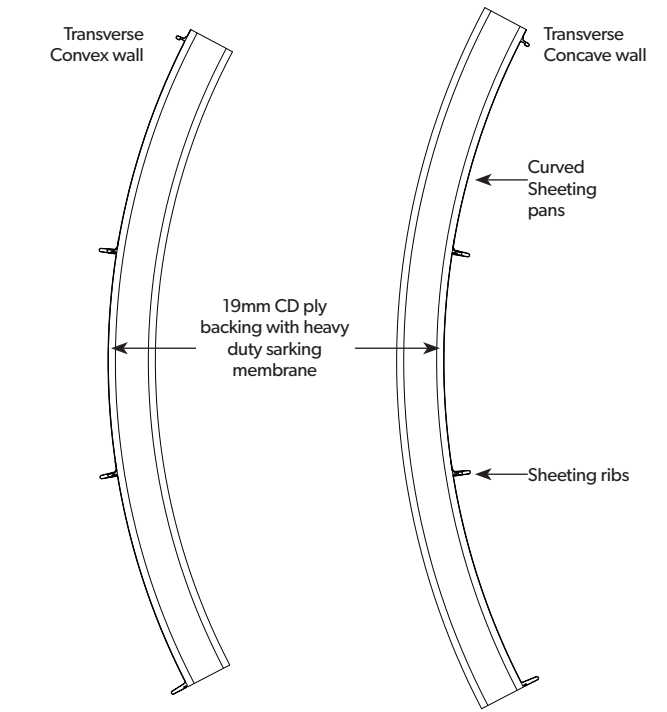
Additional rib fixing for transverse curved PERPETUAL®



4.5.3 TRANSVERSE CURVE WALLS

Flat pan sheeting is readily adaptable to transverse curving in walling applications for a subtle blended visual aesthetic. Min Transverse curve radii are outlined in Table 4.5.1.1. In transverse curved applications full ply support is required.

Figure 4.5.3.1: Convex v Concave Walling



4.6 COLOUR AVAILABILITY

PERMALITE® cladding is available in seven specialised colours (shown below) as well as colours from the COLORBOND® steel standard and metallic ranges*. Colours outside this range are also available, subject to minimum order quantities of 2.5 tonne or approx. 1000m².



The colour swatches shown have been reproduced to represent actual product colours as accurately as possible. However, we recommend checking your chosen colour against an actual sample of the product before purchasing, as varying light conditions and limitations of the printing process may affect colour tones and finishes.

* Min order quantities may apply. Please check with Lysaght regarding availability.

4.6.1 COLOUR EQUIVALENTS

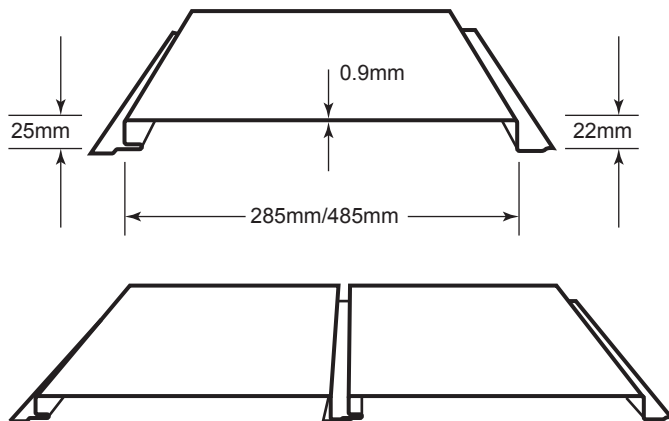
COLORBOND® steel Colour Name	PERMALITE® Equivalent Colour Name
Bushland®	Bush Smoke™
Pale Eucalypt®	Enduro Green®
Deep Ocean®	Eternal Blue™
Classic Cream™	Full Cream™
Surfmist®	Glacier White™
Shale Grey™	Gull Grey™
Manor Red®	Heritage Red™
Ironstone®	Iron Grey™
Jasper®	Jasmine Brown™
Windspray®	Moon Shadow®
Wilderness®	Perpetual Green®
Headland®	Resilient Red®
Dune®	Sahara®
Woodland Grey®	Slate Grey™
Monument®	Obelisk Grey®
Wallaby®	Pademelon®
Night Sky®	Midnight Sky™

5.0 ALURE™

ALURE™ is a contemporary wall-cladding giving the impression of a flat recessed joint providing a stylish and durable solution to any project. The system is installed with a ventilated air space. It involves installing the interlocking panels on a metal framework fixed to the supporting structure. The panels are simply connected by the use of an interlocking groove giving the elegant appearance of a recessed joint with fixings within. Panels may be installed vertically, horizontally, at an angle or a combination of all three to create unique aspects to any building design.

Figure 5.0.1:

ALURE™ Profile



NB ALURE™ panels are available with either open or closed ends. This needs to be specified at order placement.

5.1 ALURE™ PROFILE DETAILS

ALURE™ cladding is available in standard face width sizes, 285mm and 485mm as shown in **Table 5.1.1**, additionally non-standard sizes are available from 185mm min face width up to 485mm face width. In addition, the nominal express joint dimension of 15mm may be customised between 2mm and 25mm providing greater design options. This must be nominated at order placement. We recommend the installation of a 10mm thermal break tape between the panel and batten to improve thermal performance of the system and reduce the potential for thermally induced oil canning.

SIZES

Table 5.1.1:

ALURE™ Sizes

Product	Thickness (mm)	Face width (mm)	Cover width (mm)
ALURE™ 285mm	0.90	285	300
ALURE™ 485mm	0.90	485	500

MASSES

Table 5.1.2:

ALURE™ Masses

Product	Material	Mass/unit length (kg/m)	Mass/unit area (kg/m²)
ALURE™ 285mm	0.9mm BMT	0.75-0.80	2.6-2.8
ALURE™ 485mm	5251 – H38 Marine Grade Aluminium	1.25-1.30	2.3-2.8

Note: Masses are approximate values for standard, single-sided paint system. For other variants, please contact your local Lysaght branch.

YIELD STRESS

Table 5.1.3:

ALURE™ Yield Stress

Product	Material	Yield Stress (MPa)
ALURE™ 285mm	5251 H38 Marine Grade Aluminium	230
ALURE™ 485mm	5251 H38 Marine Grade Aluminium	230

LENGTHS

Sheets are supplied custom cut to length¹.

Table 5.1.4:

ALURE™ Lengths

Product	Minimum (mm)	Maximum (mm)
ALURE™ 285mm	1,000	8000 ²
ALURE™ 485mm	1,000	6000 ²

1. Maximum and minimum lengths apply based on profile, point of production & transport regulations. For more information, contact your local Lysaght branch.
2. To assist minimising the potential effects of oil canning in ALURE™ cladding it is recommended to keep panel length under the maximum recommended length. Longer lengths may be available subject to minimum order quantity.

TOLERANCES

Table 5.1.5:

ALURE™ Tolerances

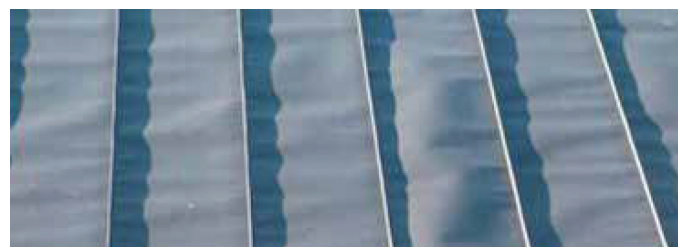
Length (mm)	Width (mm)
+/- 3	+/- 2

MINIMUM ROOF PITCH

ALURE™ is not suitable for roofing.

5.2 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.



5.3 ALURE™ FASTENERS

ALURE™ wall cladding may be direct fixed to aluminium or steel battens (with appropriate isolation) or 15mm plywood with fixings at a maximum spacing of 600mm.

Table 5.3.1:

ALURE™ Fastener

FASTENER SPECIFICATION - ALURE™ CLADDING			
APPLICATION	Fixing to 0.55mm BMT G550 steel	Fixing to 3mm Aluminium	Fixing to plywood / Timber battens
Non-Cyclonic	12-14 x 25mm HEX SS304 & SS420 SDM	12-14 x 25mm HEX SS304 & SS420 SDM	12-11 x 25mm HEX SS304 T17

NB - Pre-drill ALURE™ with 6.6mm hole to cater for thermal expansion and contraction. Pre-drilling is not required from 1.2 mm to 4.0 mm. For anything over 4.0 mm, pre-drill before installation.

5.4 SHEETS REQUIRED

Table 5.4.1:

Sheets required – 300mm Cover – ALURE™ 285

SHEETS REQUIRED - 300mm COVER - ALURE™ 285																					
Width of roof/ wall (m)	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	30	40	50
Number of sheets required	10	14	17	20	24	27	30	34	37	40	44	47	50	54	57	60	64	67	100	134	167

Table 5.4.2: Sheets required – 500mm Cover – ALURE™ 485

Width of roof/ wall (m)	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	30	40	50
Number of sheets required	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	60	80	100

5.5 WIDTH COVERED

Table 5.5.1:

Width covered - 300mm Cover – ALURE™ 285

Number of sheets	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Width of roof/ wall covered (m)	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3.0	3.3	3.6	3.9	4.2	4.5	4.8	5.1	5.4	5.7	6.0

Table 5.5.2:

Width covered - 500mm Cover – ALURE™ 485

Number of sheets	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Width of roof/ wall covered (m)	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0

5.6 DESIGN DATA

5.6.1 ALURE™ WALLING ONLY: LIMIT STATE WIND PRESSURE CAPACITIES (kPa) - NON-CYCLONIC

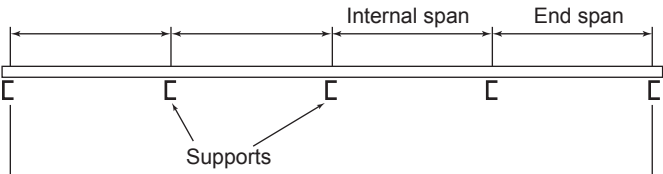
Pan Width x BMT	Support Requirement	Design pressure (kPa)	
		Serviceability	Strength
285 x 0.9mm BMT	Metal Batten: Steel: 40mm x 0.55mm BMT G550 Aluminium: 40mm x 3.0mm BMT Batten Spacing: 450mm (max) Batten Span: 1500mm (max) Minimum support/Purlin thk BMT: Steel- 1.0mm BMT G550 / Aluminium - 3.0mm BMT H36	1.68	4.14
	15mm F11 CD structural grade plywood (walling applications) Maximum support spacing: 600mm Fastener spacing: 450mm	1.68	4.14
	Metal Batten: Steel: 40mm x 0.55mm BMT G550 Aluminium: 40mm x 3.0mm BMT Batten Spacing: 600mm (max) Batten Span: 1500mm (max) Minimum support/Purlin thk BMT: Steel- 1.0mm BMT G550 / Aluminium - 3.0mm BMT H36	1.57	3.06
	15mm F11 CD structural grade plywood (walling applications) Maximum support spacing: 600mm Fastener spacing: 450mm	1.57	3.06
485 x 0.9mm BMT	Metal Batten: Steel: 40mm x 0.55mm BMT G550 Aluminium: 40mm x 3.0mm BMT Batten Spacing: 450 mm (max) Batten Span: 1500 mm (max) Minimum support/Purlin thk BMT: Steel- 1.0mm BMT G550 / Aluminium - 3.0mm BMT H36	0.92	3.53
	19mm F11 CD structural grade plywood (roofing applications) 15mm F11 CD structural grade plywood (walling applications) Maximum support spacing: 600mm Fastener spacing: 450mm	0.92	3.53

5.6.2 ALURE™ MAXIMUM SUPPORT SPACINGS⁽¹⁾

ALURE™	285mm face width	485mm face width
	0.9mm BMT ALURE™ panel	0.9mm BMT ALURE™ panel
Application	Non-cyclonic	Non-cyclonic
TYPE OF SPAN		
WALLS		
Single Span (mm)	600	450
End Span (mm)	600	450
Internal Span (mm)	600	450
Overhang (mm)	100	100

⁽¹⁾ Refer section 3.4 – Support Spacing and Overhang for loading parameters applicable to MAXIMUM SPACINGS. For projects outside these loading parameters (Region B) designers should reference LIMIT STATE WIND CAPACITIES tables to determine appropriate support spacings.

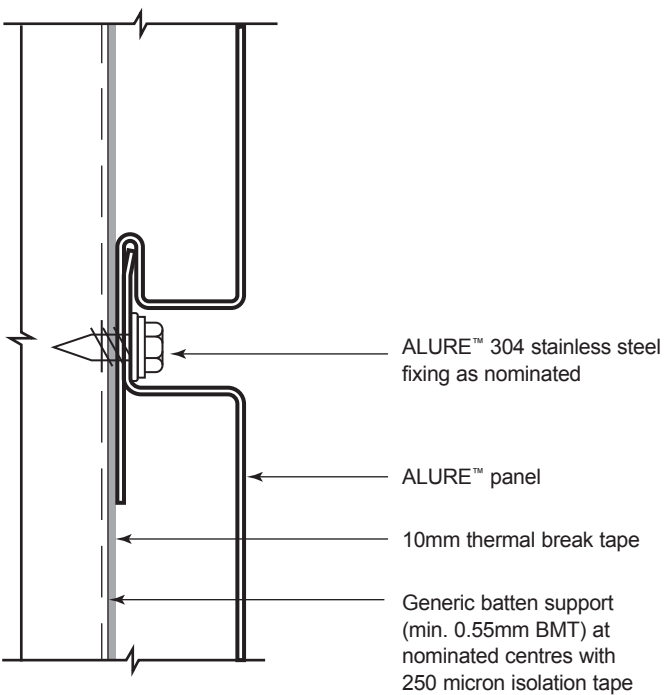
Figure 5.6.1:
Cladding Spans



ALURE™ is designed to be installed in conjunction with a heavy duty pliable building membrane as an additional weather-proofing measure. The pliable membrane must be installed in accordance with AS 4200.2 Pliable building membranes and underlays Part 2: Installation

All laps in the membrane, flashings and panels must be fitted with this in mind. Prior to commencement, ensure that the surface the system is being fixed to, is free of sharp edges and in the correct plane.

Figure 5.6.2:
ALURE™ Panel Fixing



Impermeable membranes are preferred for roofing applications with permeable membranes preferred for walling applications. For greater detail on membrane selection and design of ventilation and drainage pathways refer to CONDENSATION CONTROL IN AUSTRALIAN BUILDINGS CONSTRUCTED WITH LYSAGHT® CLADDINGS.

ALURE™ must be isolated from dissimilar materials such as ZINCALUME® steel or galvanised battens or treated timber. This may be achieved by use of a min 250 micron thickness PVC tape or building membrane.

5.7 TYPICAL INSTALLATION DETAILS

Fixing of the Membrane

1. Check that the steel work or concrete is free of any sharp edges or protrusions that may puncture the membrane.
2. The membrane must be a heavy-duty building membrane or equivalent with the non-reflective face to the outside face.
3. The membrane must be hung and sealed at the top. It must be free of ripples and puckers with holding battens between the 40mm vertical battens securing it to the supporting member.
4. All laps in the membrane must be made with 150mm lap sealed with double sided tape between the faces of the foil and taped with sisal tape on the outside face.
5. The perimeter of the membrane must be sealed also with premium quality Sisal tape or 40mm battens to secure it.
Note: - It is essential that attention is paid to ensuring that membrane is fixed in a way that it won't flap or tear away at the laps or edges.
6. At the bottom of the façade a flashing is required to direct any water from the membrane external of the façade. This will be done in a way as to allow any water to pass between the flashing and the foot mould.

Figure 5.7.1:

Standard fixing detail.

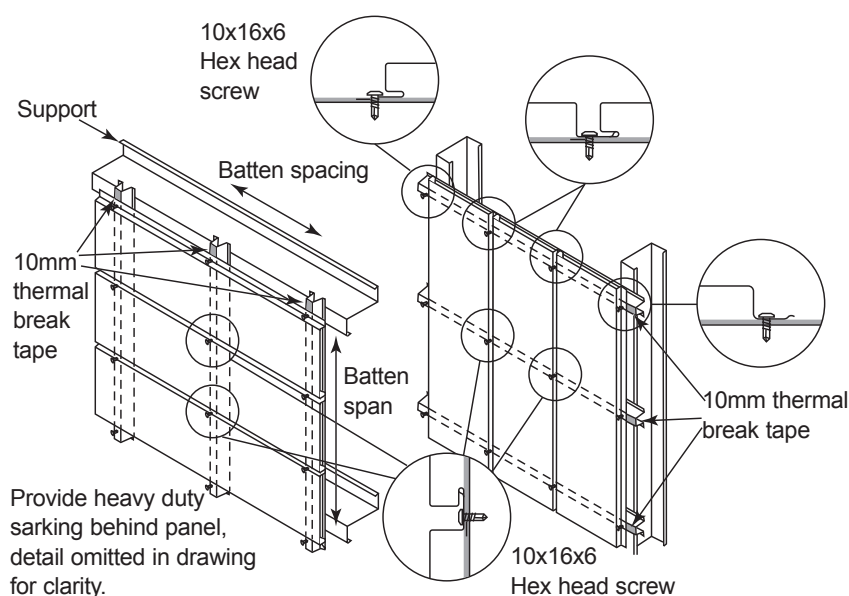
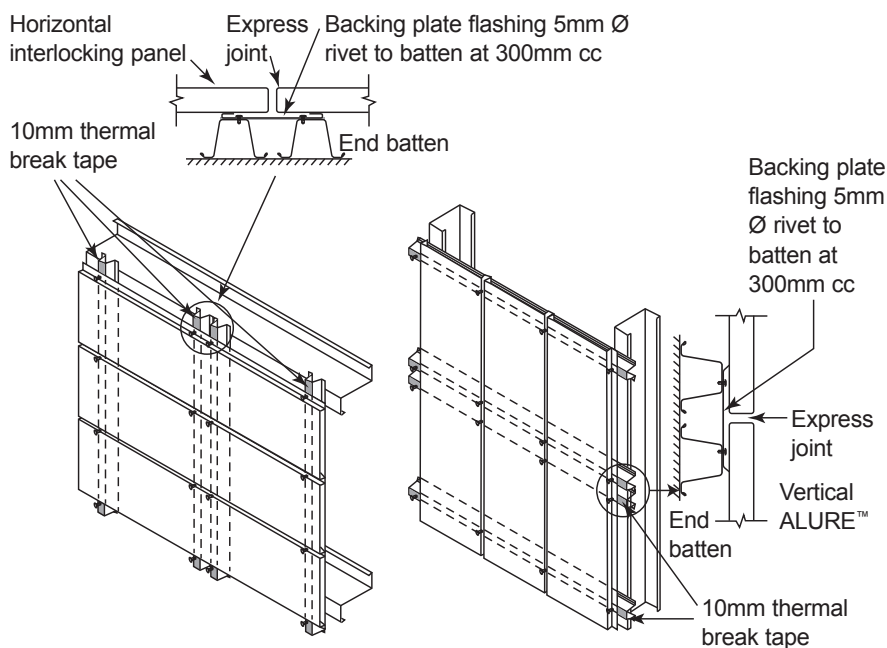


Figure 5.7.2:

Express joint detail.



5.8 ALURE™ TYPICAL CONSTRUCTION DETAILS

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 HB 39.

Construction details for the PERMALITE® aluminium cladding range are similar to those for products from Lysaght's ZENITH® cladding range. The full suite of ZENITH® constructions details are available for download from <https://bimcontent.com/lysaght/> in both REVIT and PDF format.

The following table details the construction drawings included in this manual.

ALURE™ PANEL - TYPICAL WALL DETAILS - HORIZONTAL FIX		
Figure	Title	Page
5.8.1.1	Typical wall cladding setout – Unsupported ALURE™ panel – Horizontal fix – Plan View	22
5.8.1.2	Typical wall cladding setout – Unsupported ALURE™ panel – Horizontal fix – Sectional view	22
5.8.1.3	External Corner - Unsupported ALURE™ Panel - Horizontal Fix - D05-01	23
5.8.1.4	Internal Corner - Unsupported ALURE™ Panel - Horizontal Fix - D06-01	23
5.8.1.5	Wall Closure Detail - Unsupported ALURE™ Panel - Horizontal Fix - D07-01	24
5.8.1.6	Window Jamb Detail - Unsupported ALURE™ Panel - Horizontal Fix - D11-01	24
5.8.1.7	Wall Base Detail - Unsupported ALURE™ Panel - Horizontal Fix - D08-01	25
5.8.1.8	Top of Wall Eave - Zero Overhang - Unsupported ALURE™ - Horizontal Fix - D09-01	25
5.8.1.9	Top of Wall Eave - Overhang - Unsupported ALURE™ - Horizontal Fix - D09-05	26
5.8.1.10	Window Sill Detail - Unsupported ALURE™ Panel - Horizontal Fix - D11-05	26
5.8.1.11	Window Head Detail - Unsupported ALURE™ Panel - Horizontal Fix - D11-09	27
ALURE™ PANEL - TYPICAL WALL DETAILS - VERTICAL FIX		
Figure	Title	Page
5.8.2.1	Typical Wall Cladding Setout - Unsupported ALURE™ Vertical Fix - Plan View - D04-05	28
5.8.2.2	Typical Wall Cladding Setout - Unsupported ALURE™ - Vertical Fix - Sectional View - D04-06	28
5.8.2.3	External Corner - Unsupported ALURE™ Panel - Vertical Fix - D05-04	29
5.8.2.4	Internal Corner - Unsupported ALURE™ Panel - Vertical Fix - D06-04	29
5.8.2.5	Wall Closure Detail - Unsupported ALURE™ Panel - Vertical Fix - D07-03	30
5.8.2.6	Window Jamb Detail - Unsupported ALURE™ Panel - Vertical Fix - Male - D11-03a	30
5.8.2.7	Window Jamb Detail - Unsupported ALURE™ Panel - Vertical Fix - Female - D11-03b	31
5.8.2.8	Wall Base Detail - Unsupported ALURE™ Panel - Vertical Fix - D08-03	31
5.8.2.9	Top of Wall Eave - Zero Overhang - Unsupported ALURE™ Panel - Vertical Fix - D09-03	32
5.8.2.10	Top of Wall Eave - Overhang - Unsupported ALURE™ Panel - Vertical Fix - D09-07	32
5.8.2.11	Window Sill Detail - Unsupported ALURE™ Panel - Vertical Fix - D11-07	33
5.8.2.12	Window Head Detail - Unsupported ALURE™ Panel - Vertical Fix Option 1 - D11-11a	33
5.8.2.13	Window Head Detail - Unsupported ALURE™ Panel - Vertical Fix Option 2 - D11-11b	34
5.8.2.14	Wall Sheet Joint Detail - Unsupported ALURE™ Panel - Vertical Fix - Sectional View - D12-18	34

ALURE™ PANEL - TYPICAL FLASHINGS

Figure	Title	Page
5.8.3.1	ALU-100 - J Mould Flashings	35
	ALU-101 - Z Mould with Squash Fold and return (left)	35
5.8.3.2	ALU-101 - Z Mould with Squash Fold and return (right)	35
	ALU-101 - Z Mould Flashing with Squash Fold	35
	ALU-102 - L Mould Flashing	35
5.8.3.3	ALU-102 - L Mould Flashing with Returns	35
	ALU-102 - L Mould Flashing with Squash Folds	35
5.8.3.4	ALU-103 - Apron Flashing	35
5.8.3.5	ALU-104 - U Mould Flashing	36
5.8.3.6	ALU-200 - External Corner Over Flashing	36
5.8.3.7	ALU-201 - Single Return Over Flashing	36
	ALU-202 - Internal Corner Flashings with Returns	36
5.8.3.8	ALU-202 - Internal Corner Flashings with Squash Folds	36
5.8.3.9	ALU-203 - Base flashing with Squash Fold	36
5.8.3.10	ALU-204 - Aluminium Base Flashing with Ventilation	36
5.8.3.11	ALU-205 - Top of Wall Flashing	37
	ALU-206 - Parapet Top Flashing with female return & Squash Fold	37
5.8.3.12	ALU-206 - Parapet Top Angled Flashing with return & Squash Fold	37
	ALU-400 - Window Sill Flashing with female return	37
5.8.3.13	ALU-400 - Window Sill Angled Flashing with return	37
	ALU-401 - Window Head Male Profile Flashing with Squash Fold	37
5.8.3.14	ALU-401 - Window Head Flashing with Squash Fold	38
	ALU-402 - Window Jamb Flashing with Squash Fold	38
5.8.3.15	ALU-402 - Window Jamb Female Flashing with Squash Fold	38
	ALU-500 - External Corner Details - male male	38
5.8.3.16	ALU-500 - External Corner Details - female male	38
	ALU-500 - External Corner Details - female female	38
	ALU-501 - Internal Corner Details - male male	39
5.8.3.17	ALU-501 - Internal Corner Details - female male	39
	ALU-501 - Internal Corner Details - female female	39
5.8.3.18	ALU-502 - Perforation Detail	39
5.8.3.19	ALU-504 - Corrosion Resistant Flashing	39
5.8.3.20	ALU-505 - Backing Plate Flashing with returns	39

5.8.1 ALURE™ PANEL - TYPICAL WALL DETAILS - HORIZONTAL FIX

Figure 5.8.1.1:

Typical wall cladding setout – Unsupported ALURE™ panel – Horizontal fix – Plan View

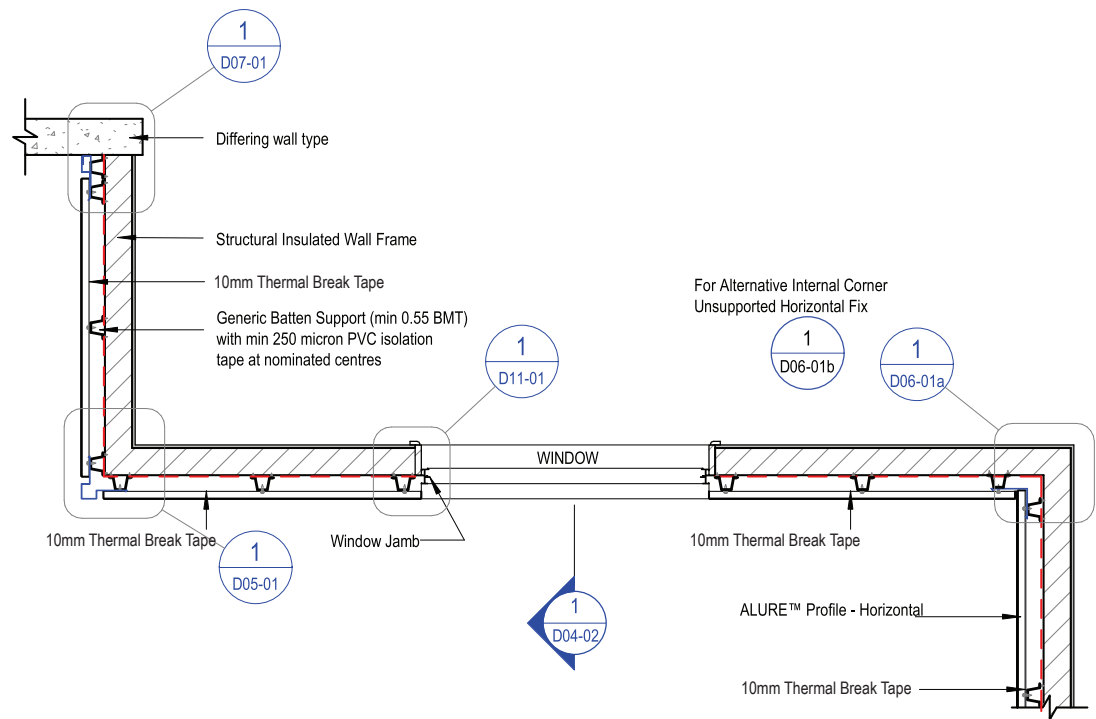


Figure 5.8.1.2:

Typical wall cladding setout – Unsupported ALURE™ panel – Horizontal fix – Sectional view

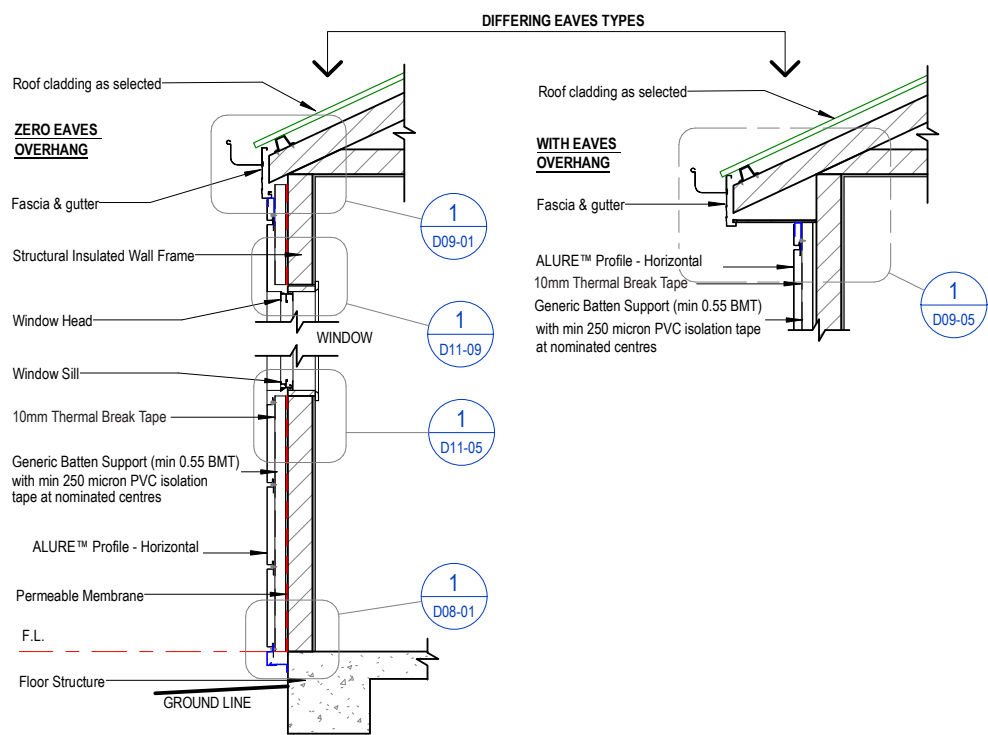


Figure 5.8.1.3:

External Corner - Unsupported ALURE™ Panel - Horizontal Fix - D05-01

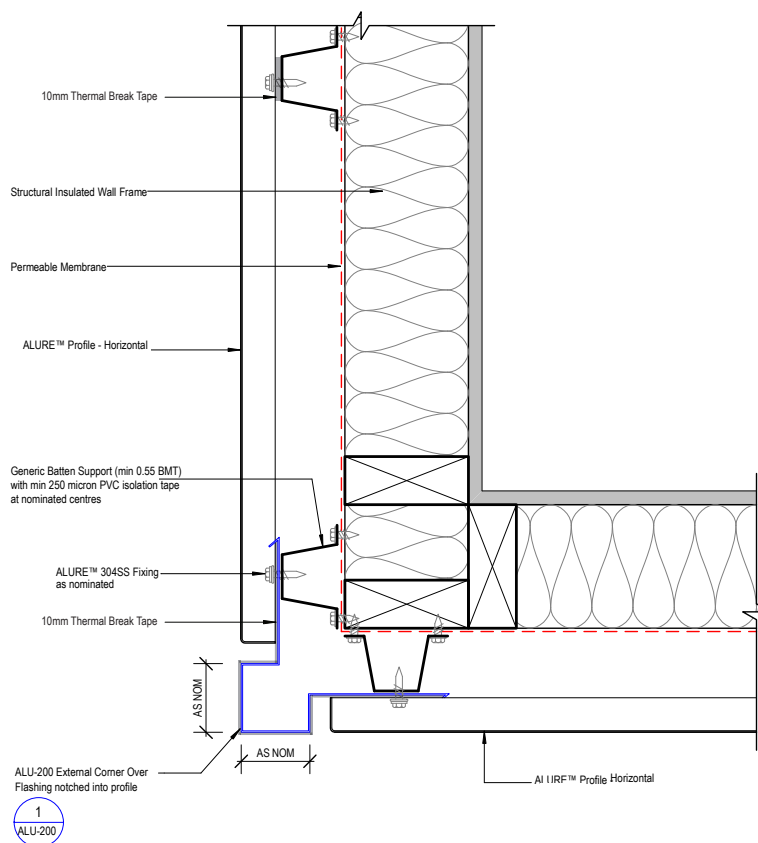


Figure 5.8.1.4:

Internal Corner - Unsupported ALURE™ Panel - Horizontal Fix - D06-01

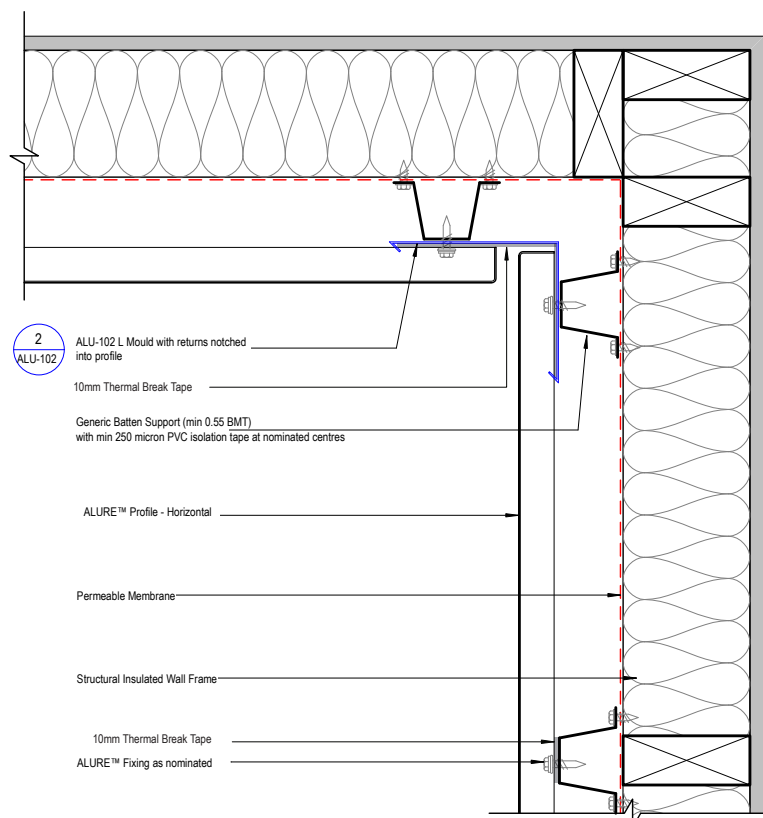


Figure 5.8.1.5:

Wall Closure Detail - Unsupported ALURE™ Panel - Horizontal Fix - D07-01

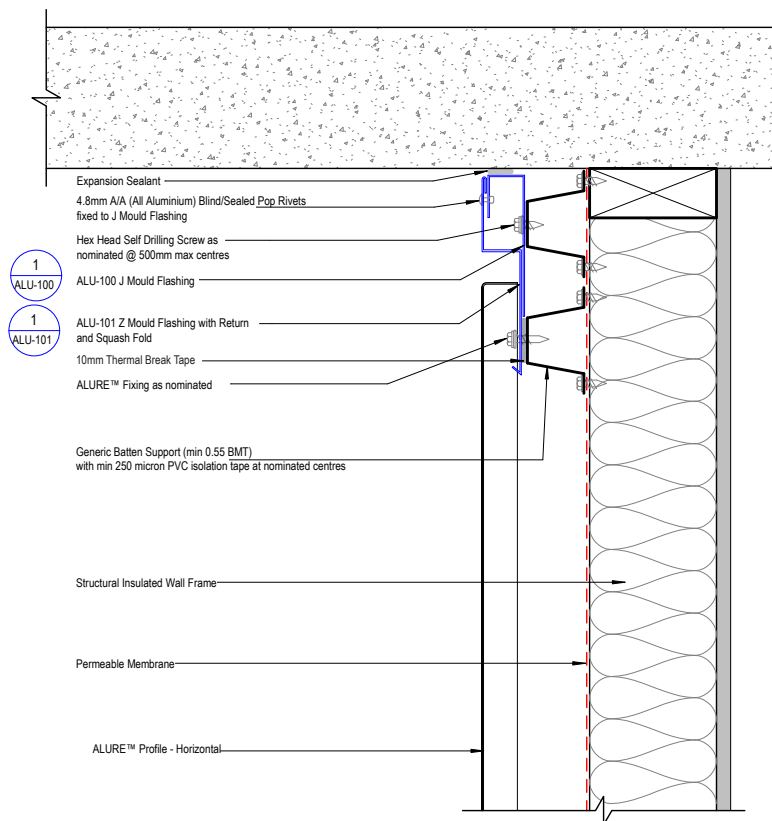


Figure 5.8.1.6:

Window Jamb Detail - Unsupported ALURE™ Panel - Horizontal Fix - D11-01

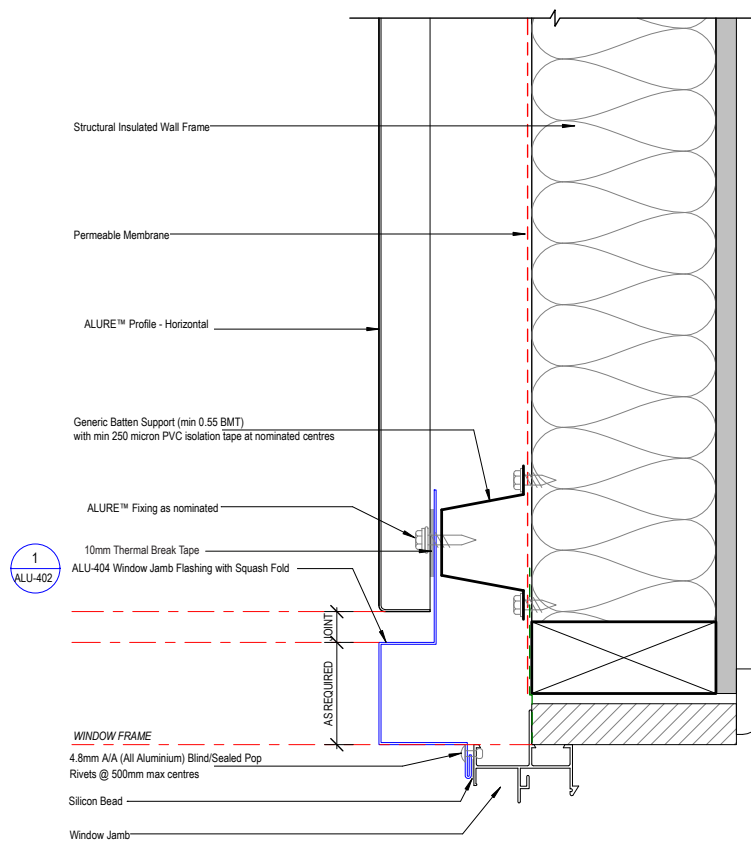


Figure 5.8.1.7:

Wall Base Detail - Unsupported ALURE™ Panel - Horizontal Fix - D08-01

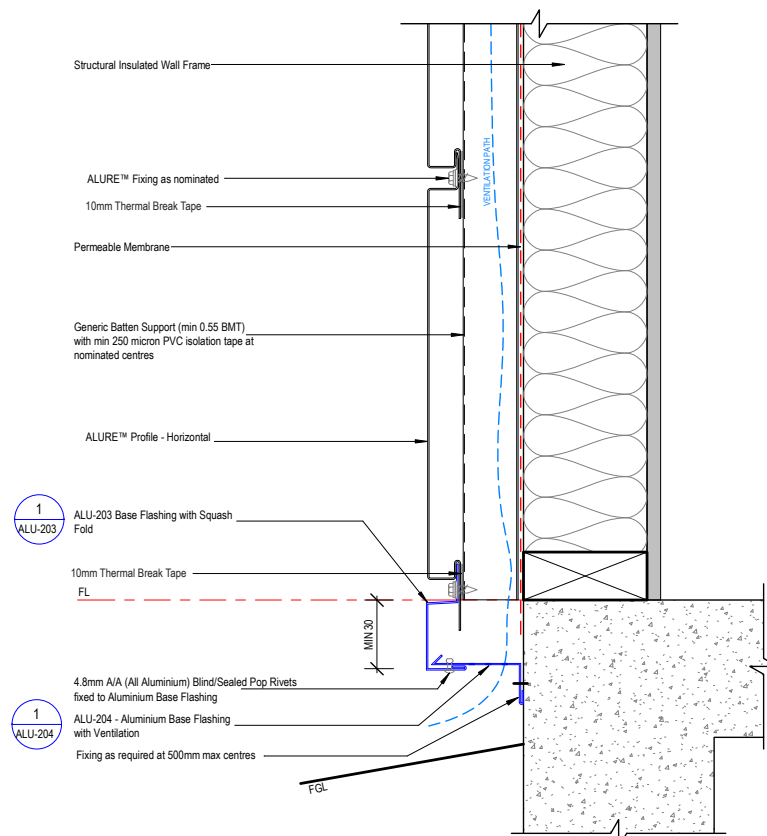


Figure 5.8.1.8:

Top of Wall Eave - Zero Overhang - Unsupported ALURE™ - Horizontal Fix - D09-01

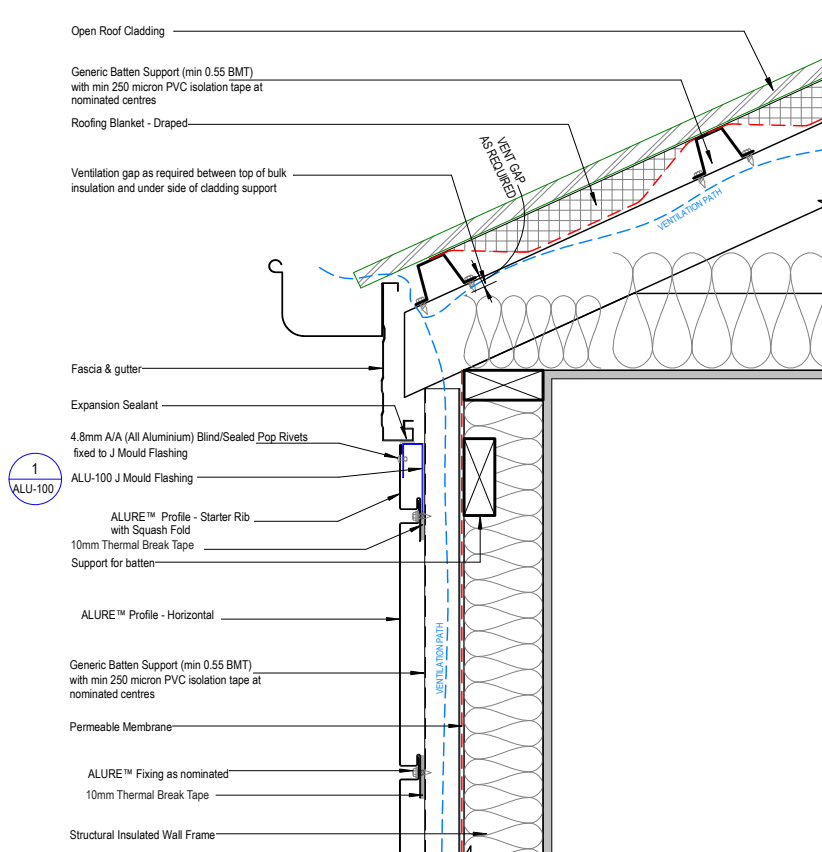


Figure 5.8.1.9:

Top of Wall Eave - Overhang - Unsupported ALURE™ - Horizontal Fix - D09-05

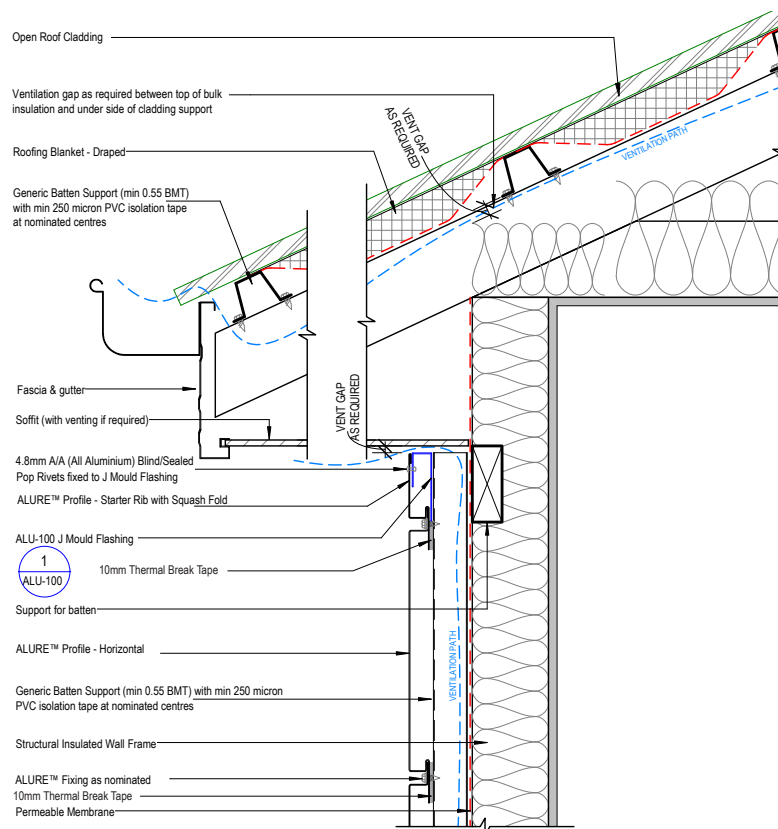


Figure 5.8.1.10:

Window Sill Detail - Unsupported ALURE™ Panel - Horizontal Fix - D11-05

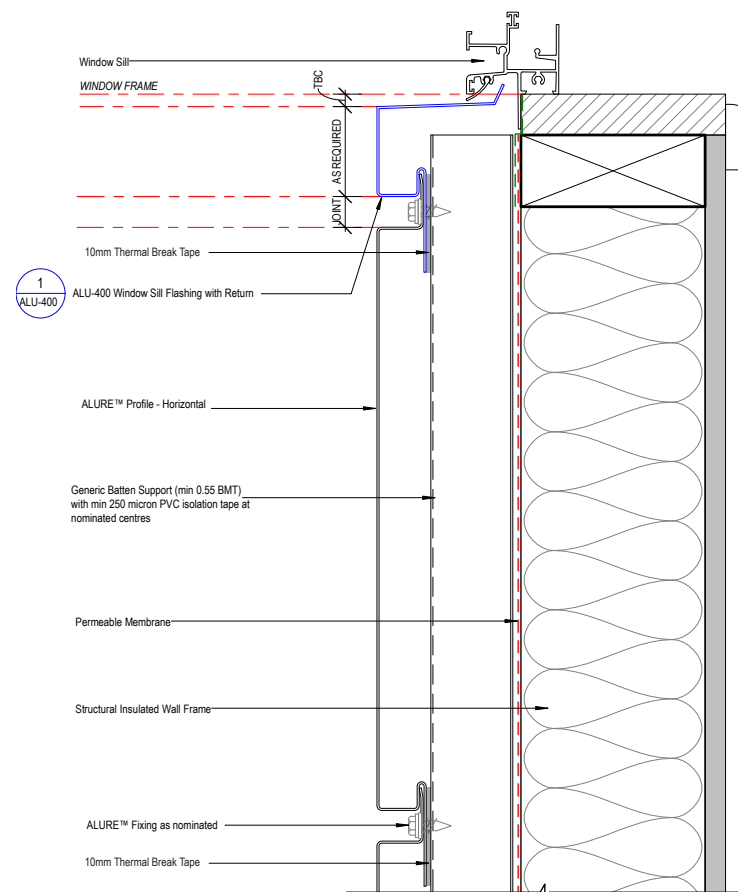
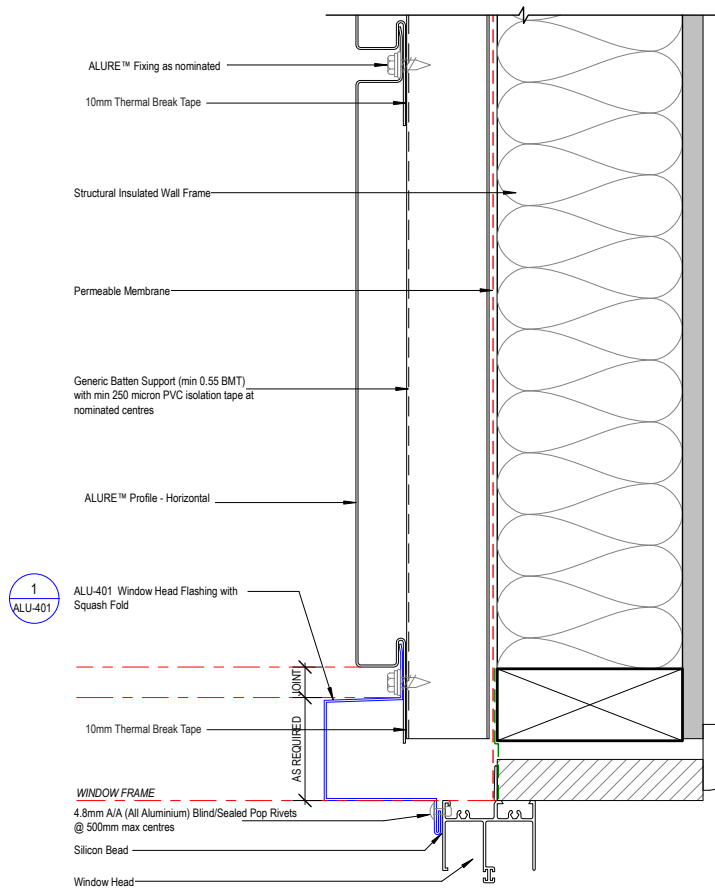


Figure 5.8.1.11:

Window Head Detail - Unsupported ALURE™ Panel - Horizontal Fix - D11-09



5.8.2 ALURE™ PANEL TYPICAL WALL DETAILS - VERTICAL FIX

Figure 5.8.2.1:

Typical Wall Cladding Setout - Unsupported ALURE™ Vertical Fix - Plan View - D04-05

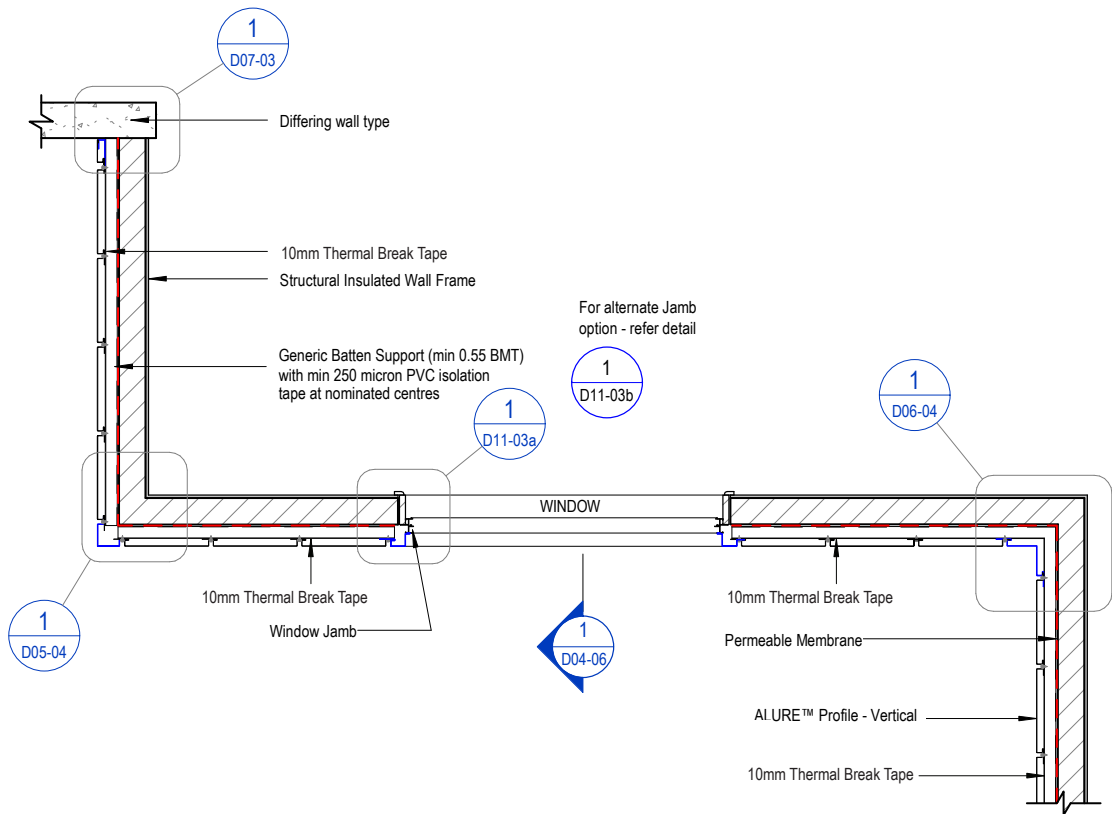


Figure 5.8.2.2:

Typical Wall Cladding Setout - Unsupported ALURE™ - Vertical Fix - Sectional View - D04-06

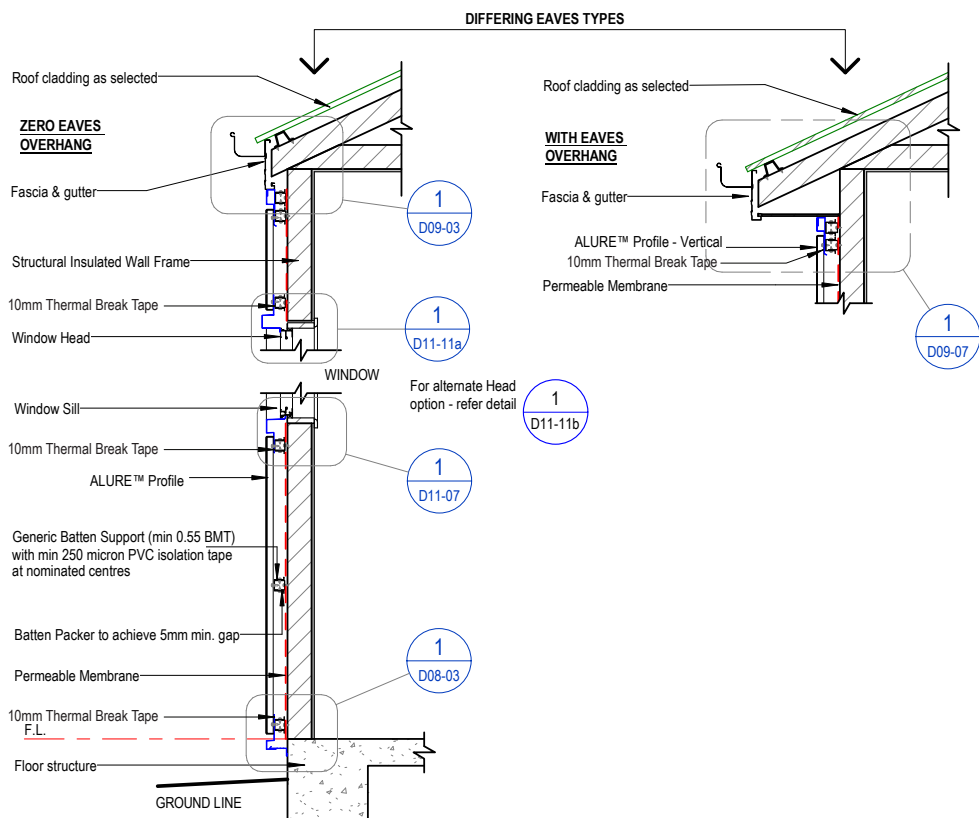


Figure 5.8.2.3:

External Corner - Unsupported ALURE™ Panel - Vertical Fix - D05-04

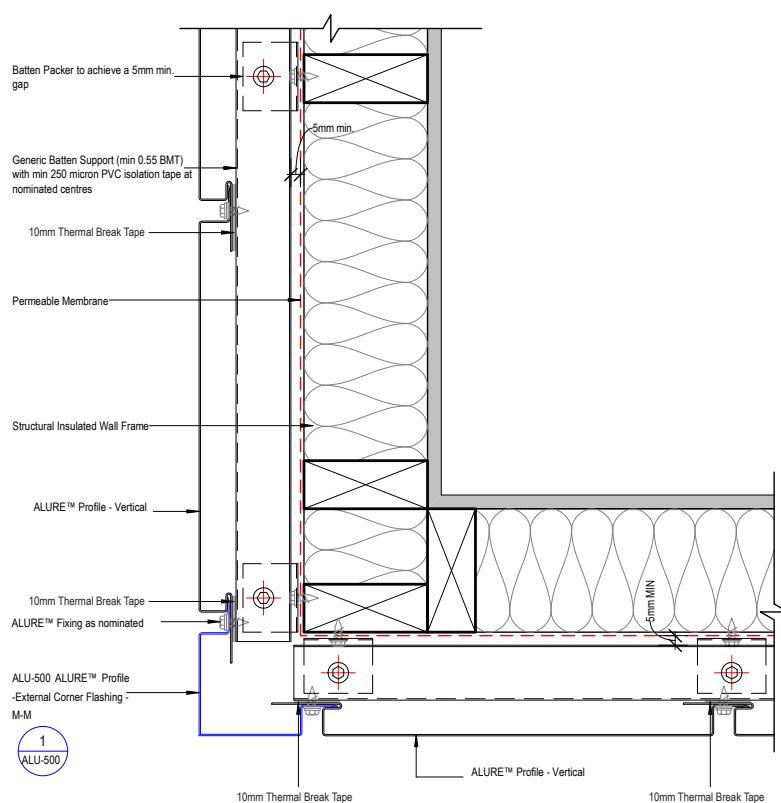


Figure 5.8.2.4:

Internal Corner - Unsupported ALURE™ Panel - Vertical Fix - D06-04

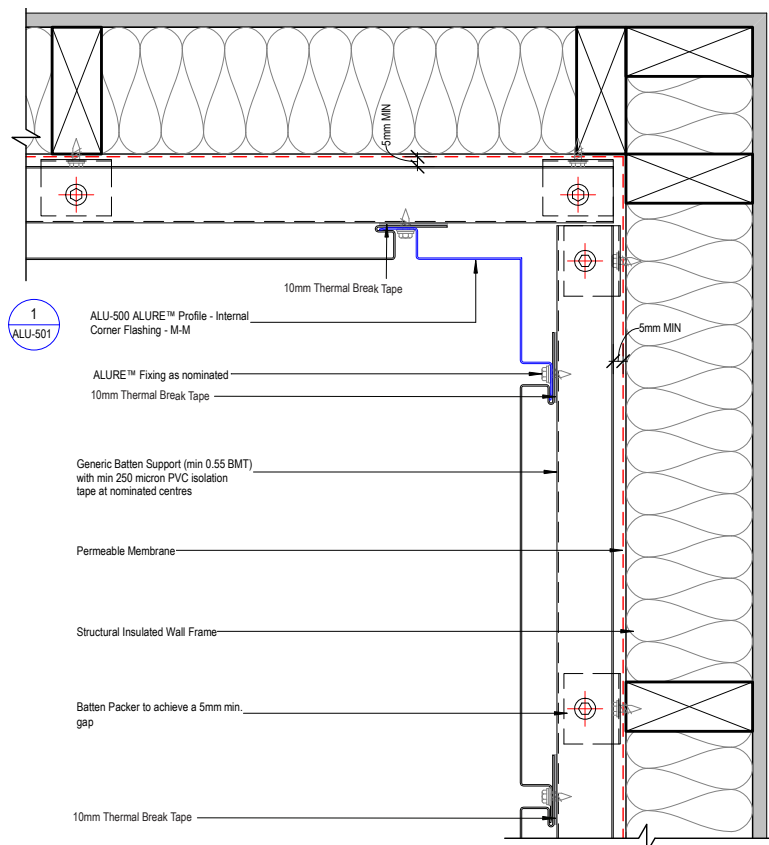


Figure 5.8.2.5:

Wall Closure Detail - Unsupported ALURE™ Panel - Vertical Fix - D07-03

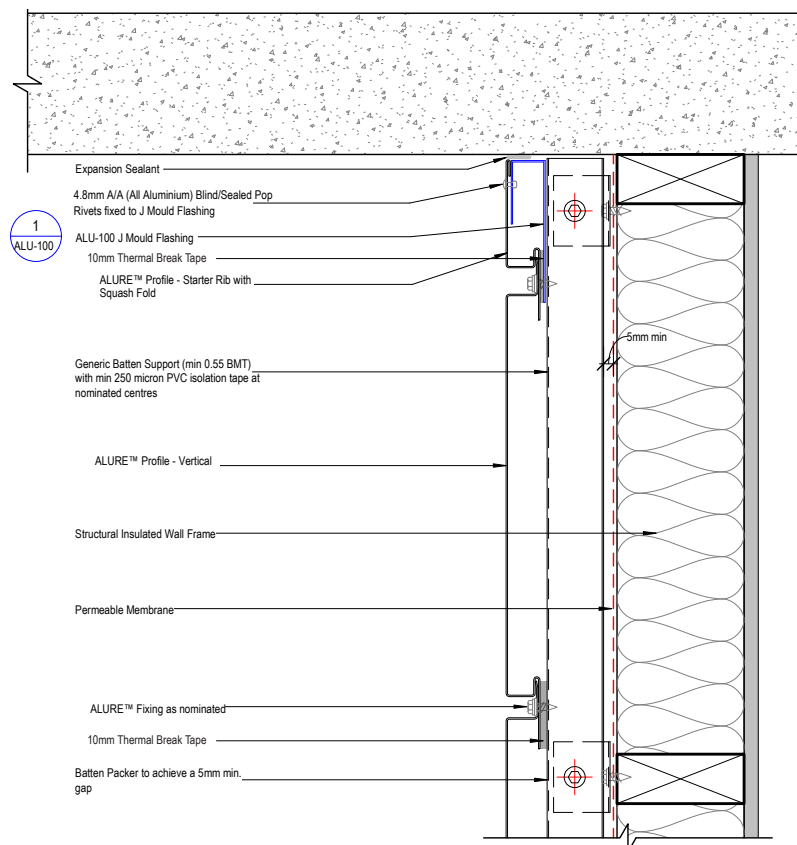
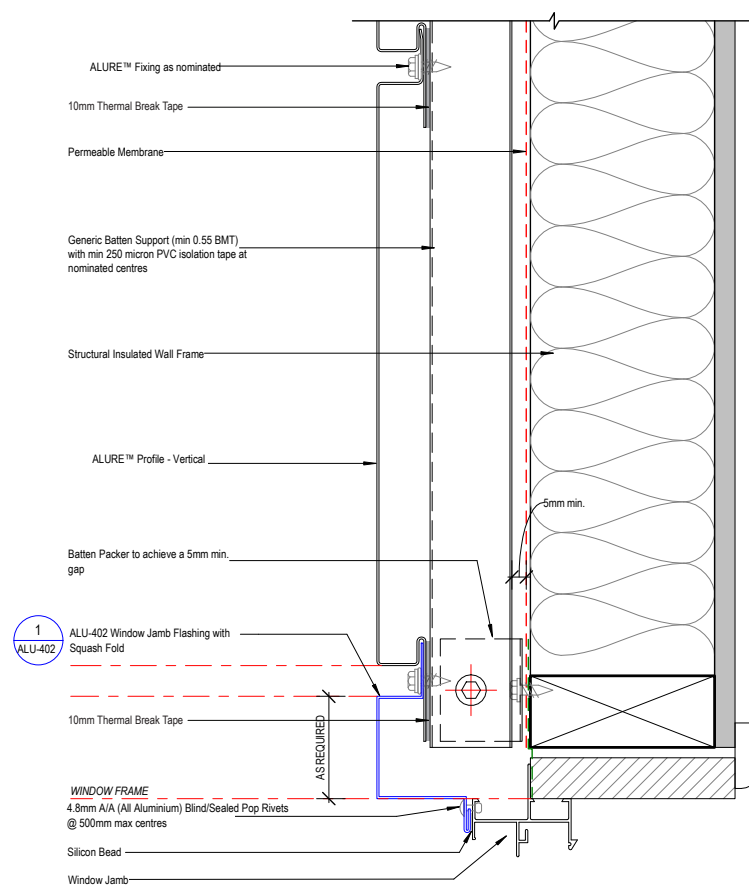


Figure 5.8.2.6:

Window Jamb Detail - Unsupported ALURE™ Panel - Vertical Fix - Male - D11-03a



Window Jamb Detail - Unsupported ALURE™ Panel - Vertical Fix - Female - D11-03b



Figure 5.8.2.9:

Top of Wall Eave - Zero Overhang - Unsupported ALURE™ Panel - Vertical Fix - D09-03

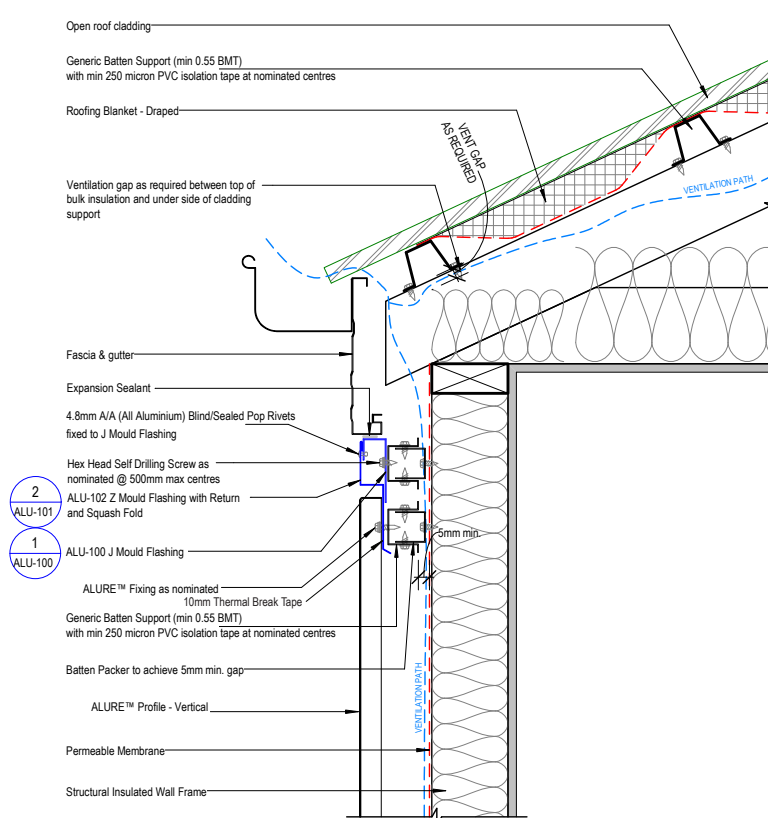


Figure 5.8.2.10:

Top of Wall Eave - Overhang - Unsupported ALURE™ Panel - Vertical Fix - D09-07

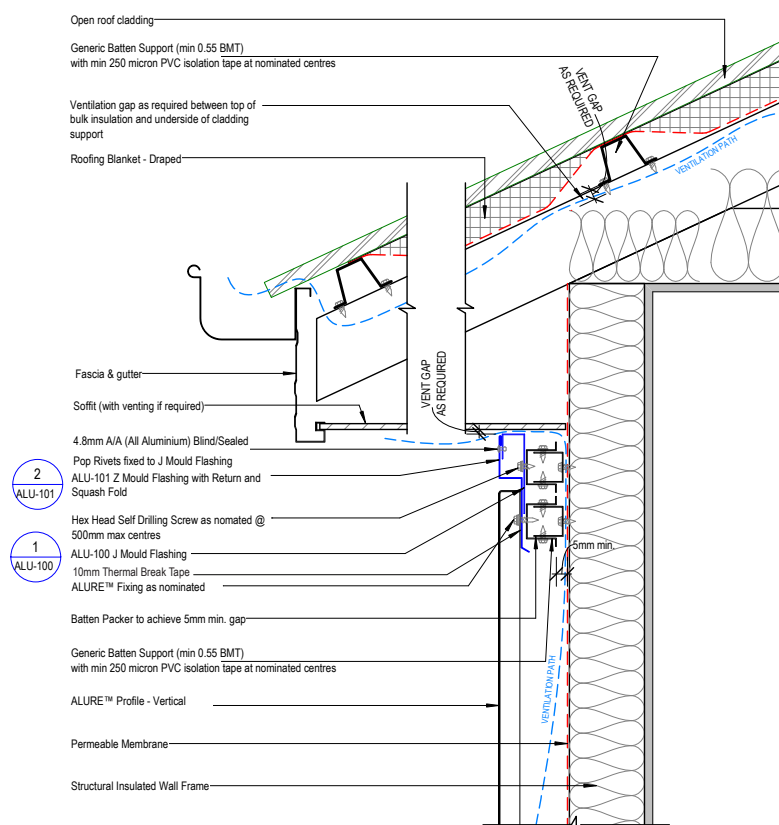


Figure 5.8.2.11:

Window Sill Detail - Unsupported ALURE™ Panel - Vertical Fix - D11-07

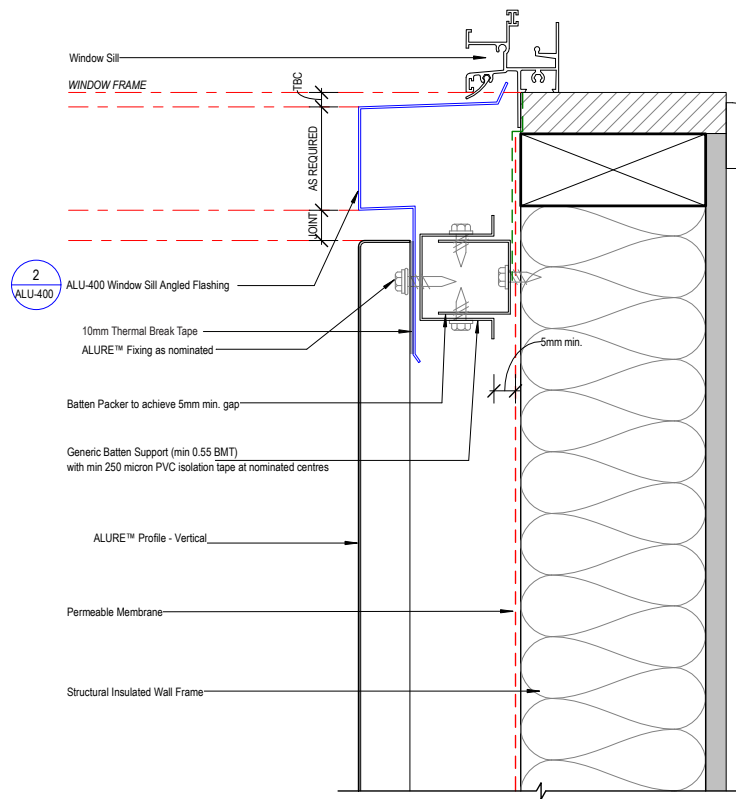


Figure 5.8.2.12:

Window Head Detail - Unsupported ALURE™ Panel - Vertical Fix Option 1 - D11-11a

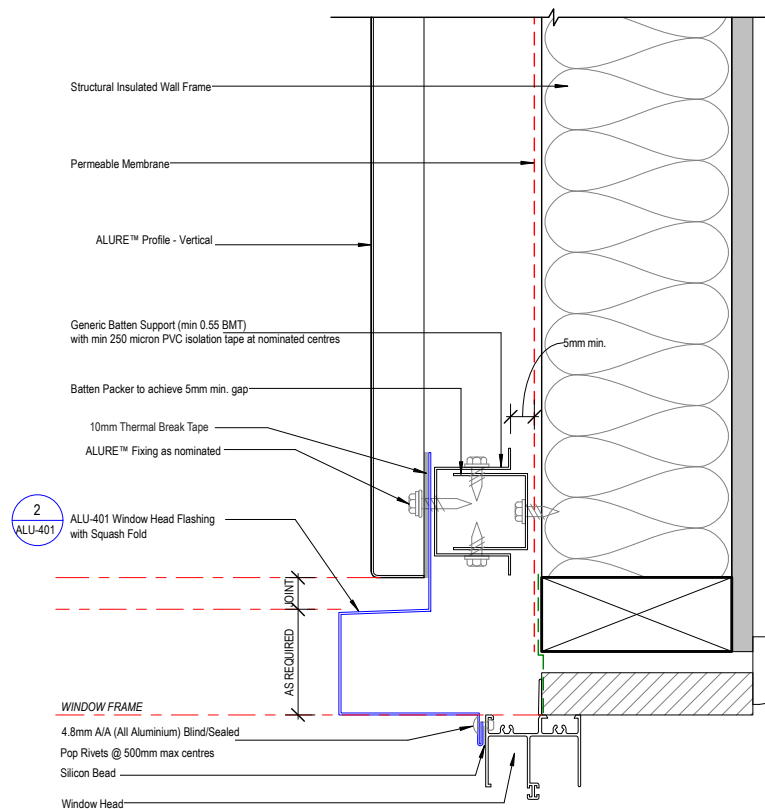


Figure 5.8.2.13:

Window Head Detail - Unsupported ALURE™ Panel - Vertical Fix Option 2 - D11-11b

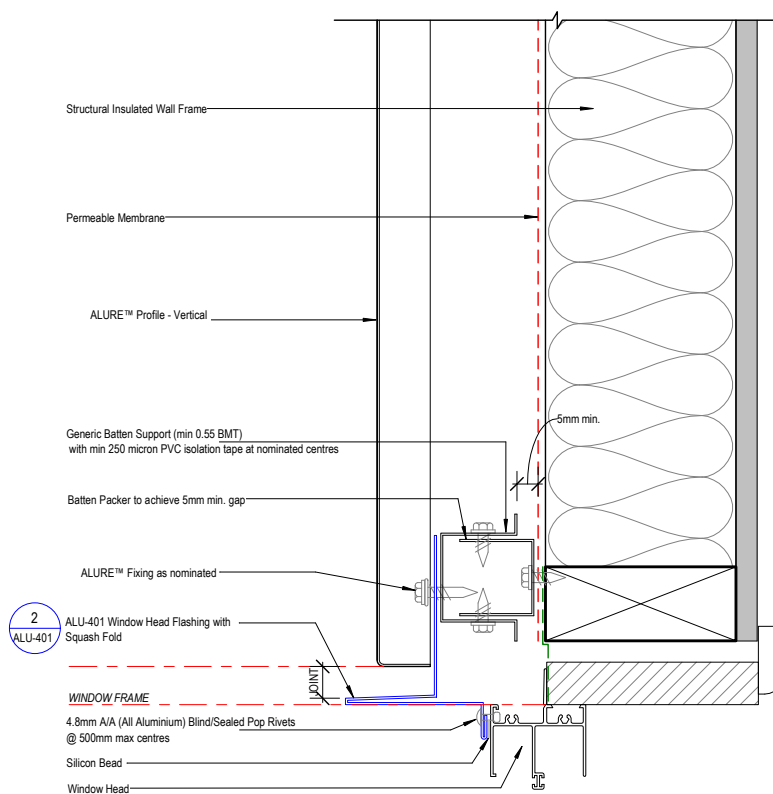
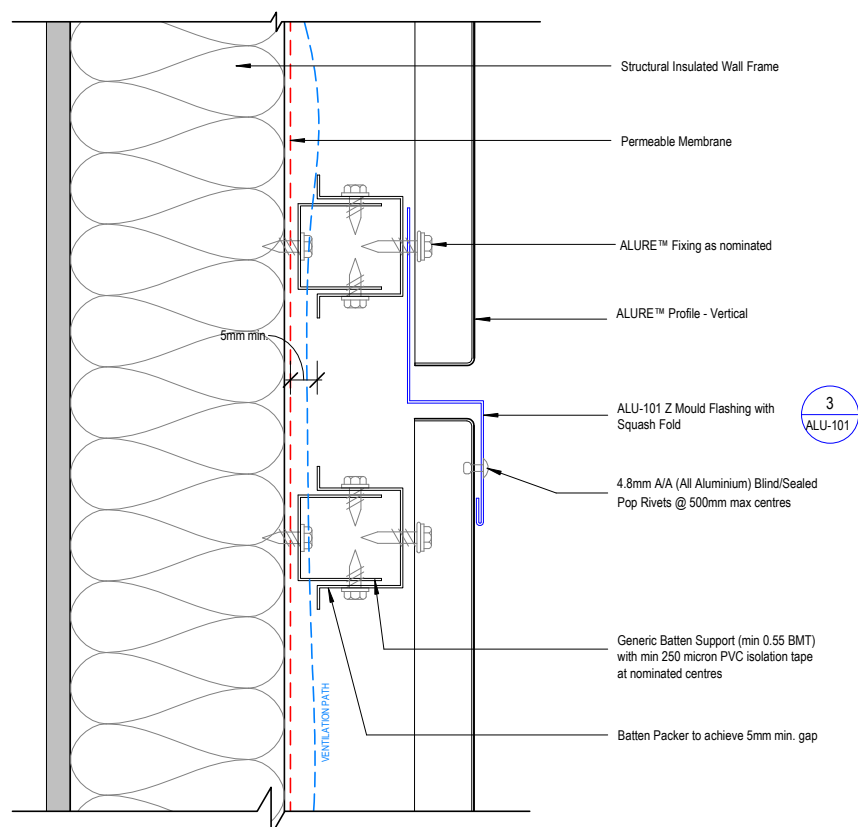


Figure 5.8.2.14:

Wall Sheet Joint Detail - Unsupported ALURE™ Panel - Vertical Fix - Sectional View - D12-18



5.8.3 ALURE™ TYPICAL FLASHINGS

Figure 5.8.3.1:

ALU-100 - J Mould Flashings

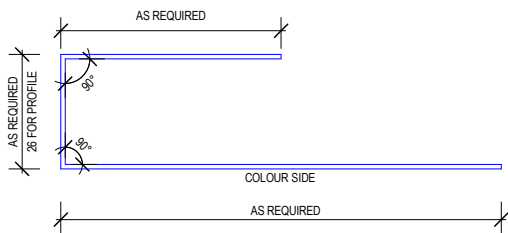
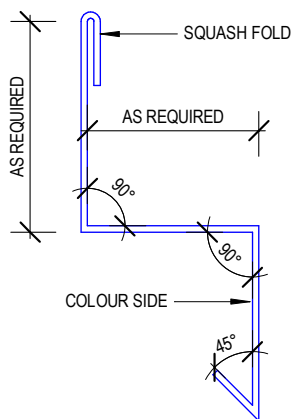
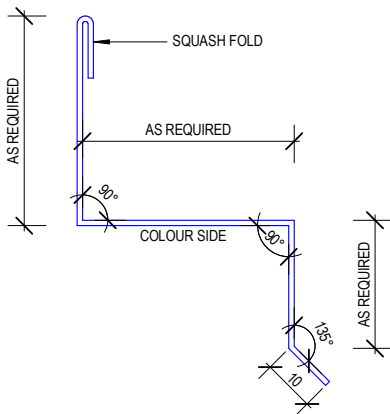


Figure 5.8.3.2:

ALU-101 - Z Mould with Squash Fold and return (left)



ALU-101 - Z Mould with Squash Fold and return (right)



ALU-101 - Z Mould Flashing with Squash Fold

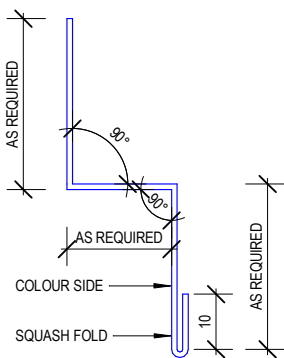
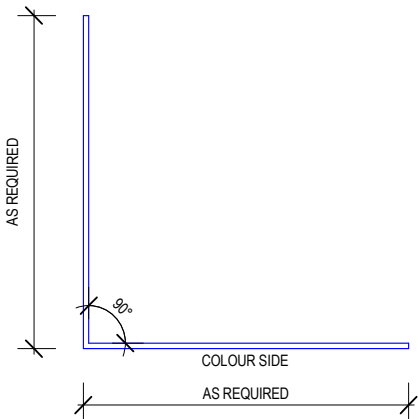
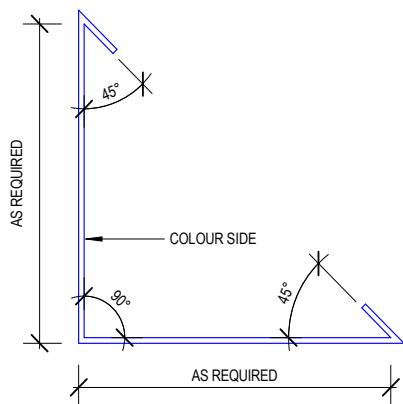


Figure 5.8.3.3:

ALU-102 - L Mould Flashing



ALU-102 - L Mould Flashing with Returns



ALU-102 - L Mould Flashing with Squash Folds

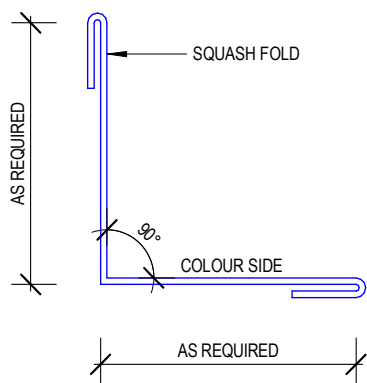


Figure 5.8.3.4:

ALU-103 - Apron Flashing

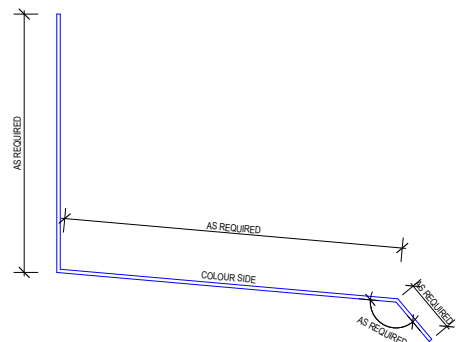


Figure 5.8.3.5:

ALU-104 - U Mould Flashing

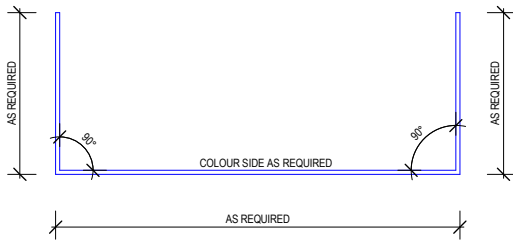


Figure 5.8.3.6:

ALU-200 - External Corner Over Flashing

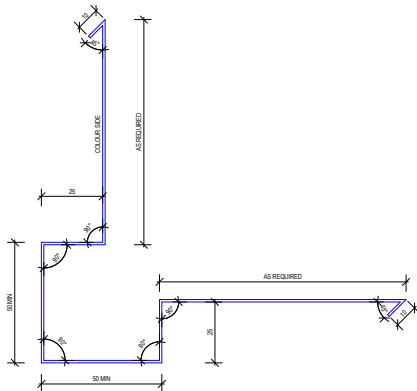


Figure 5.8.3.7:

ALU-201 - Single Return Over Flashing

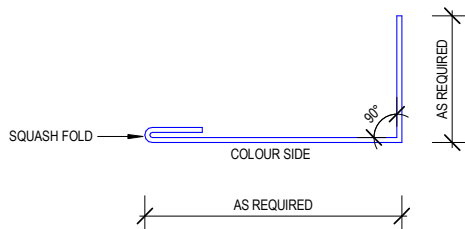
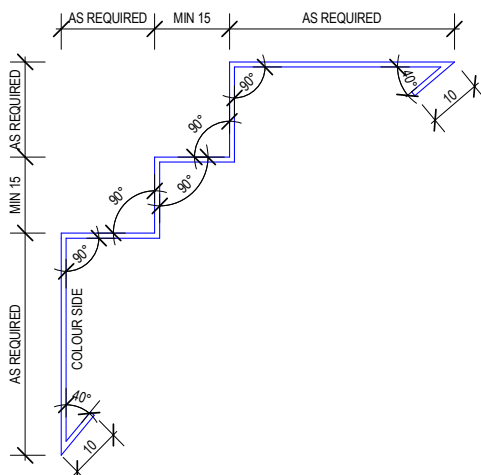


Figure 5.8.3.8:

ALU-202 - Internal Corner Flashings with Returns



ALU-202 - Internal Corner Flashings with Squash Folds

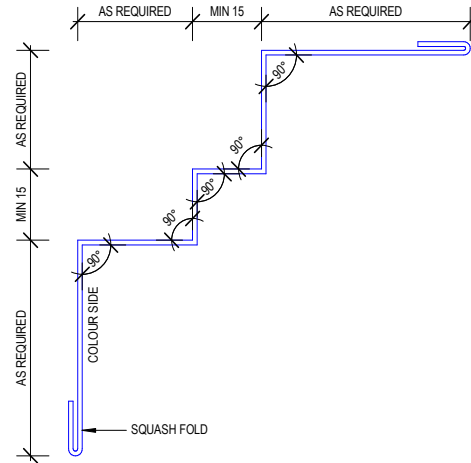


Figure 5.8.3.9:

ALU-203 - Base flashing with Squash Fold

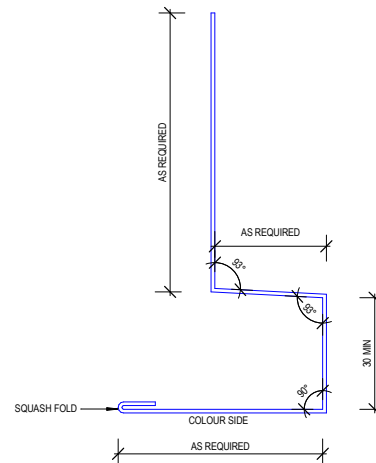


Figure 5.8.3.10:

ALU-204 - Aluminium Base Flashing with Ventilation

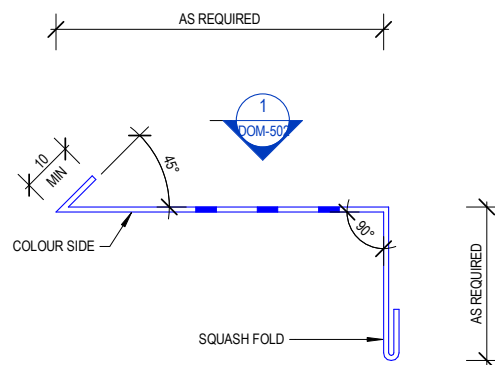


Figure 5.8.3.11:

ALU-205 - Top of Wall Flashing

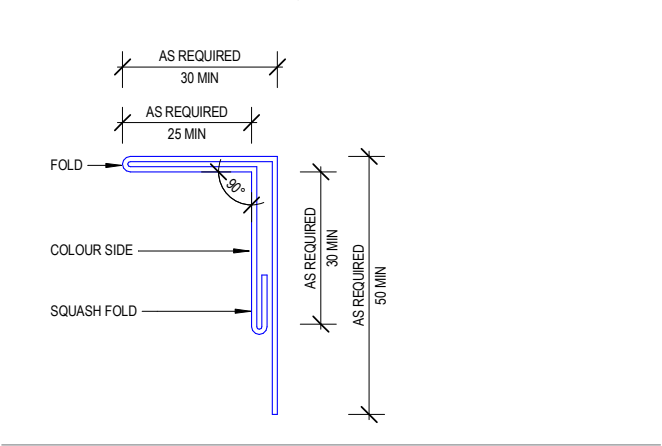
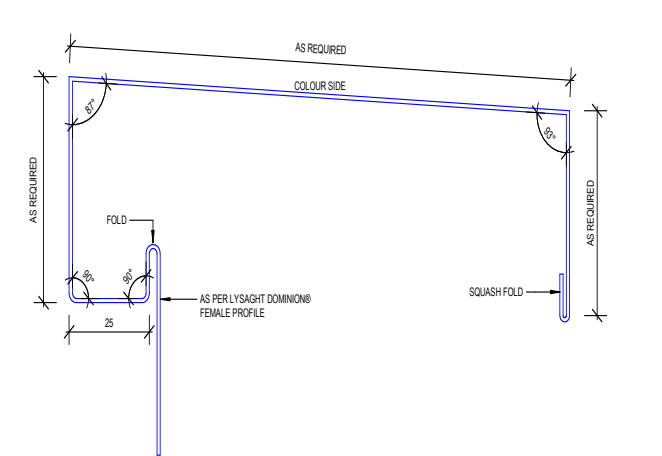


Figure 5.8.3.12:

ALU-206 - Parapet Top Flashing with female return & Squash Fold



ALU-206 - Parapet Top Angled Flashing with return & Squash Fold

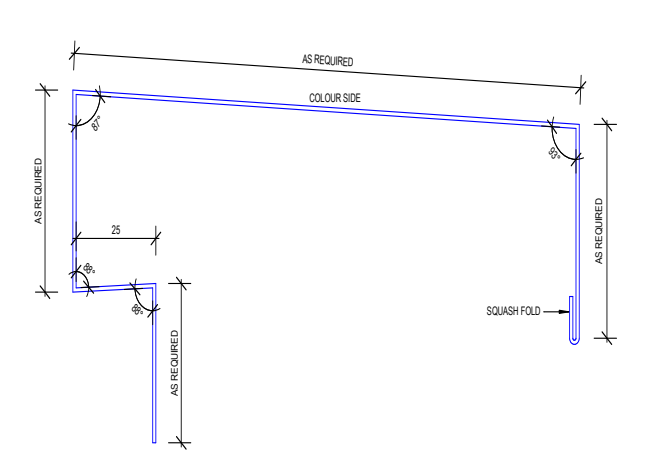
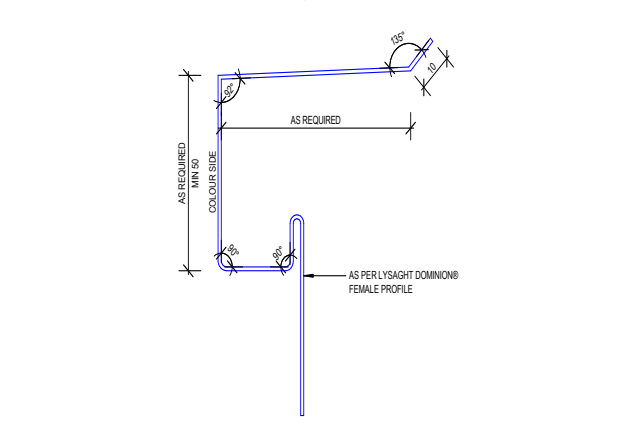


Figure 5.8.3.13:

ALU-400 - Window Sill Flashing with female return



ALU-400 - Window Sill Angled Flashing with return

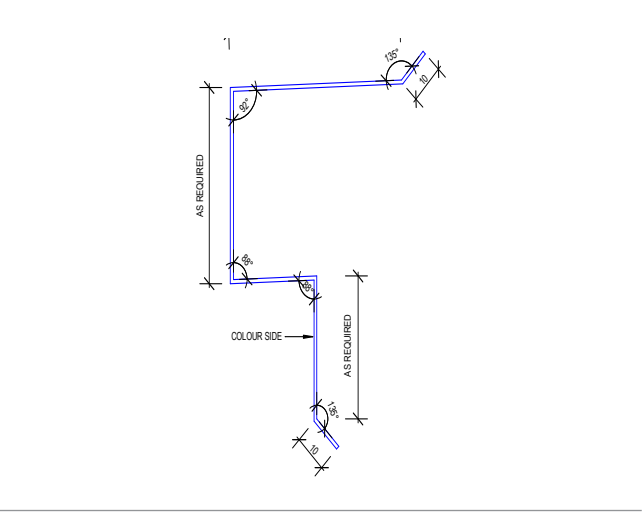
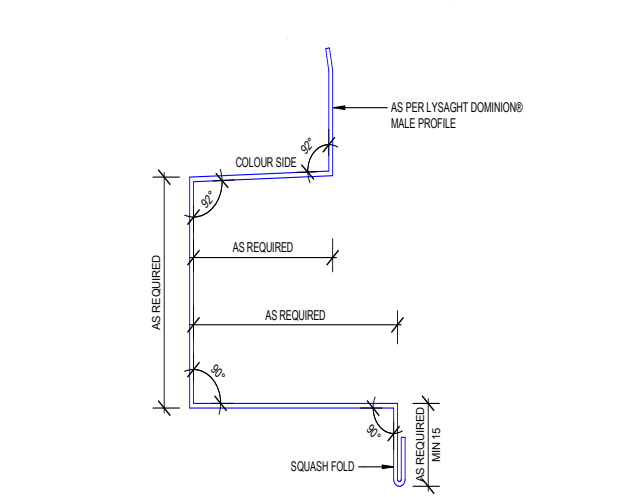


Figure 5.8.3.14:

ALU-401 - Window Head Male Profile Flashing with Squash Fold



ALU-401 - Window Head Flashing with Squash Fold

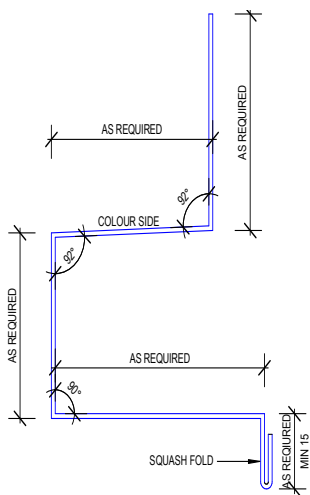
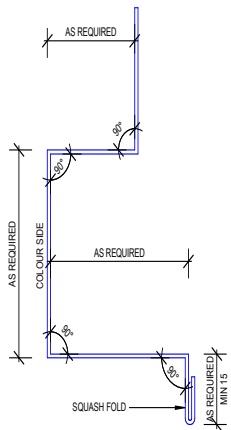


Figure 5.8.3.15:

ALU-402 - Window Jamb Flashing with Squash Fold



ALU-402 - Window Jamb Female Flashing with Squash Fold

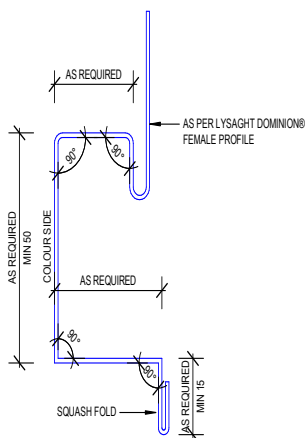
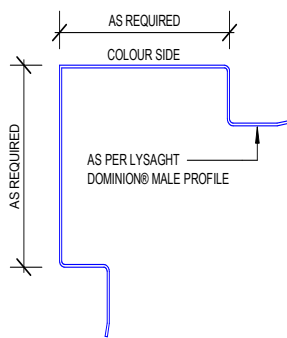
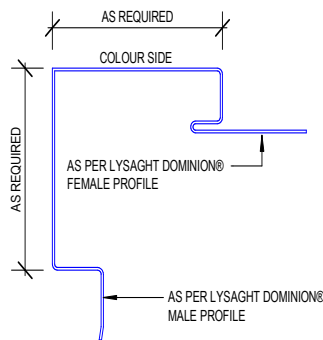


Figure 5.8.3.16:

ALU-500 - External Corner Details - male male



ALU-500 - External Corner Details - female male



ALU-500 - External Corner Details - female female

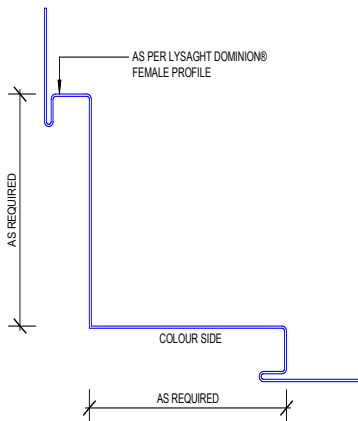
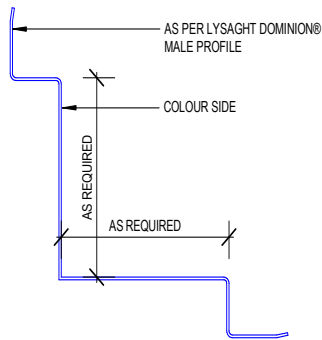
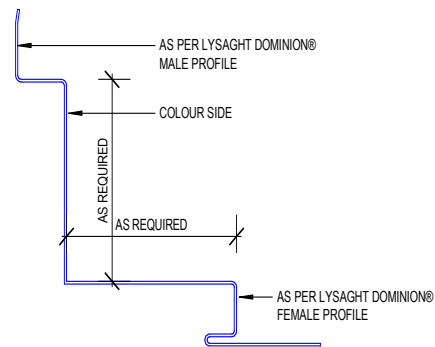


Figure 5.8.3.17:

ALU-501 - Internal Corner Details - male male



ALU-501 - Internal Corner Details - female male



ALU-501 - Internal Corner Details - female female

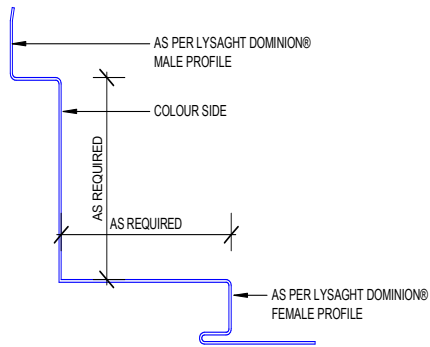


Figure 5.8.3.18:

ALU-502 - Perforation Detail

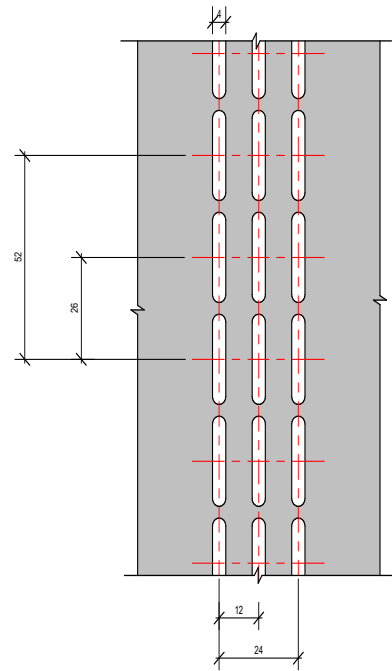


Figure 5.8.3.19:

ALU-504 - Corrosion Resistant Flashing

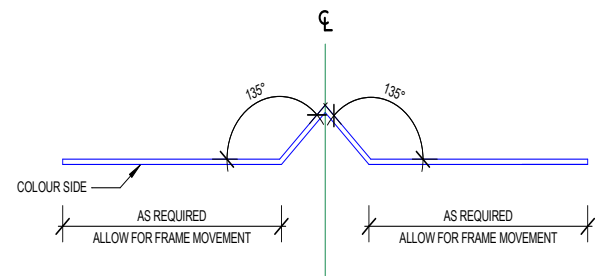
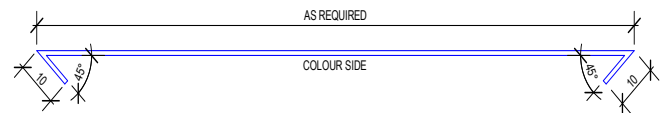


Figure 5.8.3.20:

ALU-505 - Backing Plate Flashing with returns

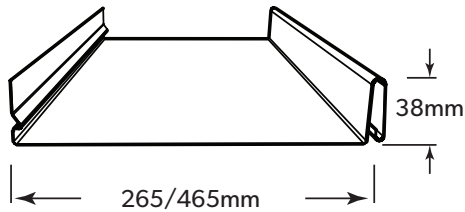


6.0 PERCIPIERE®

PERCIPIERE® roofing and walling panel is an elegant addition to any project. This product combines a striking appearance yet simple and manageable installation. There has been no compromise on style to achieve the products practicality, eye catching street appeal, versatility and durability for contemporary designs.

Figure 6.0.1:

PERCIPIERE® Profile



6.1 PERCIPIERE® PROFILE DETAILS

PERCIPIERE® roofing and walling is available in 2 standard widths as depicted in Table 6.1.1. Additionally, PERCIPIERE® is available in custom widths between 180mm wide and 465mm wide.

SIZES

Table 6.1.1:

PERCIPIERE® Sizes

Product	Thickness (mm)	Rib Height (mm)	Cover width (mm)
PERCIPIERE® 265	0.90	38	265
PERCIPIERE® 465	0.90	38	465

MASSSES

Table 6.1.2:

PERCIPIERE® Masses

Product	Material	Mass/unit length (kg/m)	Mass/unit area (kg/m²)
PERCIPIERE® 265	0.9mm BMT	0.95-1.00	3.5-3.7
PERCIPIERE® 465	5251 – H38 Marine Grade Aluminium	1.65-1.70	3.5-3.7

Note: Masses are approximate values for standard, single-sided paint system. For other variants, please contact your local Lysaght branch.

YIELD STRESS

Table 6.1.3:

PERCIPIERE® Yield Stress

Product	Material	Yield Stress (MPa)
PERCIPIERE® 265	5251 H38 Marine Grade Aluminium	230
PERCIPIERE® 465	5251 H38 Marine Grade Aluminium	230

LENGTHS

Sheets are supplied custom cut to length¹.

Table 6.1.4:

PERCIPIERE® Lengths

Product	Minimum (mm)	Maximum (mm)
PERCIPIERE® 265	1,000	8000 ²
PERCIPIERE® 465	1,000	8000 ²

Notes:

1. Maximum and minimum lengths apply based on profile, point of production & transport regulations. For more information, contact your local Lysaght branch.
2. To assist minimising the potential effects of oil canning in PERCIPIERE® cladding it is recommended to keep panel length under the maximum recommended length. Longer lengths may be available subject to minimum order quantity

TOLERANCES

Table 6.1.5:

PERCIPIERE® Tolerances

Length (mm)	Width (mm)
+/- 3mm	+/- 2mm

MINIMUM ROOF PITCH

Table 6.1.6:

PERCIPIERE® Minimum Roof Pitch

Product	Sealed Side Laps	Unsealed Side Laps
PERCIPIERE® 265	3 degrees	7.5 degrees
PERCIPIERE® 465	3 degrees	7.5 degrees

6.2 PERCIPIERE® FASTENERS

Table 6.2.1:

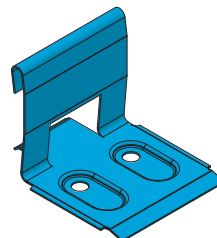
Fastener Specification – PERCIPIERE®

APPLICATION	Fixing to 0.55mm BMT G550 steel	Fixing to 3mm Aluminium	Fixing to plywood / Timber battens
Non-Cyclonic	10-16 x 16mm FLAT PH#2 B8 Coating SDM	10-16 x 16mm FLAT PH#2 B8 Coating SDM	10-12 X 25mm Flat Top Stainless Steel Fixing PH#2 Class 3 T17

Note: 250 micron thick PVC isolating tape required between sheet and clips / screws

Figure 6.2.1:

PERCIPIERE® Non-Cyclonic Clip



6.3 SHEETS REQUIRED

Table 6.3.1:

Sheets required – 265mm Cover – PERCIPERE® 265

Width of roof/ wall (m)	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	30	40	50
Number of sheets required	12	16	19	23	27	31	34	38	42	46	50	53	57	61	65	68	72	76	114	151	189

Table 6.3.2:

Sheets required – 465mm Cover – PERCIPERE® 465

Width of roof/ wall (m)	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	30	40	50
Number of sheets required	7	9	11	13	16	18	20	22	24	26	28	31	33	35	37	39	41	44	65	87	108

6.4 WIDTH COVERED

Table 6.4.1:

Width covered - 265mm Cover – PERCIPERE® 265

Number of sheets	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Width of roof/ wall covered (m)	0.8	1.1	1.3	1.6	1.9	2.1	2.4	2.7	2.9	3.2	3.4	3.7	4.0	4.2	4.5	4.8	5.0	5.3

Table 6.4.2:

Width covered - 465mm Cover – PERCIPERE® 465

Number of sheets	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Width of roof/ wall covered (m)	1.4	1.9	2.3	2.8	3.3	3.7	4.2	4.7	5.1	5.6	6.0	6.5	7.0	7.4	7.9	8.4	8.8	9.3

6.5 DESIGN DATA

6.5.1 PERCIPERE® CLADDING: LIMIT STATE WIND PRESSURE CAPACITIES (kPa) - NON-CYCLONIC

Pan Width x BMT	Support Requirement	Design pressure (kPa)		Application
		Serviceability	Strength	
265mm x 0.9mm BMT	Metal Batten: Steel: 40mm x 0.55mm BMT G550 Aluminium: 40mm x 3.0mm BMT Batten Spacing: 900 mm (max) Batten Span: 1200 mm (max) Minimum Support/Purlin thickness : Steel- 1.0mm BMT G550 / Aluminium - 3.0mm BMT H36	1.09	2.38	Roofing and Walling
	19mm F11 CD structural Grade plywood (roofing applications) 15mm F11 CD structural Grade plywood (walling applications) Maximum support spacing 600 mm (max) Fastener spacing: 450 mm	1.09	2.38	
265mm x 0.9mm BMT	Metal Batten: Steel: 40mm x 0.55mm BMT G550 Aluminium: 40mm x 3.0mm BMT Batten Spacing: 600 mm (max) Batten Span: 1200 mm (max) Minimum Support/Purlin thickness : Steel- 1.0mm BMT G550 / Aluminium - 3.0mm BMT H36	1.23	3.46	Roofing and Walling
	19mm F11 CD structural Grade plywood (roofing applications) 15mm F11 CD structural Grade plywood (walling applications) Maximum support spacing 600 mm (max) Fastener spacing: 450 mm	1.23	3.46	
465mm x 0.9mm BMT	Metal Batten: Steel: 40mm x 0.55mm BMT G550 Aluminium: 40mm x 3.0mm BMT Batten Spacing: 450 mm (max) Batten Span: 1200 mm (max) Minimum Support/Purlin thickness : Steel- 1.0mm BMT G550 / Aluminium - 3.0mm BMT H36	0.41	3.69	Walling
	19mm F11 CD structural Grade plywood (roofing applications) 15mm F11 CD structural Grade plywood (walling applications) Maximum support spacing 600 mm (max) Fastener spacing: 450 mm	0.41	3.69	Roofing and Walling

6.5.2 PERCIPERE® : MAXIMUM SUPPORT SPACINGS ⁽¹⁾

PERCIPERE®	265mm Face width	465mm Face width
	0.9mm BMT PERCIPERE® panel	0.9mm BMT PERCIPERE® panel
Application	Non-cyclonic	Non-cyclonic
TYPE OF SPAN		
ROOF		
Single Span (mm)	900	Must be fixed to 19mm thk F11 structural CD plywood with screw fixing at 450mm c/c and batten support spacings at maximum 600 mm centres.
End Span (mm)	900	
Internal Span (mm)	900	
Overhang (mm)	50	
WALLS		
Single Span (mm)	900	450
End Span (mm)	900	450
Internal Span (mm)	900	450
Overhang (mm)	100	450

(1) Refer Section 3.4 - Support Spacing and Overhang for loading parameters applicable to MAXIMUM SUPPORT SPACINGS. For Projects outside these loading parameters (Region B) designers should reference LIMIT STATE WIND CAPACITIES tables to determine appropriate support spacings.

6.5.3 TYPICAL INSTALLATION DETAILS

PERCIPERE® roofing and walling is designed to be directly fixed to either battens or 19mm CD grade plywood substrate with a heavy-duty metal pliable building membrane as an additional weather-proofing measure as shown in following details. The Pliable Membrane must be installed in accordance with AS 4200.2 Pliable building membranes and underlays Part 2 : Installation.

All laps in the membrane, flashings and panels must be fitted with this in mind. Prior to commencement, ensure that the surface the system is being fixed to, is free of sharp edges and in the correct plane.

6.6 TYPICAL INSTALLATION DETAILS

Figure 6.6.1:

Fixing to steel batten.

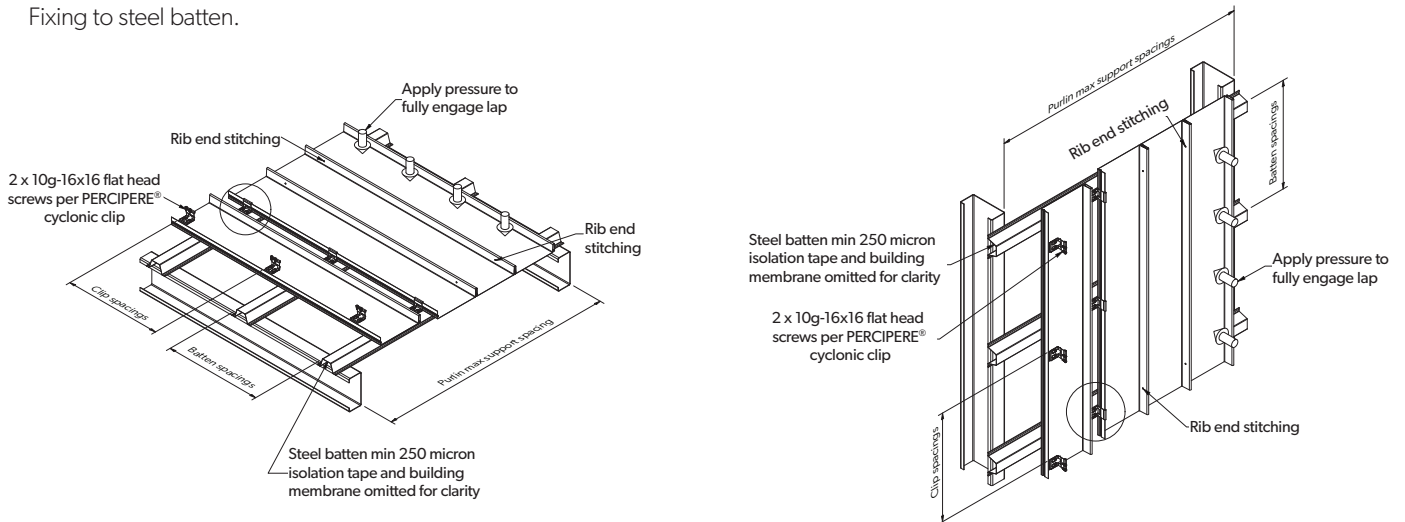


Figure 6.6.2:

Fixing to Plywood Detail

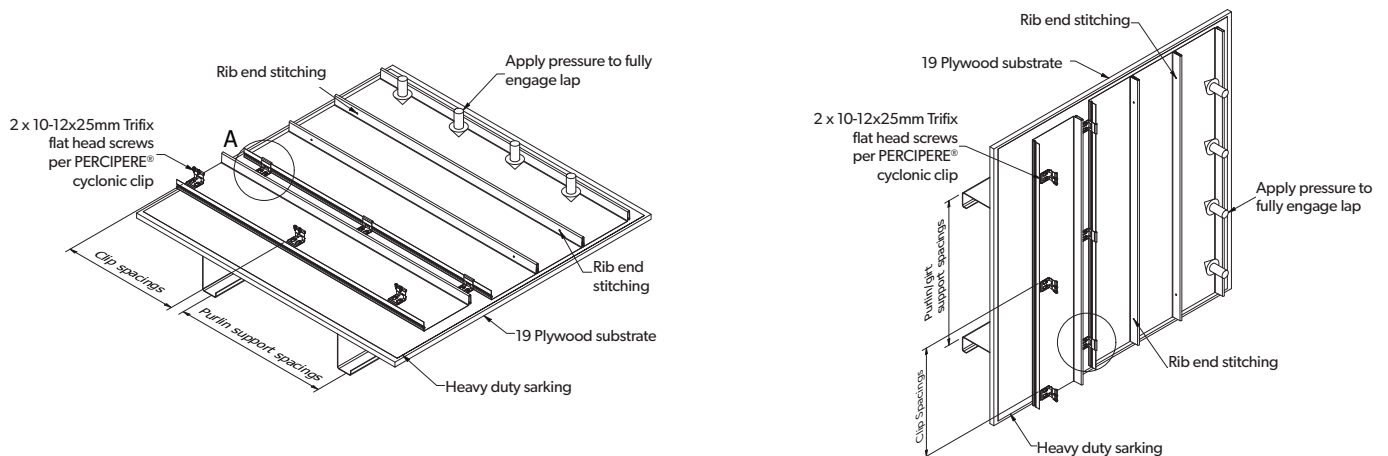
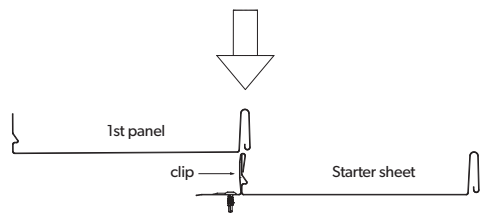


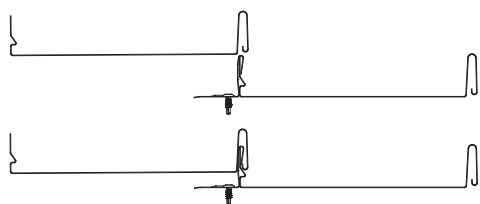
Figure 6.6.3:

Standard lap engagement procedure.

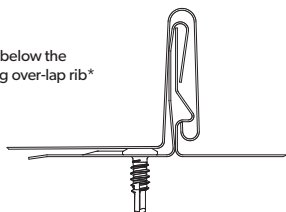


Position the first sheet to align with the building edge. Screw fix the clips over the under lap edge to battens or ply as shown in Figure 12.2.1 and Figure 12.2.2

Engage under-lap and over-lap ribs by applying vertical pressure along the over-lap rib either by hand or using a rubber mallet.



Apply silicone along the bend below the under-lap rib, prior to engaging over-lap rib*



When roof pitch is under 7.5° or total combined sheet length is over 5m

Figure 6.6.4:

Foam Infill detail.

80mm x 40mm closed cell foam infill cut to size and shape on site as required under ridge, hip or corner flashing

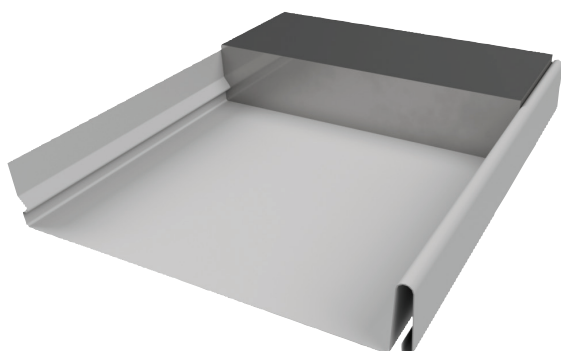


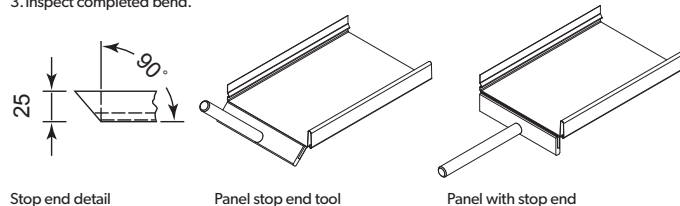
Figure 6.6.5:

Pan turn-up & turn-down details.

TYPICAL STOP END DETAIL

Stop end procedure:

1. Place pan into the panel stop end tool, the front edge of the tool must rest between the rib.
2. While maintaining pressure against the panel, rotate the stop end tool as close to 90° as possible.
3. Inspect completed bend.



TYPICAL TURN DOWN DETAIL

1. Panels requiring field hemmed ends should be fabricated 25mm longer than the finished panel length. Valley sheets must be field cut to the appropriate angle.
2. Cut back panel joints 25mm.
3. Place protruding pan into the panel hemming tool, the front edge of the tool must rest against the notched joint legs on both sides.
4. While maintaining pressure against the panel joints, rotate the hemming tool as close to 90° as possible.

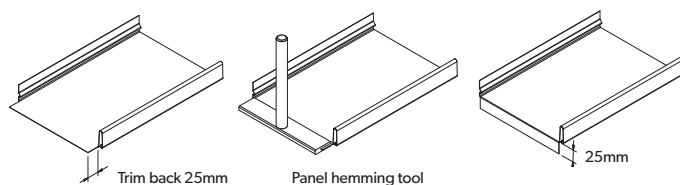
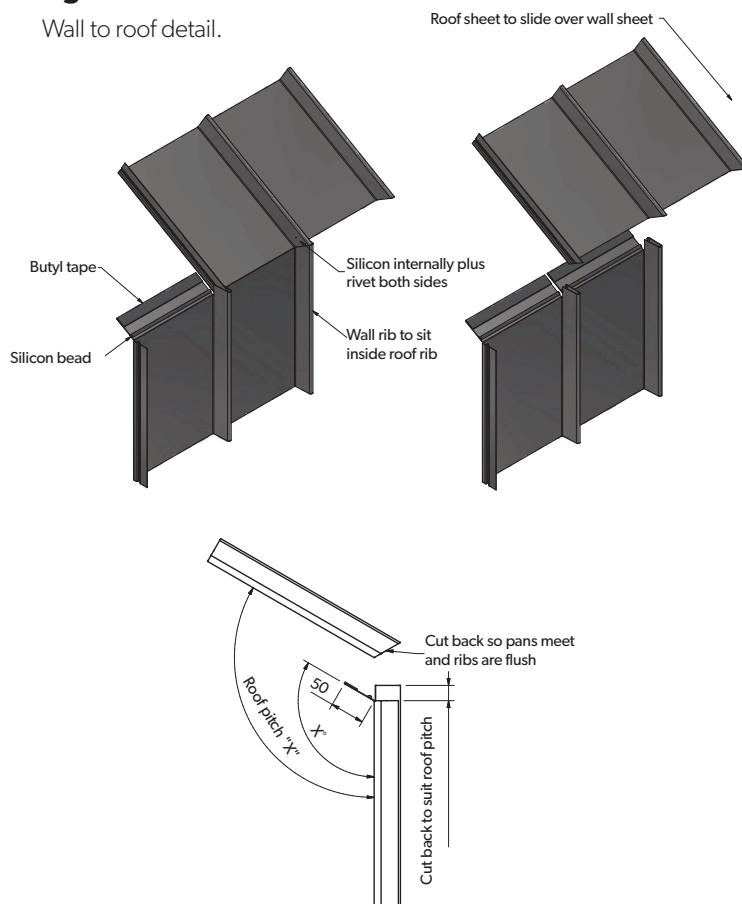


Figure 6.6.6:

Wall to roof detail.



6.7 PERCIPERE® TYPICAL CONSTRUCTION DETAILS

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 HB 39.

Construction details for the PERMALITE® premium cladding range are similar to those for products from Lysaght's ZENITH® cladding range. The full suite of ZENITH® constructions details are available for download from <https://bimcontent.com/lysaght/> in both REVIT and PDF format.

The following table details the construction drawings included in this manual.

PERCIPERE® PANEL - TYPICAL ROOF DETAILS		
Figure	Title	Page
6.7.1.1	Typical Roof Cladding Setout - Unsupported PERCIPERE® - Plan View - S04-09	47
6.7.1.2	Top of Wall Eave Detail - Zero Overhang - Unsupported PERCIPERE® - Vertical Fix - S09-03	48
6.7.1.3	Top of Wall Eave Detail - Overhang - Unsupported PERCIPERE® - Vertical Fix - S09-07	48
6.7.1.4	Ridge Detail - Unsupported PERCIPERE® Panel - S10-01	49
6.7.1.5	Valley Detail - Unsupported PERCIPERE® Panel - S10-03	49
6.7.1.6	Gable Detail - Unsupported PERCIPERE® Roof to Wall - Vertical Fix - S10-05	50
6.7.1.7	Parapet Wall Detail - Unsupported PERCIPERE® Panel - Vertical Fix - S12-03	50
6.7.1.8	PERCIPERE® Vertical Fix Wall to PERCIPERE® Roof - Unsupported - Side View - S12-11	51
6.7.1.9	PERCIPERE® Vertical Fix Wall to PERCIPERE® Roof - Unsupported - End View - S12-15	51
PERCIPERE® TYPICAL WALL DETAILS		
Figure	Title	Page
6.7.2.1	Typical Wall Cladding Setout - Unsupported PERCIPERE® Panel Horizontal Fix - Plan View - S04-01	52
6.7.2.2	Typical Wall Cladding Setout - Unsupported PERCIPERE® - Horizontal Fix - Sectional View - S04-02	52
6.7.2.3	External Corner Detail - Unsupported PERCIPERE® Panel - Vertical Underlap Underlap - S05-04	53
6.7.2.4	Internal Corner Detail - Unsupported PERCIPERE® Panel - Vertical Underlap Underlap - S06-04	53
6.7.2.5	Wall Closure Detail - Unsupported PERCIPERE® Panel - Vertical Fix - S07-03	54
6.7.2.6	Window Jamb Detail - Unsupported PERCIPERE® Panel - Vertical Fix Option 1 - S11-03a	54
6.7.2.7	Window Jamb Detail - Unsupported PERCIPERE® Panel - Vertical Fix Option 2 - S11-03b	55
6.7.2.8	Wall Base Detail - Unsupported PERCIPERE® Panel - Vertical Fix - S08-03	55
6.7.2.9	Top of Wall Eave Detail - Zero Overhang - Unsupported PERCIPERE® - Vertical Fix - S09-03	56
6.7.2.10	Top of Wall Eave Detail - Overhang - Unsupported PERCIPERE® - Vertical Fix - S09-07	56
6.7.2.11	Window Sill Detail - Unsupported PERCIPERE® Panel - Vertical Fix - S11-07	57
6.7.2.12	Window Head Detail - Unsupported PERCIPERE® Panel - Vertical Fix Option 1 - S11-11a	57
6.7.2.13	Window Head Detail - Unsupported PERCIPERE® Panel - Vertical Fix Option 2 - S11-11b	58
PERCIPERE® MANSARD ROOF / WALL		
Figure	Title	Page
6.7.3.1	PERCIPERE® Mansard Roof - S12-21	59
6.7.3.2	Typical Wall Cladding Setout - Unsupported PERCIPERE® Vertical Fix - Plan View - S12-22	60

PERCIPERE® - TYPICAL FLASHINGS

Figure	Title	Page
6.7.4.1	PER-100 - J Mould Flashings	61
	PER-100 - J Mould Flashing with Squash Fold	61
6.7.4.2	PER-101 - Z Mould Flashings	61
	PER-101 - Z Mould Flashing with 1 Squash Fold	61
6.7.4.3	PER-102 - L Mould Flashings	61
	PER-102 - L Mould Flashing with 1 Squash Fold	61
	PER-102 - L Mould Flashing with Squash Folds	61
6.7.4.4	PER-103 - Apron Flashings	62
	PER-103 - Apron Flashing with Squash Fold	62
6.7.4.5	PER-104 - U Mould Flashing	62
6.7.4.6	PER-200 - External Corner Over Flashing	62
6.7.4.7	PER-201 - Single Return Over Flashing	62
6.7.4.8	PER-202 - Internal Corner Over Flashing	62
6.7.4.9	PER-203 - Base Flashings	62
	PER-203 - Base Flashing with Squash Fold	62
6.7.4.10	PER-204 - Aluminium Base Flashing with Ventilation	63
6.7.4.11	PER-205 - Top of Wall Flashing	63
6.7.4.12	PER-206 - Parapet Top Flashing with Squash Folds	63
	PER-206 - Parapet Top Flashing with Squash Fold and return	63
6.7.4.13	PER-300 - Roof Valley Flashing	63
6.7.4.14	PER-301 - Barge Flashing with returns	63
	PER-301 - Barge Flashing with return and Squash Fold	63
6.7.4.15	PER-302 - Ridge Cap Flashing	63
6.7.4.16	PER-400 - Window Sill Flashing with Squash Fold	64
6.7.4.17	PER-401 - Window Head Flashing with Squash Fold	64
6.7.4.18	PER-402 - Window Jamb Flashing with Squash Folds	64
6.7.4.19	PER-403 - Window Z flashing with Squash Fold	64
6.7.4.20	PER-500 - External Corner Details - Underlap Underlap	64
	PER-500 - External Corner Details - Overlap Underlap	64
	PER-500 - External Corner Details - Overlap Overlap	64
6.7.4.21	PER-501 - Internal Corner Details - Underlap Underlap	65
	PER-501 - Internal Corner Details - Overlap Underlap	65
	PER-501 - Internal Corner Details - Overlap Overlap	65
6.7.4.22	PER-502 - Perforation Detail	65
6.7.4.23	PER-503 - Corrosion Resistant Flashing	65

6.7.1 PERCIPERE® TYPICAL ROOF DETAILS

Figure 6.7.1.1:

Typical Roof Cladding Setout - Unsupported PERCIPERE® - Plan View - S04-09

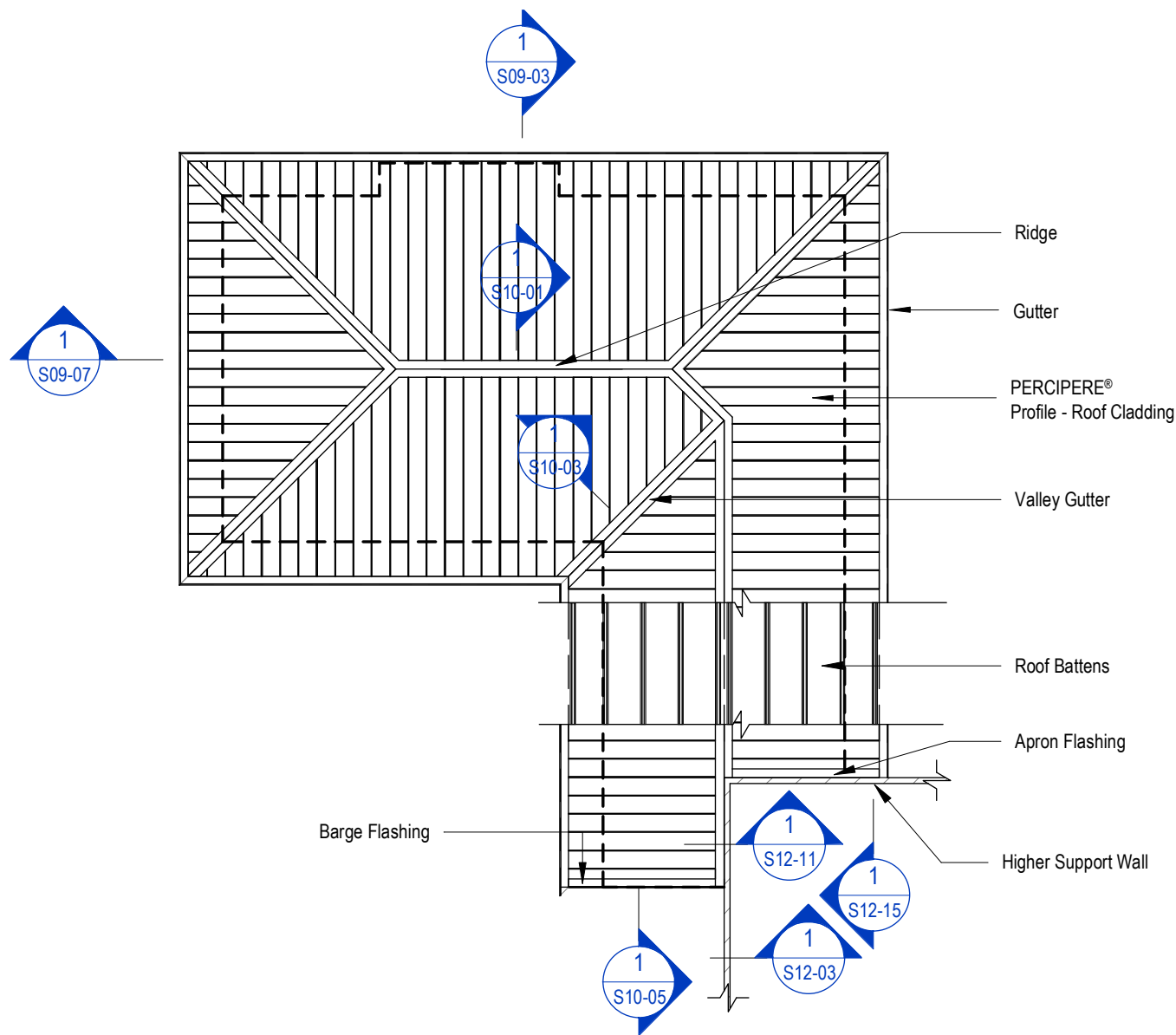


Figure 6.7.1.2:

Top of Wall Eave Detail - Zero Overhang - Unsupported PERCIPERE® - Vertical Fix - S09-03

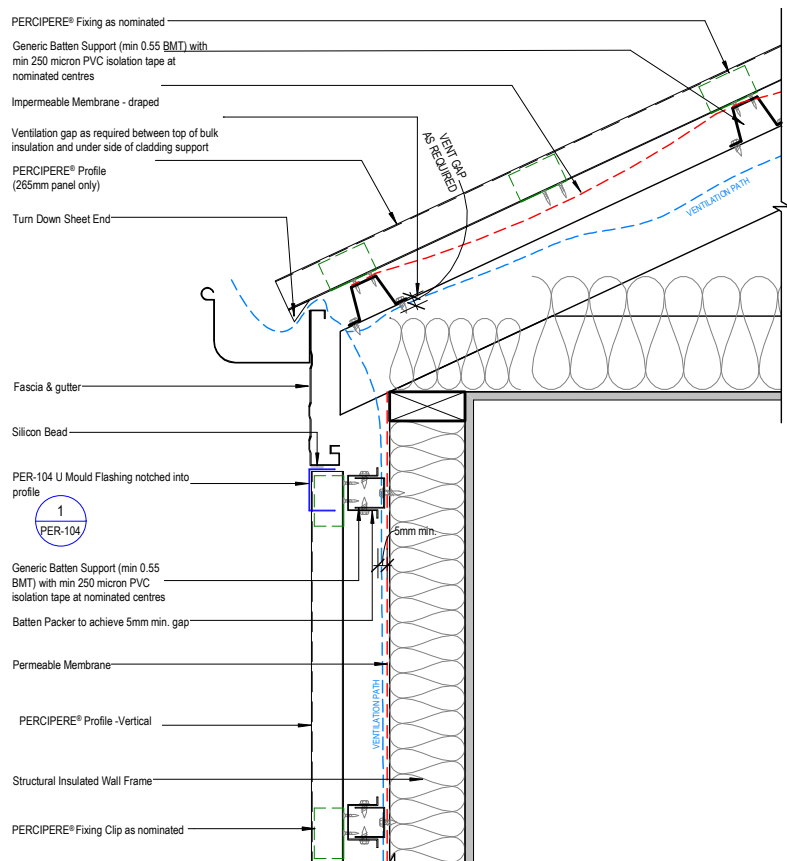


Figure 6.7.1.3:

Top of Wall Eave Detail - Overhang - Unsupported PERCIPERE® - Vertical Fix - S09-07

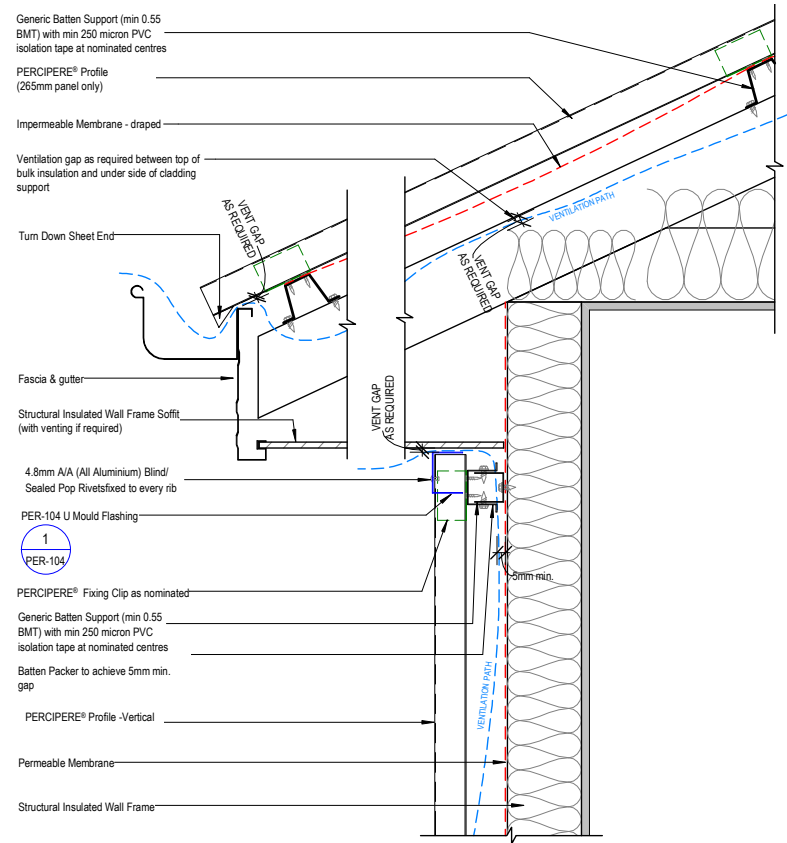


Figure 6.7.1.4:

Ridge Detail - Unsupported PERCIPERE® Panel - S10-01

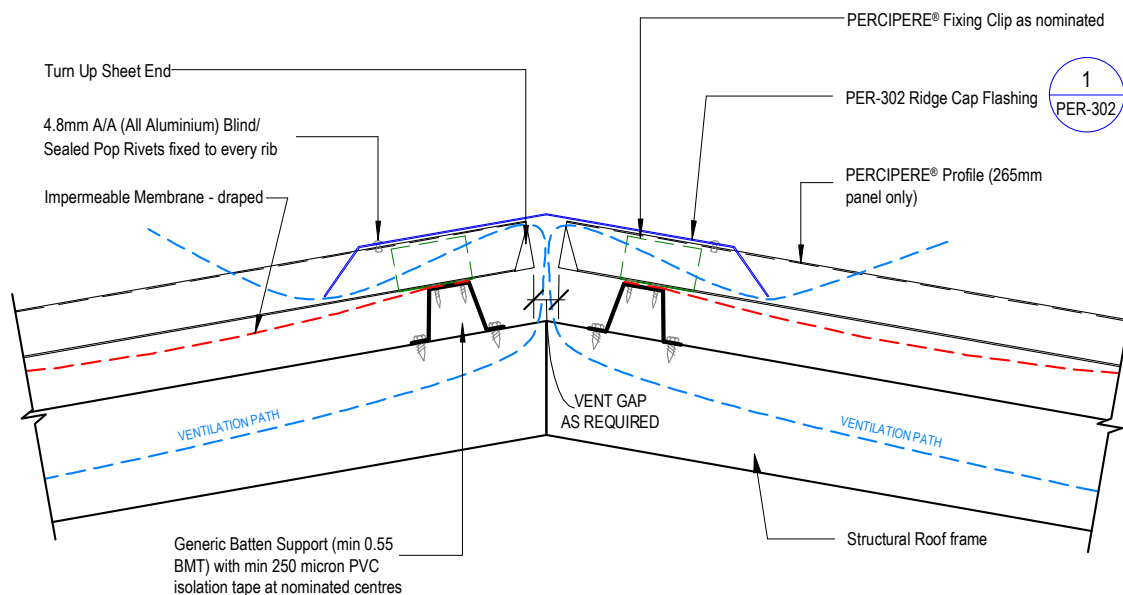


Figure 6.7.1.5:

Valley Detail - Unsupported PERCIPERE® Panel - S10-03

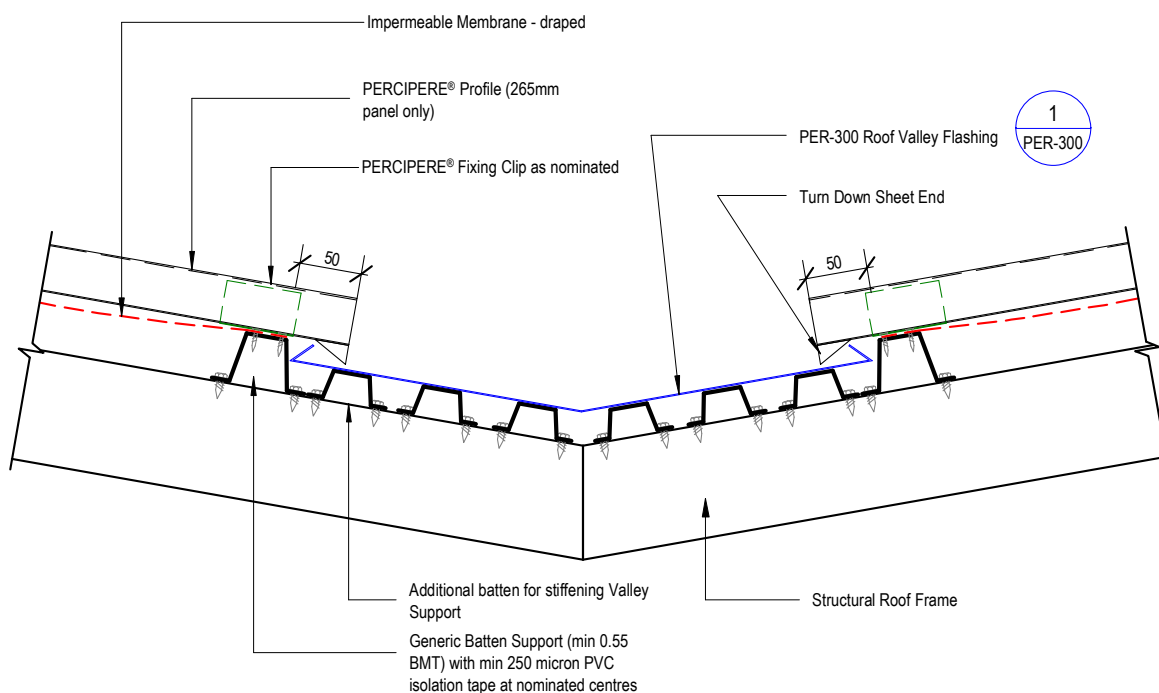


Figure 6.7.1.6:

Gable Detail - Unsupported PERCIPERE® Roof to Wall - Vertical Fix - S10-05

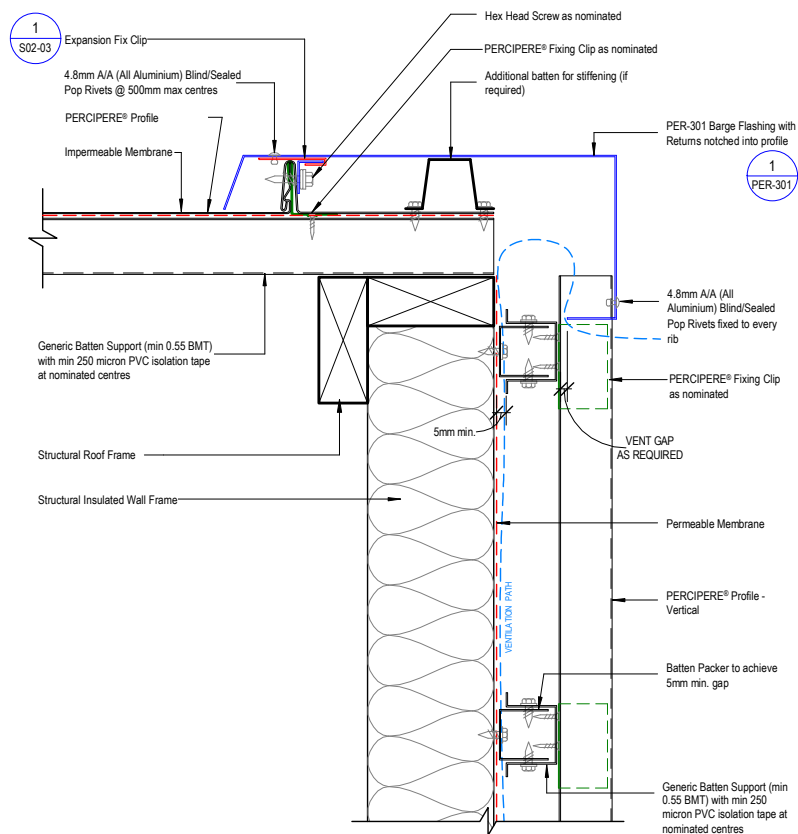


Figure 6.7.1.7:

Parapet Wall Detail - Unsupported PERCIPERE® Panel - Vertical Fix - S12-03

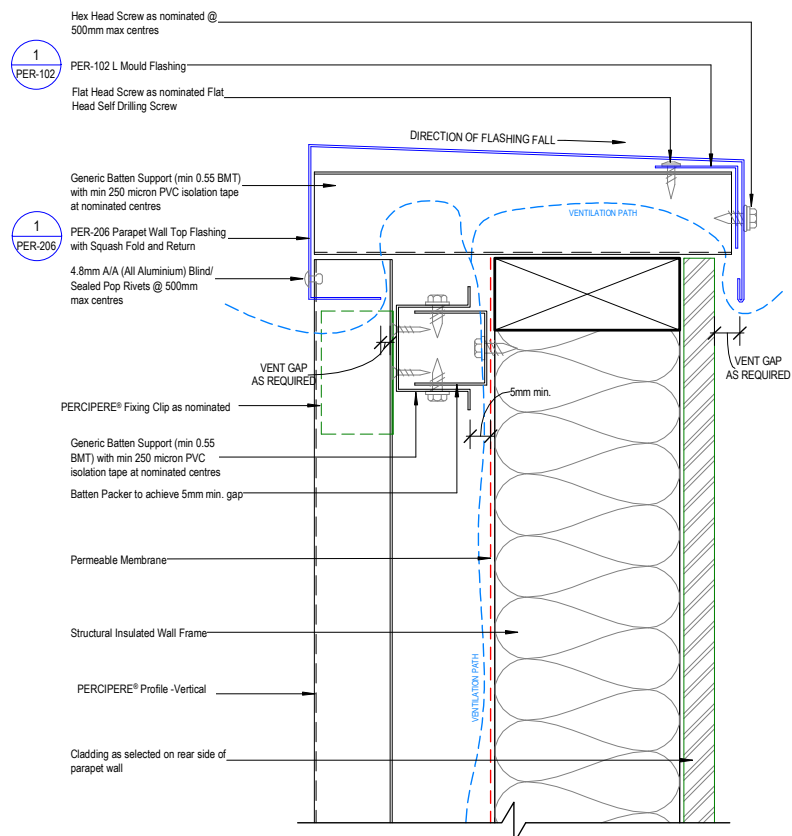


Figure 6.7.1.8:

PERCIPERE® Vertical Fix Wall to PERCIPERE® Roof - Unsupported - Side View - S12-11

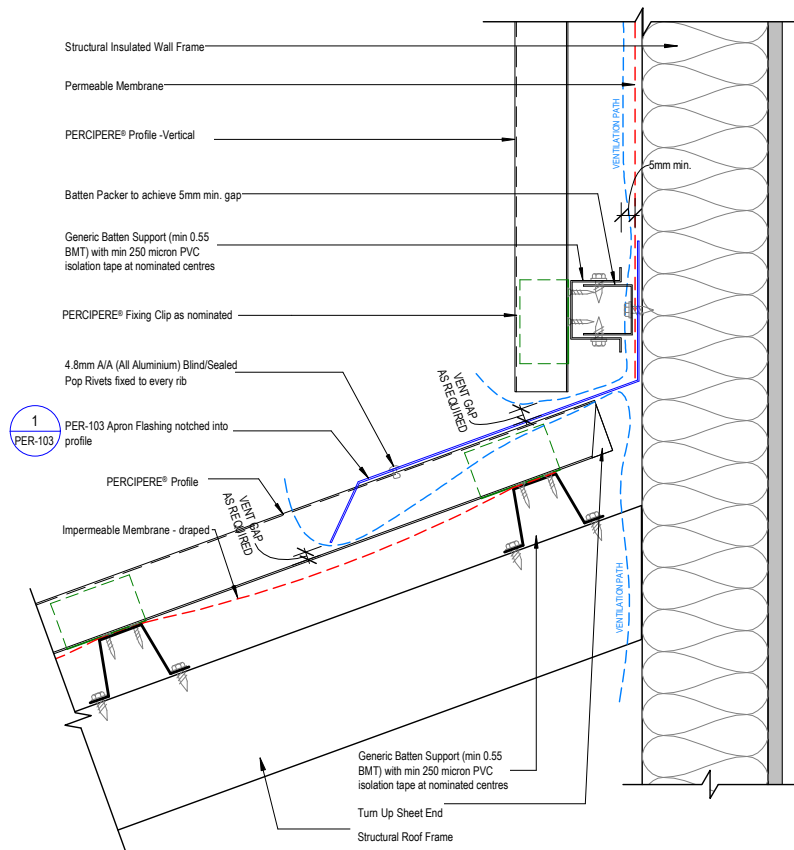
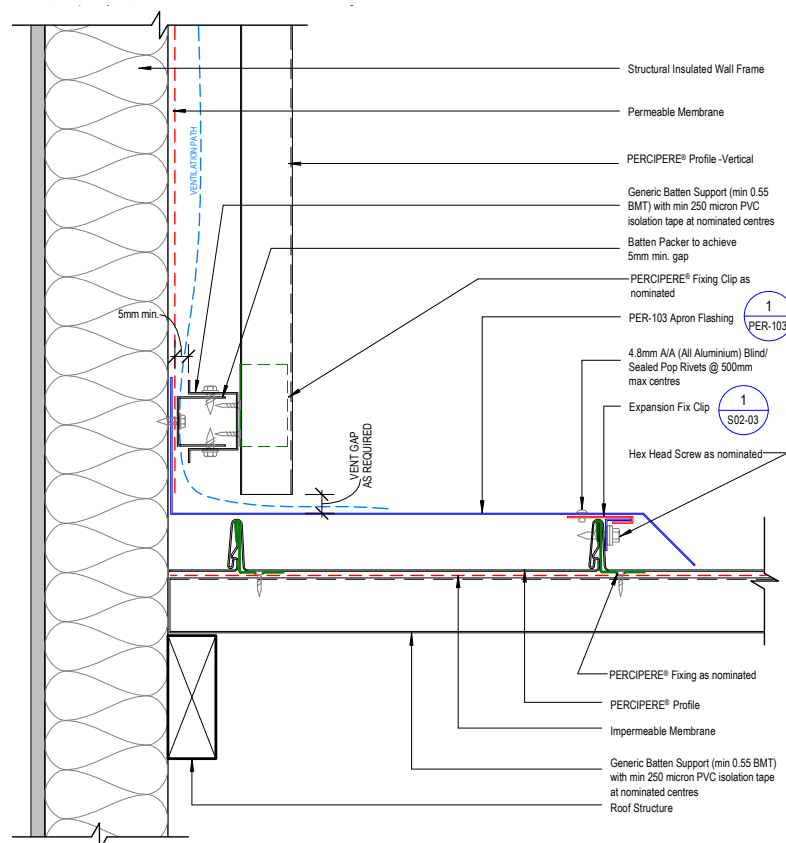


Figure 6.7.1.9:

PERCIPERE® Vertical Fix Wall to PERCIPERE® Roof - Unsupported - End View - S12-15



6.7.2 PERCIPIERE® TYPICAL WALL DETAILS

Figure 6.7.2.1:

Typical Wall Cladding Setout - Unsupported PERCIPIERE® Panel Horizontal Fix - Plan View - S04-01

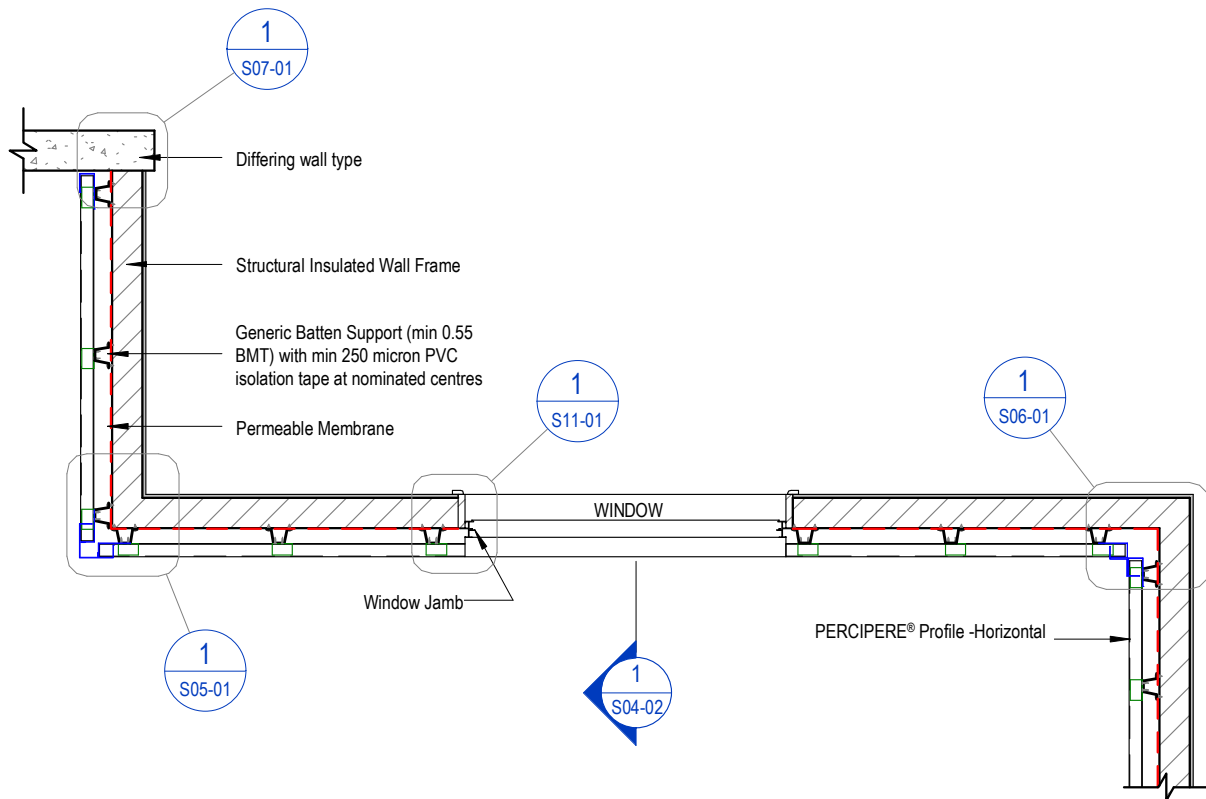
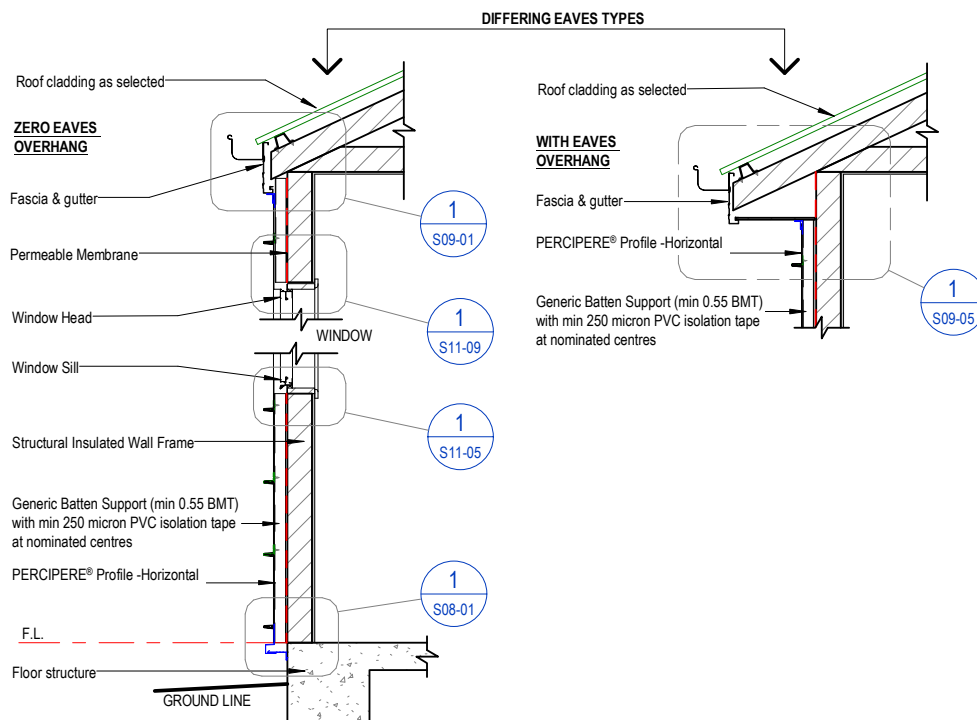


Figure 6.7.2.2:

Typical Wall Cladding Setout - Unsupported PERCIPIERE® - Horizontal Fix - Sectional View - S04-02



External Corner Detail - Unsupported PERCIPERE® Panel - Vertical Underlap Underlap - S05-04



1
PER-501

PER-501 PERCIPIERE® Profile -
Internal Corner Flashing -Underlap

PERCIPIERE® Fixing Clip as nominated

Generic Batten Support (min 0.55 BMT)
with min 250 micron PVC isolation tape
at nominated centres

Permeable Membrane

Structural Insulated Wall Frame

Batten Packer to achieve a 5mm min.
gap

5mm min.

Figure 6.7.2.5:

Wall Closure Detail - Unsupported PERCIPERE® Panel - Vertical Fix - S07-03

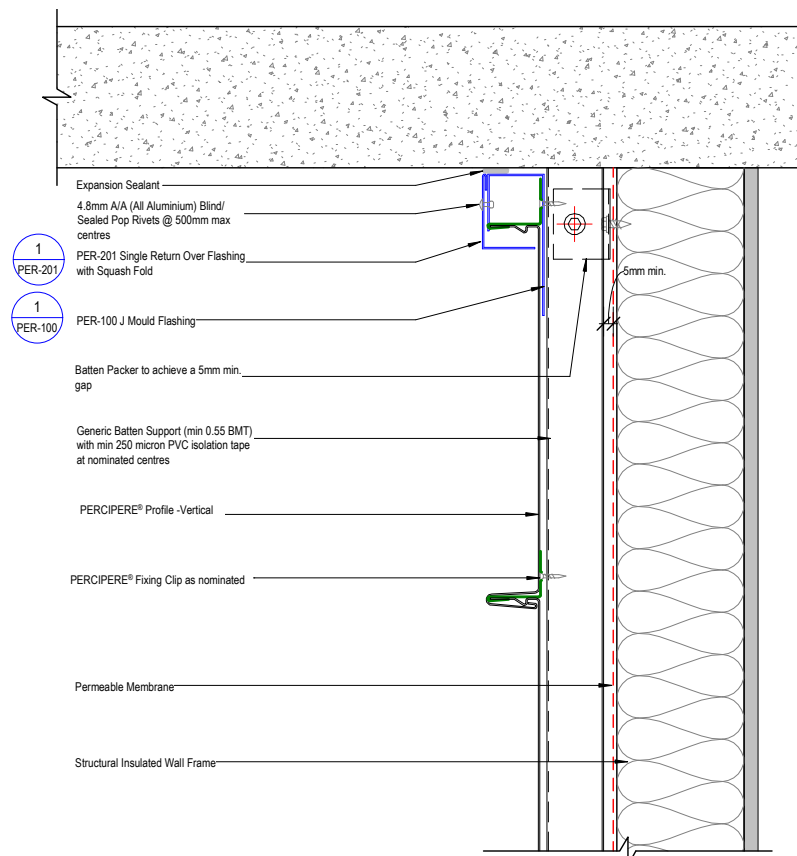


Figure 6.7.2.6:

Window Jamb Detail - Unsupported PERCIPERE® Panel - Vertical Fix Option 1 - S11-03a

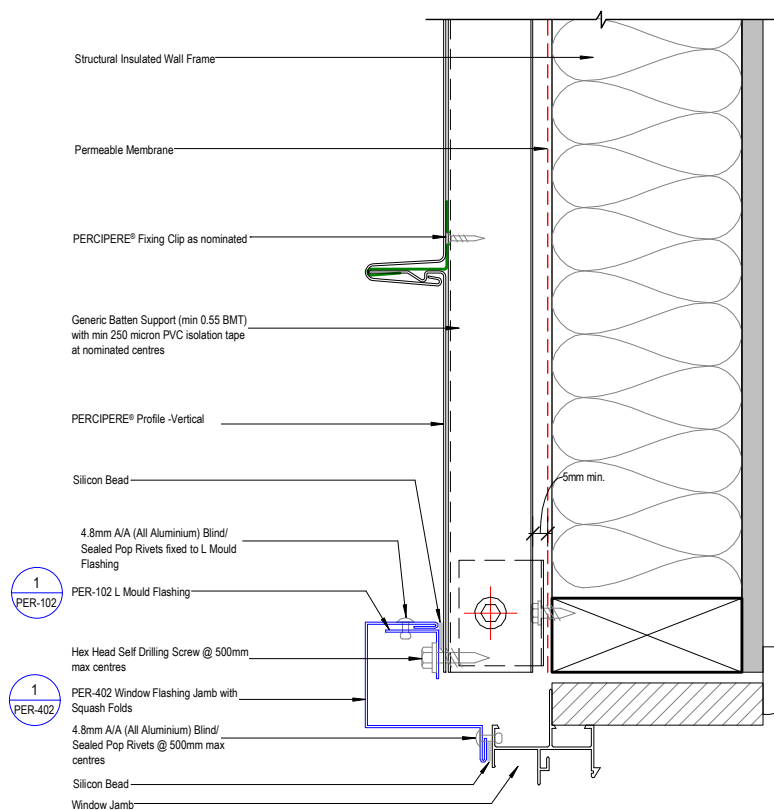


Figure 6.7.2.7:

Window Jamb Detail - Unsupported PERCIPERE® Panel - Vertical Fix Option 2 - S11-03b

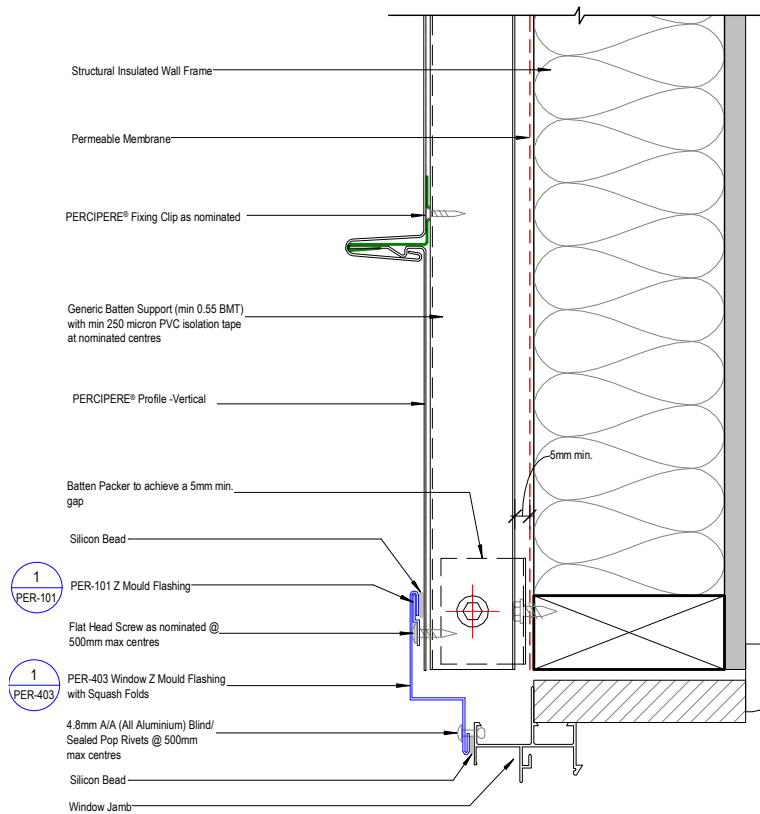


Figure 6.7.2.8:

Wall Base Detail - Unsupported PERCIPERE® Panel - Vertical Fix - S08-03

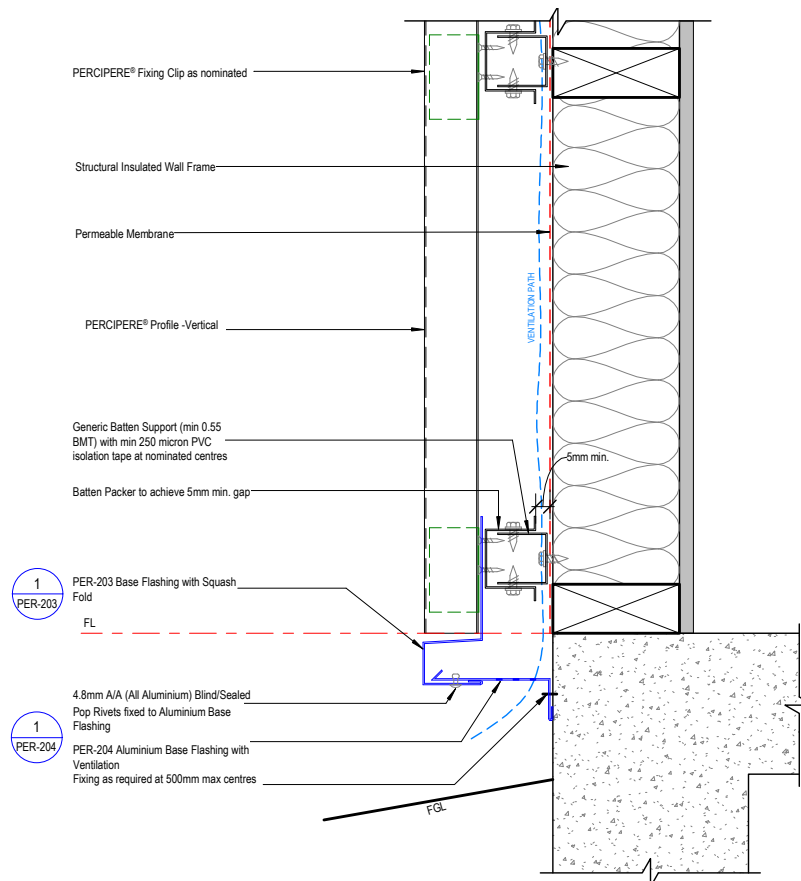


Figure 6.7.2.9:

Top of Wall Eave Detail - Zero Overhang - Unsupported PERCIPERE® - Vertical Fix - S09-03

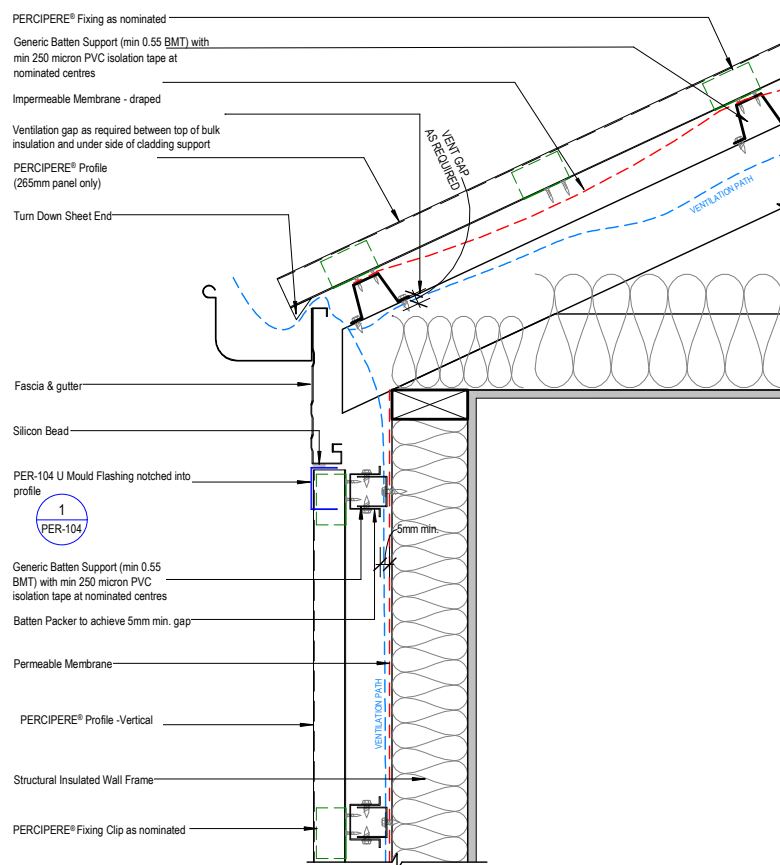


Figure 6.7.2.10:

Top of Wall Eave Detail - Overhang - Unsupported PERCIPERE® - Vertical Fix - S09-07

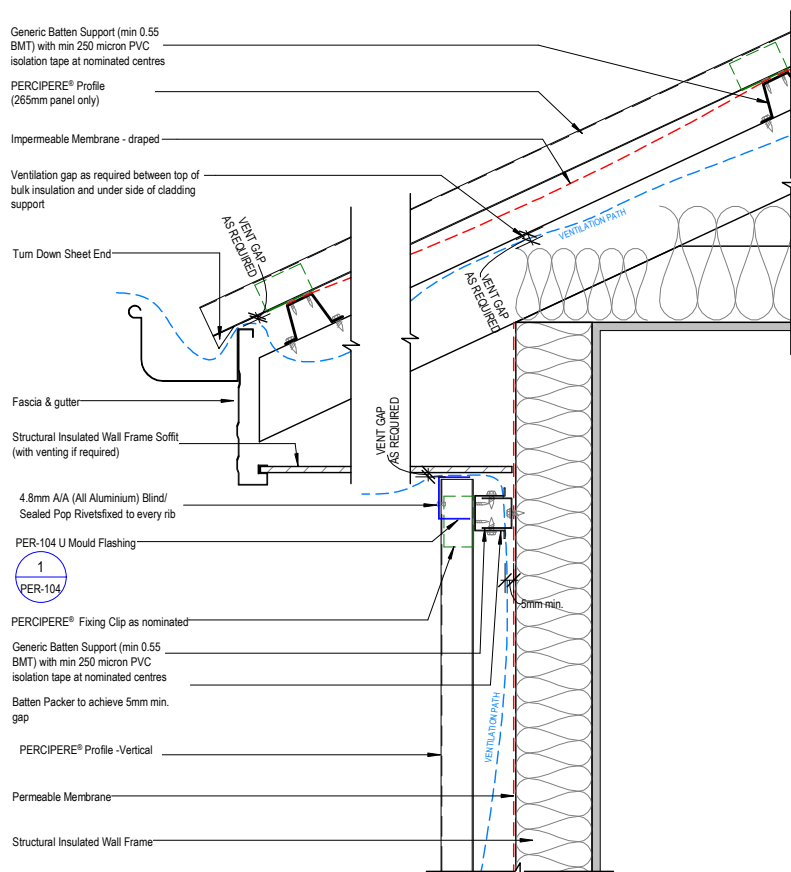


Figure 6.7.2.11:

Window Sill Detail - Unsupported PERCIPERE® Panel - Vertical Fix - S11-07

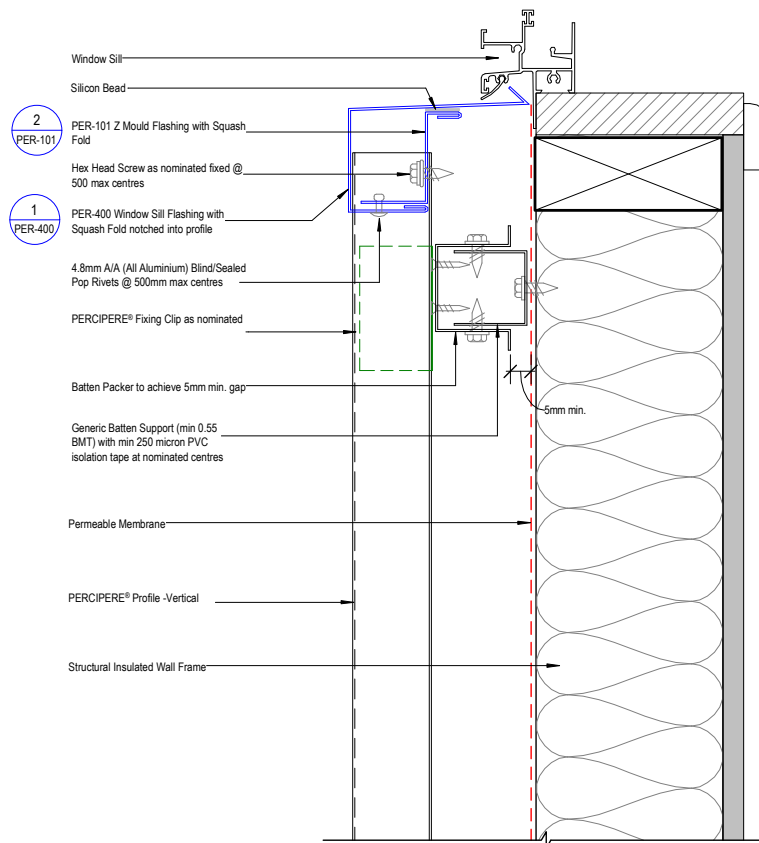


Figure 6.7.2.12:

Window Head Detail - Unsupported PERCIPERE® Panel - Vertical Fix Option 1 - S11-11a

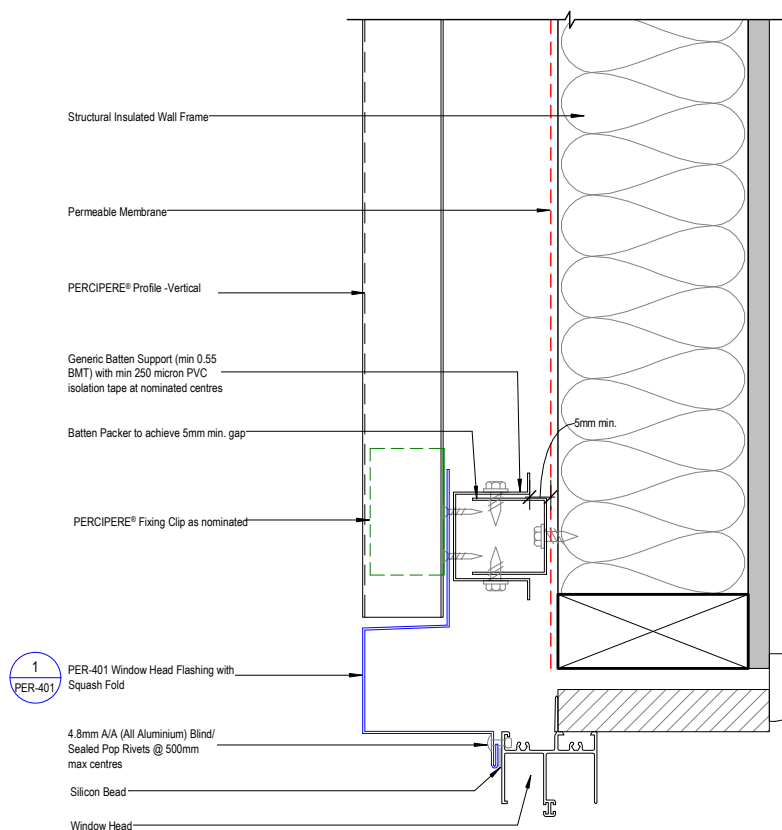
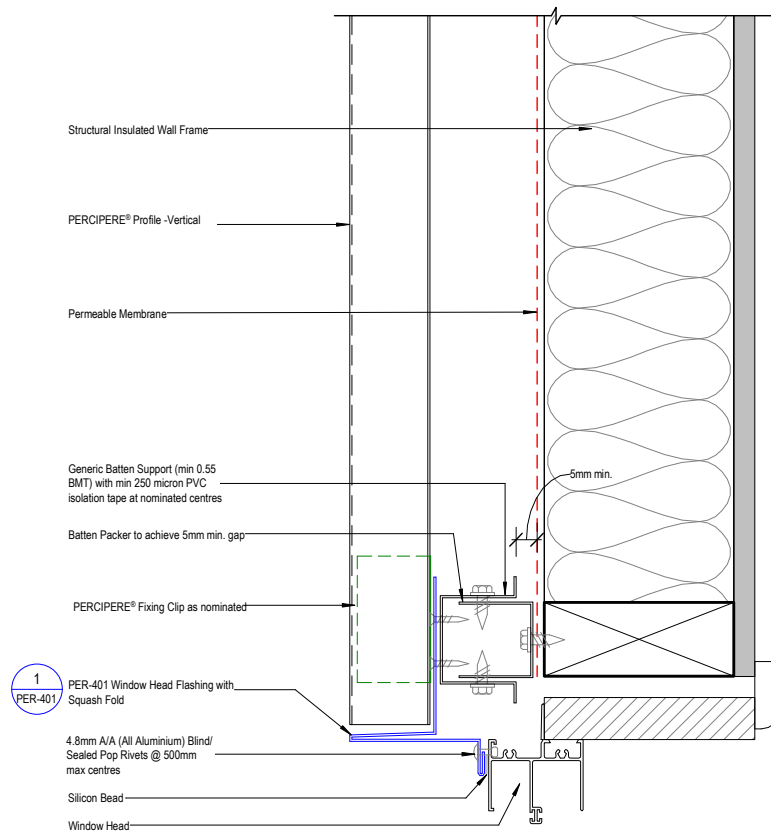


Figure 6.7.2.13:

Window Head Detail - Unsupported PERCIPERE® Panel - Vertical Fix Option 2 - S11-I1b



6.7.3 PERCIPIERE® MANSARD ROOF / WALL

Figure 6.7.3.1

PERCIPIERE® Mansard Roof - S12-21

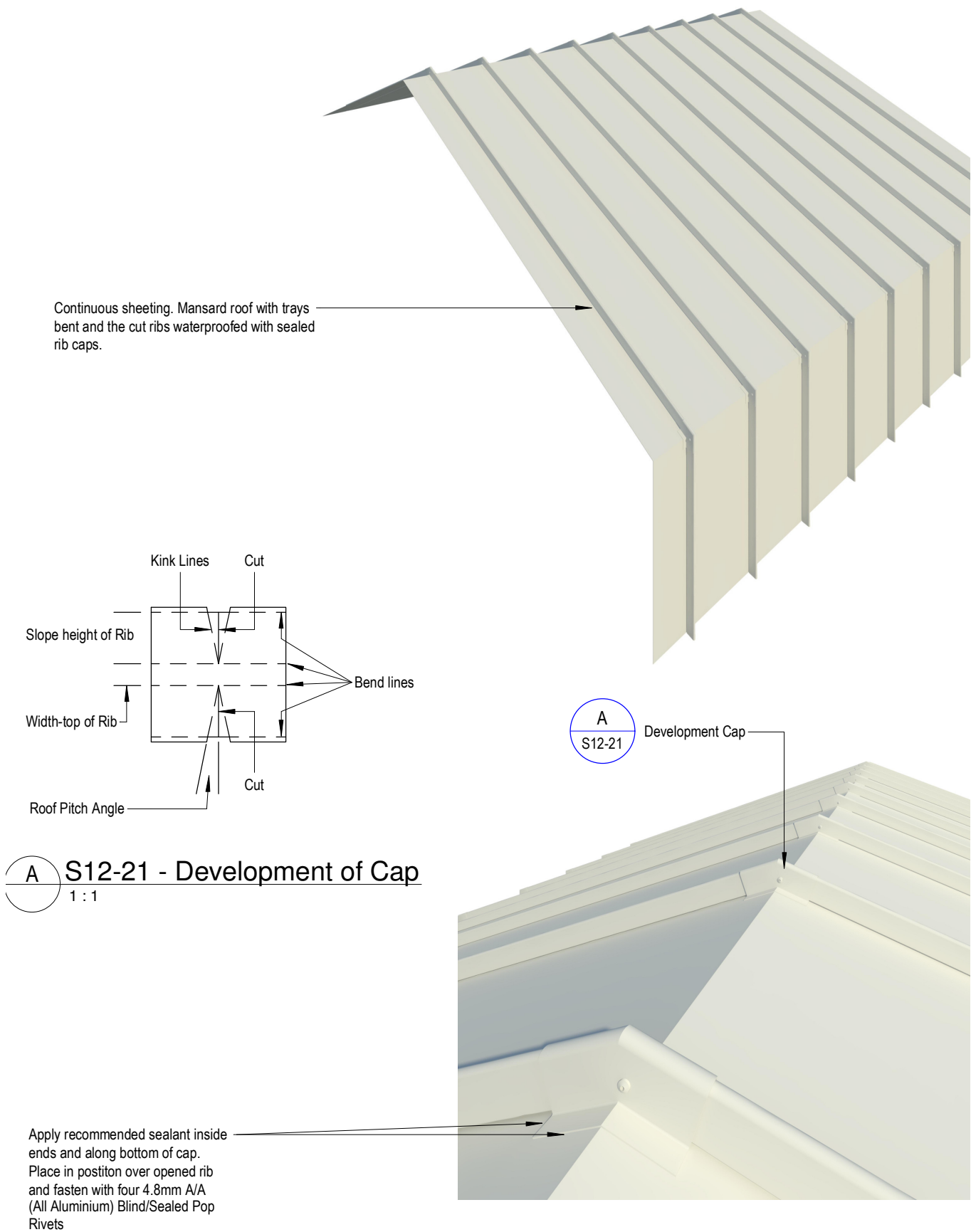
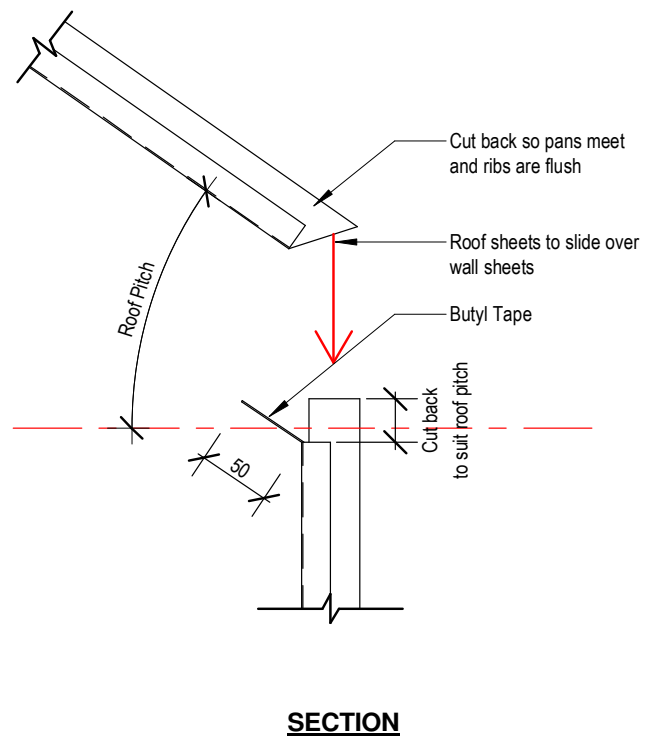
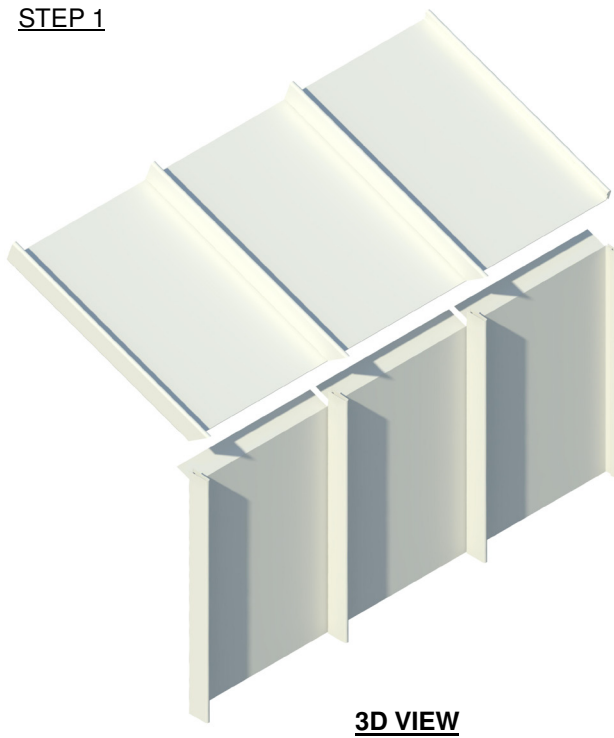


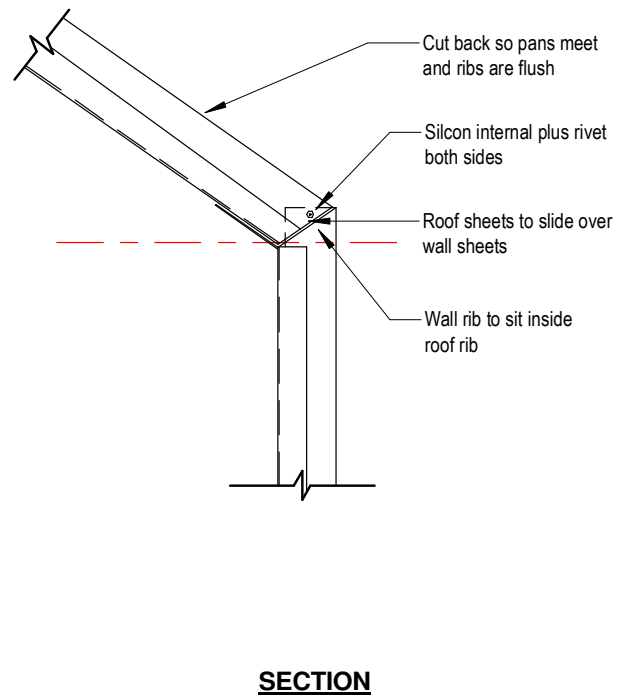
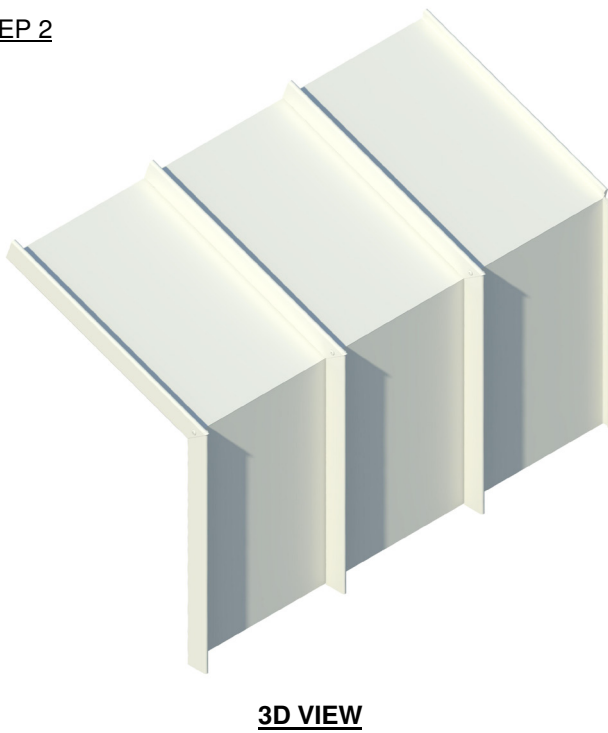
Figure 6.7.3.2

Typical Wall Cladding Setout - Unsupported PERCIPERE® Vertical Fix - Plan View - S12-22

STEP 1



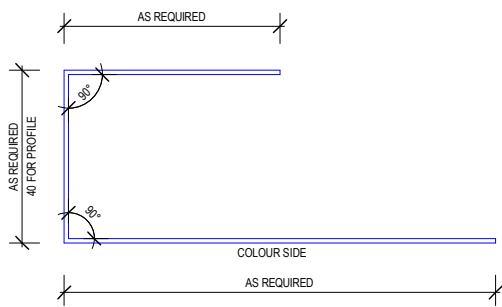
STEP 2



6.7.4 PERCIPERE® TYPICAL FLASHINGS

Figure 6.7.4.1

PER-100 - J Mould Flashings



PER-100 - J Mould Flashing with Squash Fold

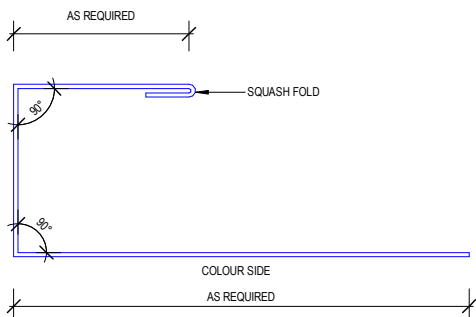
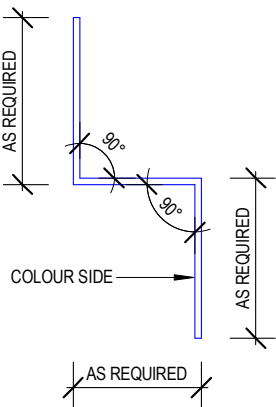


Figure 6.7.4.2

PER-101 - Z Mould Flashings



PER-101 - Z Mould Flashing with 1 Squash Fold

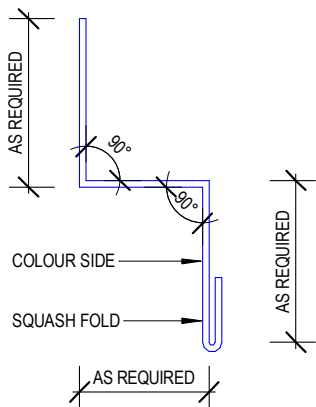
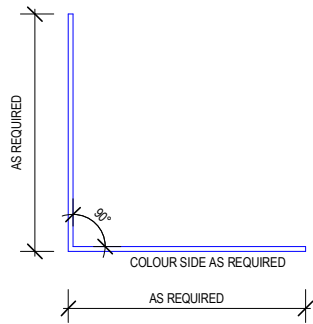
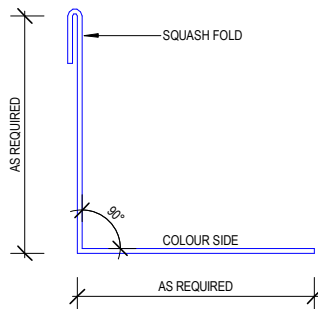


Figure 6.7.4.3

PER-102 - L Mould Flashings



PER-102 - L Mould Flashing with 1 Squash Fold



PER-102 - L Mould Flashing with Squash Folds

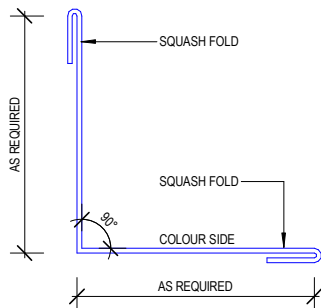
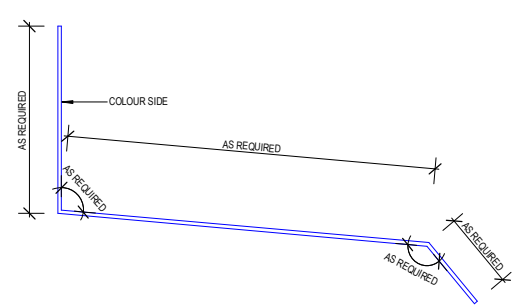


Figure 6.7.4.4

PER-103 - Apron Flashings



PER-103 - Apron Flashing with Squash Fold

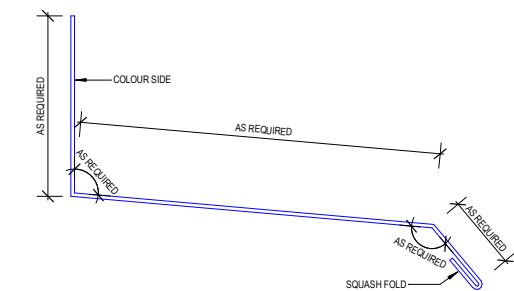


Figure 6.7.4.5

PER-104 - U Mould Flashing

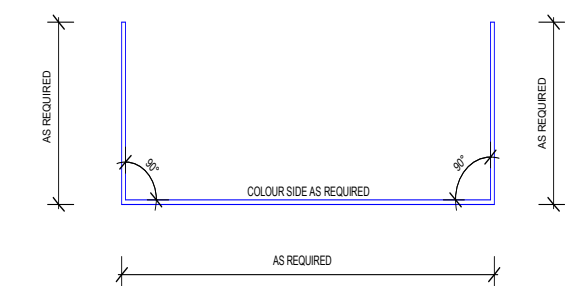


Figure 6.7.4.6

PER-200 - External Corner Over Flashing

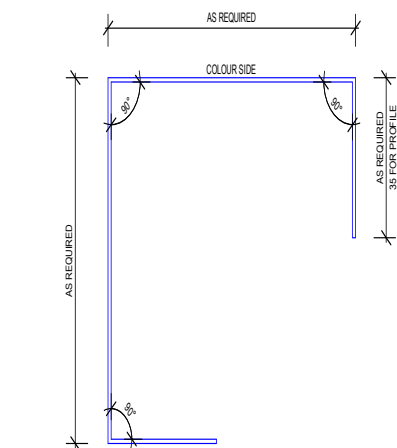


Figure 6.7.4.7

PER-201 - Single Return Over Flashing

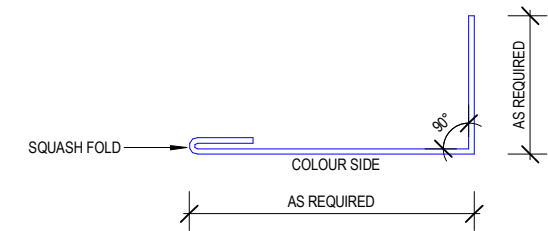


Figure 6.7.4.8

PER-202 - Internal Corner Over Flashing

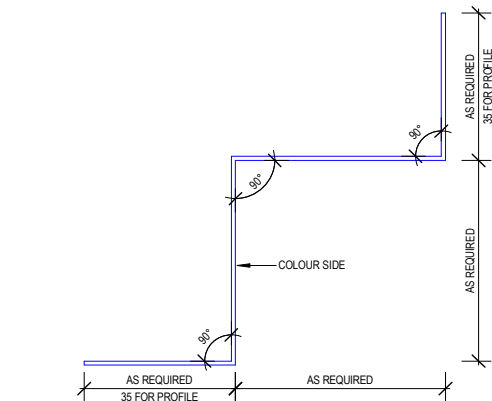
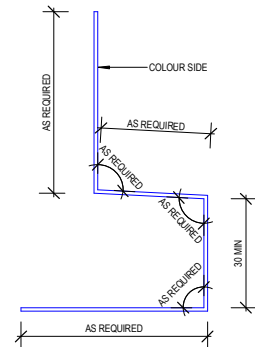


Figure 6.7.4.9

PER-203 - Base Flashings



PER-203 - Base Flashing with Squash Fold

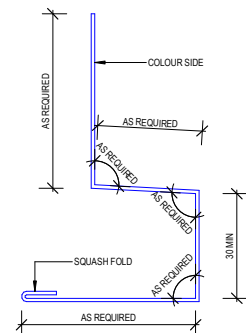


Figure 6.7.4.10

PER-204 - Aluminium Base Flashing with Ventilation

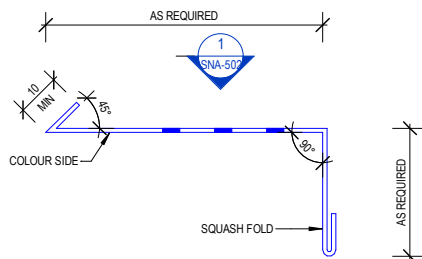


Figure 6.7.4.11

PER-205 - Top of Wall Flashing

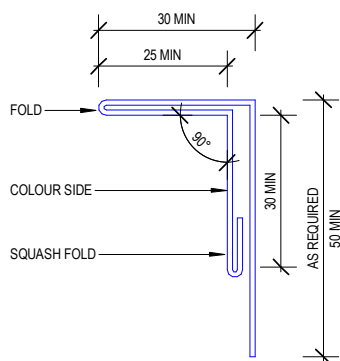
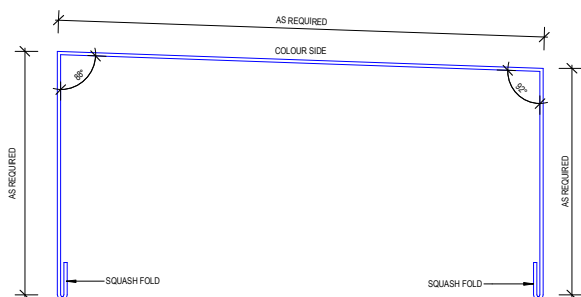


Figure 6.7.4.12

PER-206 - Parapet Top Flashing with Squash Folds



PER-206 - Parapet Top Flashing with Squash Fold and return

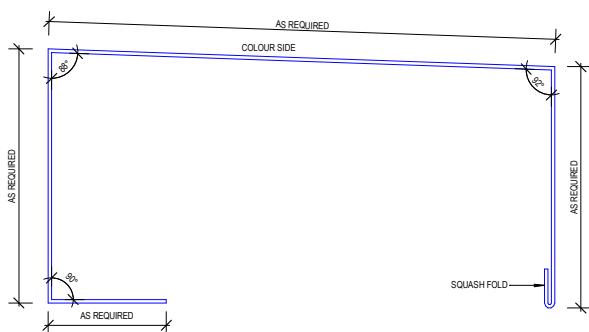


Figure 6.7.4.13

PER-300 - Roof Valley Flashing

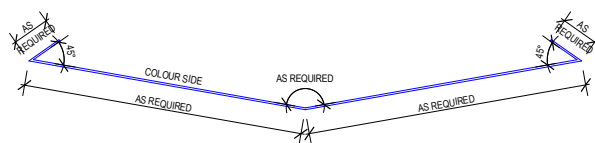
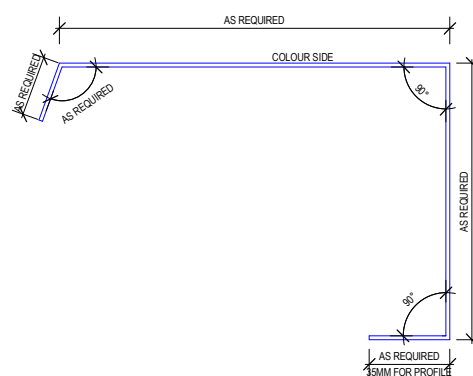


Figure 6.7.4.14

PER-301 - Barge Flashing with returns



PER-301 - Barge Flashing with return and Squash Fold

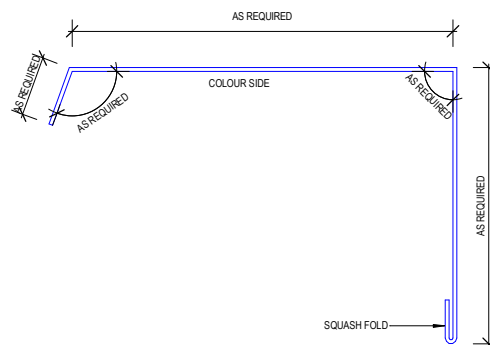


Figure 6.7.4.15

PER-302 - Ridge Cap Flashing

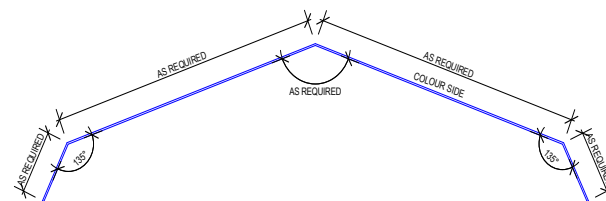
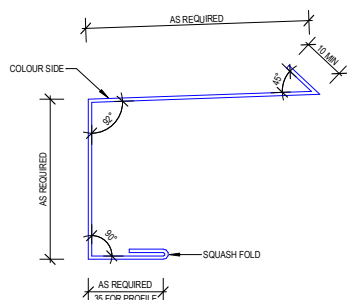
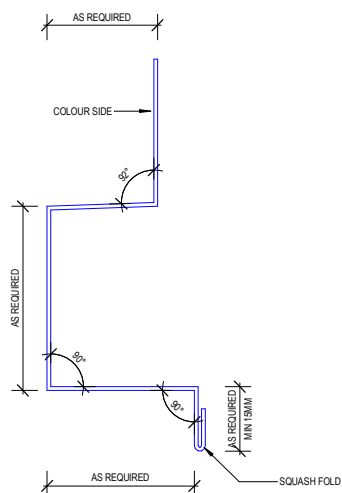


Figure 6.7.4.16

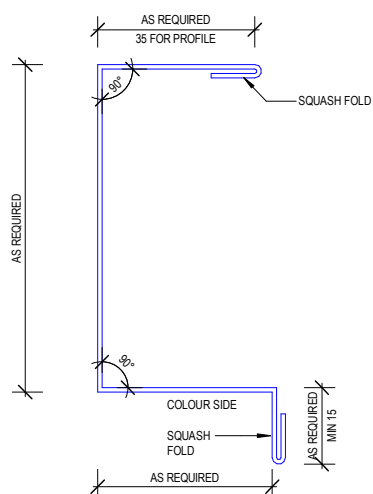
PER-400 - Window Sill Flashing with Squash Fold

**Figure 6.7.4.17**

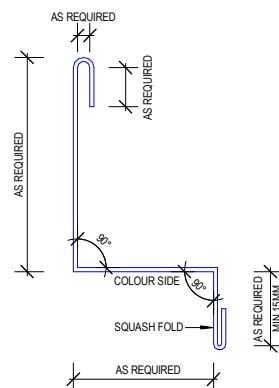
PER-401 - Window Head Flashing with Squash Fold

**Figure 6.7.4.18**

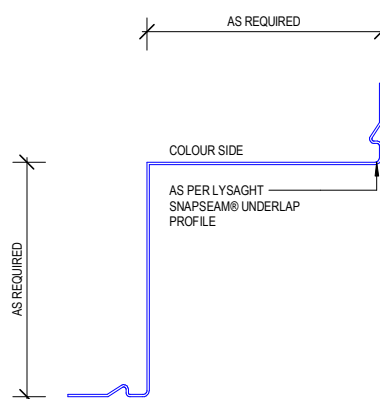
PER-402 - Window Jamb Flashing with Squash Folds

**Figure 6.7.4.19**

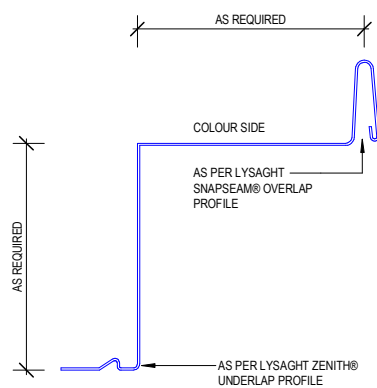
PER-403 - Window Z flashing with Squash Fold

**Figure 6.7.4.20**

PER-500 - External Corner Details - Underlap Underlap



PER-500 - External Corner Details - Overlap Underlap



PER-500 - External Corner Details - Overlap Overlap

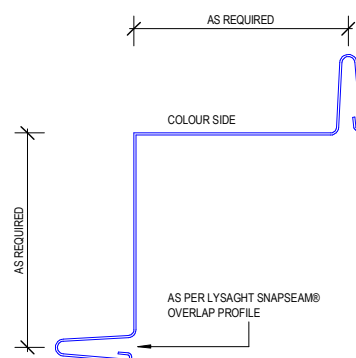
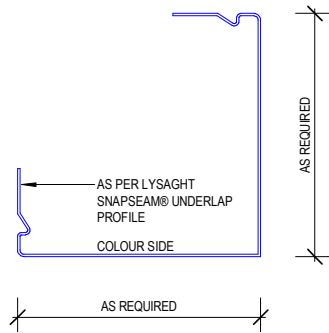
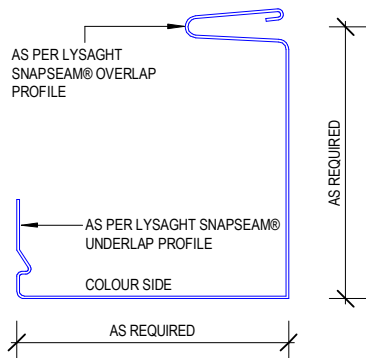


Figure 6.7.4.21

PER-501 - Internal Corner Details - Underlap Underlap



PER-501 - Internal Corner Details - Overlap Underlap



PER-501 - Internal Corner Details - Overlap Overlap

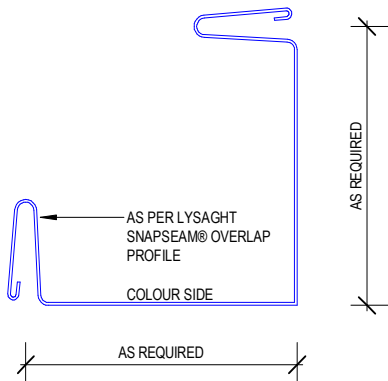


Figure 6.7.4.22

PER-502 - Perforation Detail

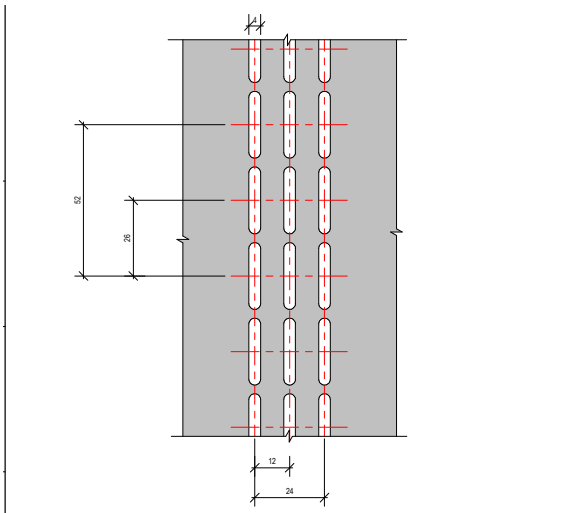
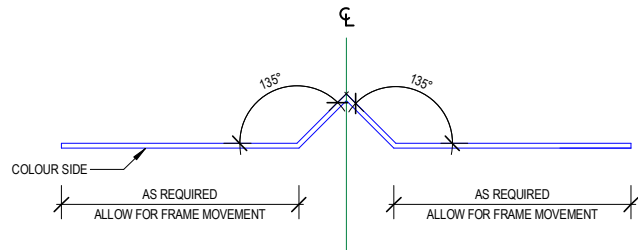


Figure 6.7.4.23

PER-503 - Corrosion Resistant Flashing

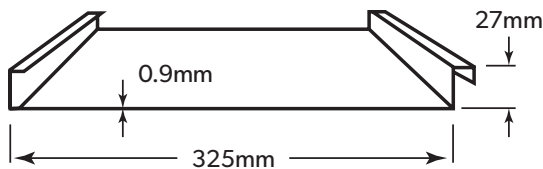


7.0 PERPETUAL™

PERPETUAL™ is a classic, versatile solution for both stylish and elegant design. PERPETUAL™ cladding is available in single seamed or double seamed and is able to be curved to a min radius of 1.5m, providing greater design freedom. This with its clean lines, provide a striking finish with exceptional results. PERPETUAL™ roofing and walling is available in the PERMALITE® standard range of colours or project specific colours to separate your next project from the rest. (Minimum order quantities may apply.)

Figure 7.0.1:

PERPETUAL™ Profile



7.1 PERPETUAL™ PROFILE DETAILS

PERPETUAL™ roofing and walling is available in 1 standard width as depicted in Table 7.1.1. Additionally, PERPETUAL™ is available in custom widths between 180mm wide and 465mm wide.

SIZES

Table 7.1.1:

PERPETUAL™ Size

Product	Thickness (mm)	Rib Height (mm)	Cover width (mm)
PERPETUAL™ 325	0.90	27	325

MASSES

Table 7.1.2:

PERPETUAL™ Masses

Product	Material	Mass/unit length (kg/m)	Mass/unit area (kg/m²)
PERPETUAL™ 325	0.9mm BMT	0.85-0.90	2.6-2.8

Note: Masses are approximate values for standard, single-sided paint system. For other variants, please contact your local Lysaght branch.

YIELD STRESS

Table 7.1.3

PERPETUAL™ Yield Stress

Product	Material	Yield Stress (MPa)
PERPETUAL™ 325	5251 H32 Marine Grade Aluminium	230

LENGTHS

Sheets are supplied custom cut to length¹.

Table 7.1.4:

PERPETUAL™ Sheet Lengths

Product	Minimum (mm)	Maximum (mm)
PERPETUAL™ 325	1,000	8000 ²

Notes:

1. Maximum and minimum lengths apply based on profile, point of production & transport regulations. For more information, contact your local Lysaght branch.
2. To assist minimising the potential effects of oil canning in PERPETUAL™ cladding it is recommended to keep panel length under the maximum recommended length. Longer lengths may be available subject to minimum order quantity

TOLERANCES

Table 7.1.5:

PERPETUAL™ Tolerances

Length (mm)	Width (mm)
+/- 3mm	+/- 2mm

MINIMUM ROOF PITCH

Table 7.1.6

PERPETUAL™ Minimum Roof Pitch

Product	Sealed Side Laps	Unsealed Side Laps
PERPETUAL™ 325	3 degrees	7.5 degrees

7.2 PERPETUAL™ FASTENERS

Table 7.2.1:

Fastener Specification – PERPETUAL™

Application	Fixing to 0.55mm BMT G550 steel	Fixing to 3mm Aluminium	Fixing to plywood / Timber battens
Non-Cyclonic	10-16 x 16mm FLAT PH#2 B8 Coating SDM	10-16 x 25mm Smooth Top Stainless Steel Fixing PH#2 SS304 & SS420 SDM	8-10 X 25mm CSK SQ #2 SS304 SUREQUIK

Note: 250 micron thick PVC isolating tape required between sheet and clips / screws

7.3 SHEETS REQUIRED

Table 7.3.1:

Sheets required – 325mm Cover – PERPETUAL™ 325

Width of roof/ wall (m)	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	30	40	50
Number of sheets required	10	13	16	19	22	25	28	31	34	37	40	44	47	50	53	56	59	62	93	124	154

7.4 WIDTH COVERED

Table 7.4.1:

Width covered - 325mm Cover – PERPETUAL™ 325

Number of sheets	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Width of roof/ wall covered (m)	0.98	1.30	1.63	1.95	2.28	2.60	2.93	3.25	3.58	3.90	4.23	4.55	4.90	5.20	5.53	5.85	6.13	6.50

7.5 DESIGN DATA

7.5.1 PERPETUAL™: LIMIT STATE WIND PRESSURE CAPACITIES (kPa) - NON-CYCLONIC

Pan Width x BMT	Support Requirement	Clip Type / Spacing	Design pressure (kPa)		Application
			Serviceability	Strength	
325mm x 0.9mm BMT	Metal Batten:	Fixed / 700mm	0.66	3.1	Roofing and Walling
	Steel: 40mm x 0.55mm BMT G550				
	Aluminium: 40mm x 3.0mm BMT				
	Batten Span: 1200 mm	Fixed / 350mm	0.75	3.9	
	Minimum Purlin/support thk BMT: Steel- 1.0mm BMT G550 / Aluminium - 3.0mm BMT H36				
	19mm F11 CD structural Grade plywood (roofing applications)	Sliding / 700mm	0.73	3.9	Roofing and Walling
	15mm F11 CD structural Grade plywood (walling applications)				
	Maximum support spacing 600 mm	Fixed / Sliding / 350mm	0.73	4.6	

7.5.2 PERPETUAL™ : MAXIMUM SUPPORT SPACINGS (1)

PERPETUAL™	325mm Face width
	0.9mm BMT PERPETUAL™
Application	Non-cyclonic
TYPE OF SPAN	
ROOF	
Single Span (mm)	Fixed clip at 350 c/c at roof edge.
End Span (mm)	Sliding clip at 700 at general areas
Internal Span (mm)	
Overhang (mm)	100
WALLS	
Single Span (mm)	Fixed clip at 350 c/c at roof edge.
End Span (mm)	Sliding clip at 700 at general areas
Internal Span (mm)	
Overhang (mm)	100

(1) Refer Section 3.4 - Support Spacing and Overhang for loading parameters applicable to MAXIMUM SUPPORT SPACINGS. For Projects outside these loading parameters (Region B) designers should reference LIMIT STATE WIND CAPACITIES tables to determine appropriate support spacings. (fixed clips for batten insulation)

7.6 TYPICAL INSTALLATION DETAILS

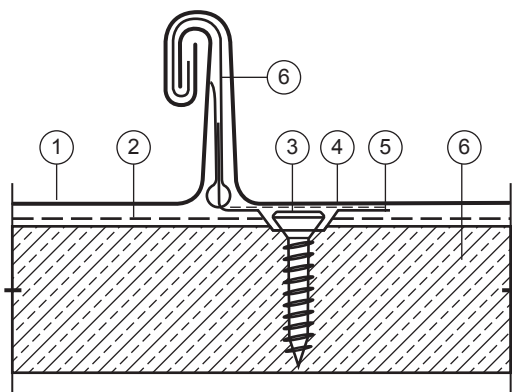
PERPETUAL™ roofing and walling is designed to be directly fixed to 19mm CD grade plywood substrate utilising stainless steel, fixed and sliding clips with a heavy duty metal roof sarking membrane underlay as shown in Figure 7.6.1. Clip type and centres are determined as per Figure 7.6.3.

For curved applications identical fixing requirements apply, with CD ply sheeting to be curved and affixed to the structure prior to PERPETUAL™ installation. Positioning and fixing of fixed and sliding clips are as per recommendations for straight sheets.

Fixing centres for PERPETUAL™ utilising the fixed and sliding clips to CD ply substrate are generally 165mm c/c to building edges and 350mm c/c to all other areas as shown as per Figure 7.6.3.

Figure 7.6.1

PERPETUAL™ Seamed Detail



Legend:

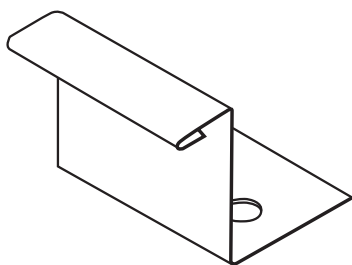
1. 25-300 Profile
2. Heavy Duty Metal Roof Sarking (or equivalent)
3. M4, 8-15x16 Smooth Top Screws - Class 3
4. Separation Tape
5. Sliding Clip
6. CD Grade Ply (15mm for wall and 19mm for roof)

Figure 7.6.2:

PERPETUAL™ Clips

300-25 Standing Seam Fixed Clip

NTS



300-25 Standing Seam Sliding Clip

NTS

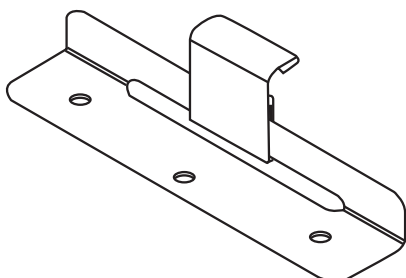
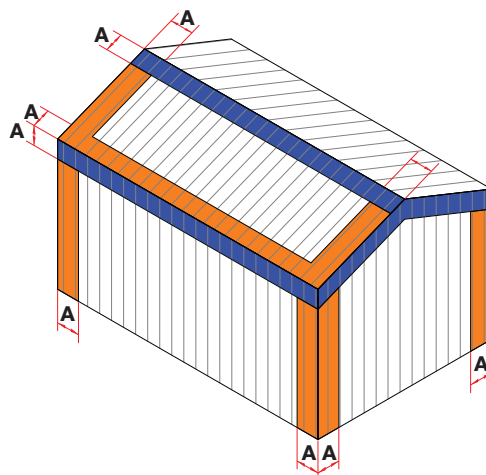


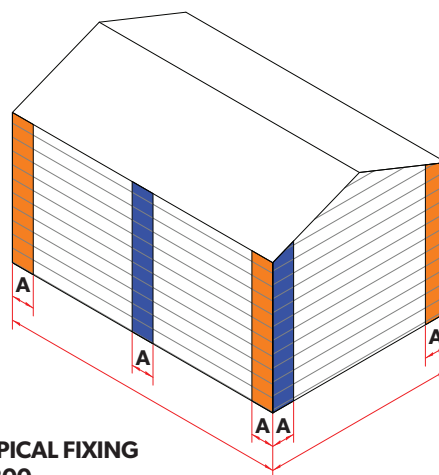
Figure 7.6.3:

PERPETUAL™ clip installation

VERTICAL LAY



HORIZONTAL LAY



TYPICAL FIXING 1:200

LEGEND	
	Sliding clips @ 700mm max cntrs
	Fixed clips @ 350mm max cntrs
	Sliding clips @ 350mm max cntrs
A	Edge of building as defined in AS4055 & AS1170.2

For installation on steel batten support, Only the fixed clip can be used. These should be used at 350mm centres at the building edges and 700mm centres in all other areas. Sheet lengths on steel batten support to be a max. of 12m. Anything over 12m is to be fixed on ply backing (supported).

7.6.1 INSULATION

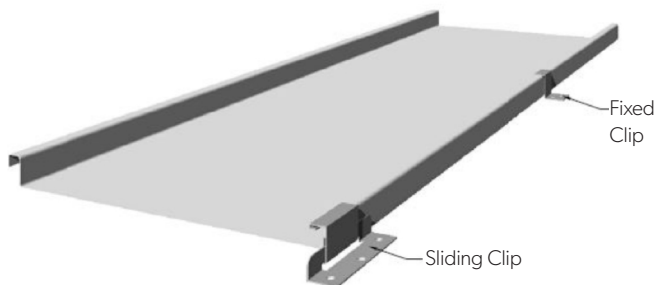
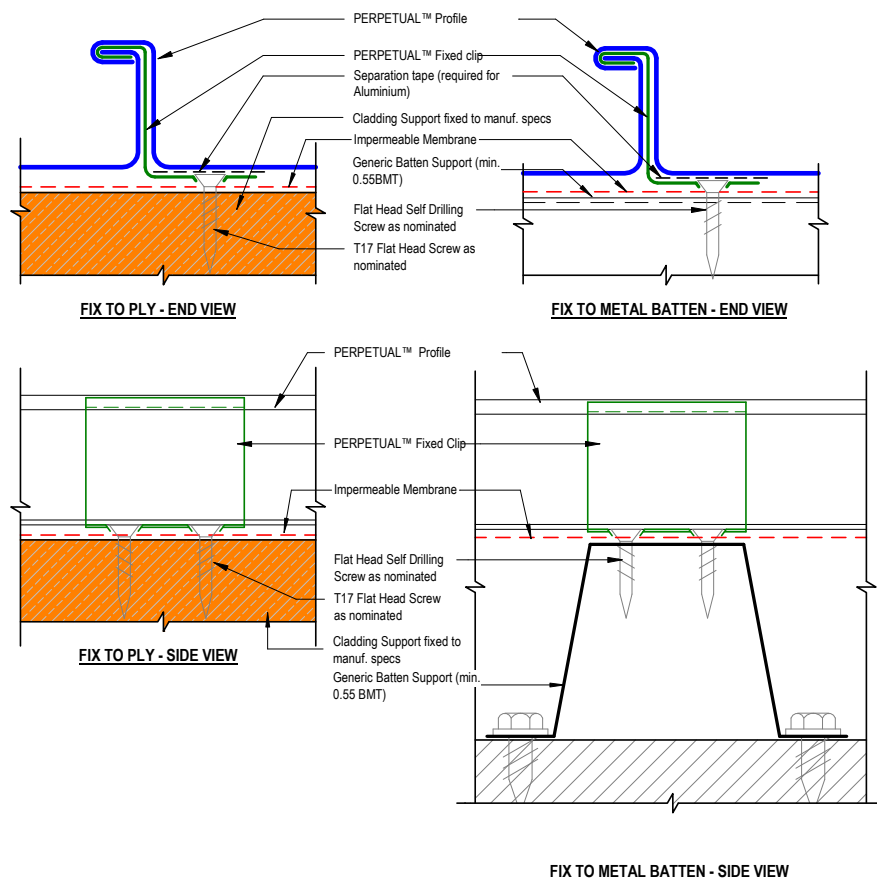
Care needs to be taken when installing insulation with PERPETUAL™ roofing or wall cladding. PERMALITE® recommend that the insulation be installed below CD Ply sheeting rather than between PERPETUAL™ and the ply sheeting. This will help maintain R_w values as well as eliminate any bulging in the profile caused by the insulation. When the screw is properly tightened into timber the screw must penetrate the timber as shown in Figure 7.6.2.1.

7.6.2 WALL CLADDING

PERPETUAL™ wall cladding may be installed horizontally or vertically. Careful attention should be given to the type, location and centres of fixing clips as noted in Figure 7.6.3 PERPETUAL™ clip installation.

Figure 7.6.2.1:

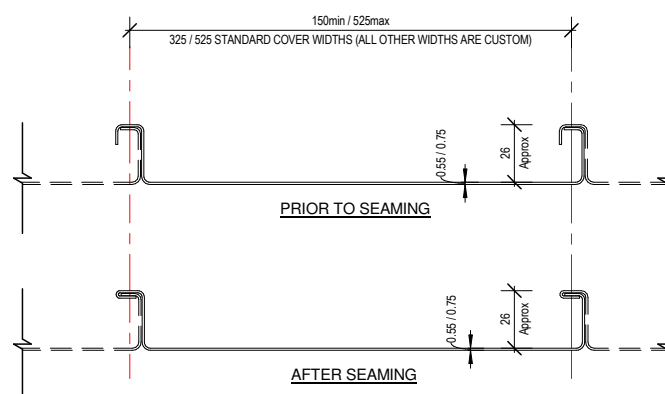
Clips Screw Fixing



Clips are progressively installed along the leading edge of the sheet. Once the overlap has been completed then the full length of the lapped ridge is single, seamed, incorporating the clips into the seam, with the seaming machine.

Figure 7.6.2.2:

Seaming

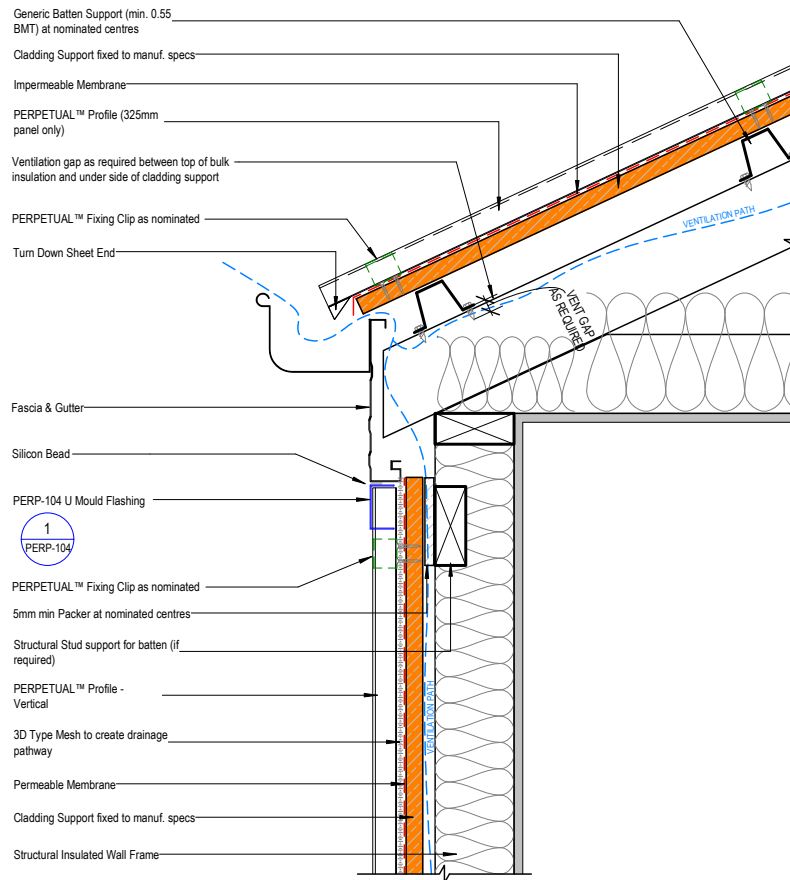


7.6.3 ROOFING INSTALLATION

PERPETUAL™ may be installed to either metal battens or to 19mm CKD grade Structural ply. If installing on ply then a min of 20mm ventilation space is required behind the CD grade ply backing to avoid condensation to the ply sheeting. This is generally readily achieved as depicted in FIGURE 7.6.3.1: PERPETUAL™ on Ply General Arrangement

Figure 7.6.3.1:

PERPETUAL™ on Ply General Arrangement - I09-04

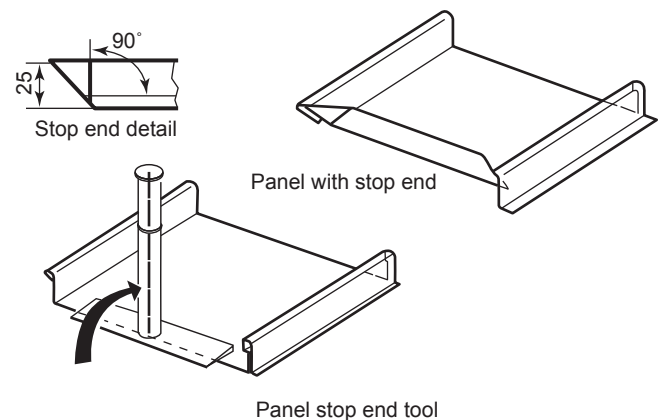


7.6.4 PERPETUAL™ TYPICAL UPTURN / TURN DOWN

1. Place pan into the panel stop end tool. The front edge of the tool must rest between the ribs.
2. While maintaining pressure against the panel, rotate the stop end tool as close to 90° as possible.
3. Inspect completed bend to ensure no material tears have occurred. Any tears should be sealed.

Figure 7.6.4.1:

PERPETUAL™ turn up turn down



7.7. PERPETUAL™ TYPICAL CONSTRUCTION DETAILS

The following table details the construction drawings included in this manual.

PERPETUAL™ HORIZONTAL WALL CLADDING ON BATTENS		
Figure	Title	Page
7.7.1.1	PERPETUAL™ Horizontal Wall Cladding On Battens General Arrangement – Plan View - I04-01	73
7.7.1.2	PERPETUAL™ Horizontal Wall Cladding On Battens General Arrangement – Section View - I04-02	73
7.7.1.3	PERPETUAL™ Horizontal Wall Cladding External Corner - I05-01	74
7.7.1.4	PERPETUAL™ Horizontal Wall Cladding Internal Corner - I06-01	74
7.7.1.5	PERPETUAL™ Horizontal Wall Cladding Wall Closure - I07-01	75
7.7.1.6	PERPETUAL™ Horizontal Wall Cladding Wall Base - I08-01	75
7.7.1.7	PERPETUAL™ Horizontal Wall Cladding Top Of Wall - Zero Overhang - I09-01	76
7.7.1.8	PERPETUAL™ Horizontal Wall Cladding Top Of Wall - Overhang - I09-05	76
7.7.1.9	PERPETUAL™ Horizontal Wall Cladding Wall Closure - I11-01	77
7.7.1.10	PERPETUAL™ Horizontal Wall Cladding Window Detail - Sill - I11-05	77
PERPETUAL™ VERTICAL WALL CLADDING ON BATTENS		
Figure	Title	Page
7.7.2.1	PERPETUAL™ Vertical Wall Cladding on Battens General Arrangement – Plan View - I04-05	78
7.7.2.2	PERPETUAL™ Vertical Wall Cladding on Battens General Arrangement – Section View - I04-06	78
7.7.2.3	PERPETUAL™ Vertical Wall Cladding External Corner - Vertical Fix - I05-05	79
7.7.2.4	PERPETUAL™ Vertical Wall Cladding Internal Corner - Vertical Fix F-F - I06-04	79
7.7.2.5	PERPETUAL™ Vertical Wall Cladding Wall Closure - I07-03	80
7.7.2.6	PERPETUAL™ Vertical Wall Cladding Wall Base - I08-03	80
7.7.2.7	PERPETUAL™ Vertical Wall Cladding Top Of Wall - Overhang - I09-07	81
7.7.2.8	PERPETUAL™ Vertical Wall Cladding Window Detail - Jamb - I11-03a	81
7.7.2.9	PERPETUAL™ Vertical Wall Cladding Window Detail - Jamb - I11-03b	82
7.7.2.10	PERPETUAL™ Vertical Wall Cladding Window Detail - Sill - I11-07	82
PERPETUAL™ ROOF CLADDING ON BATTENS		
Figure	Title	Page
7.7.3.1	PERPETUAL™ Roof Cladding On Battens General Arrangement – Plan View - I04-09	83
7.7.3.2	PERPETUAL™ Vertical Wall Cladding Top of Wall - Zero Overhang - I09-03	83
7.7.3.3	PERPETUAL™ Unsupported Cladding Roof Detail - I10-01	84
7.7.3.4	PERPETUAL™ Horizontal Wall Cladding Roof Detail - I10-08	84
7.7.3.5	PERPETUAL™ Vertical Wall Cladding Top of Wall - Zero Overhang - I12-03	85
7.7.3.6	PERPETUAL™ Vertical Wall Cladding Wall to Roof Detail - Vertical Fix - I12-11	85
7.7.3.7	PERPETUAL™ Wall Cladding Top of Wall - Zero Overhang - I12-15	86

7.7.1 PERPETUAL™ HORIZONTAL WALL CLADDING ON BATTENS

Figure 7.7.1.1

PERPETUAL™ Horizontal Wall Cladding On Battens General Arrangement – Plan View - I04-01

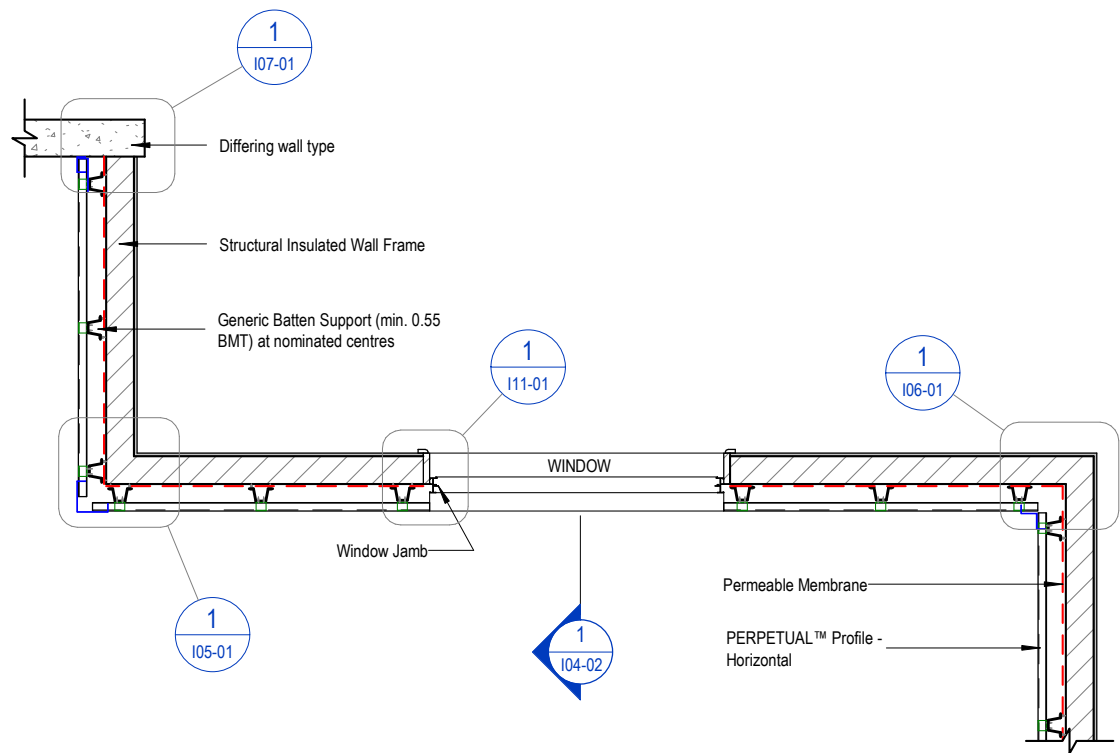


Figure 7.7.1.2

PERPETUAL™ Horizontal Wall Cladding On Battens General Arrangement – Section View - I04-02

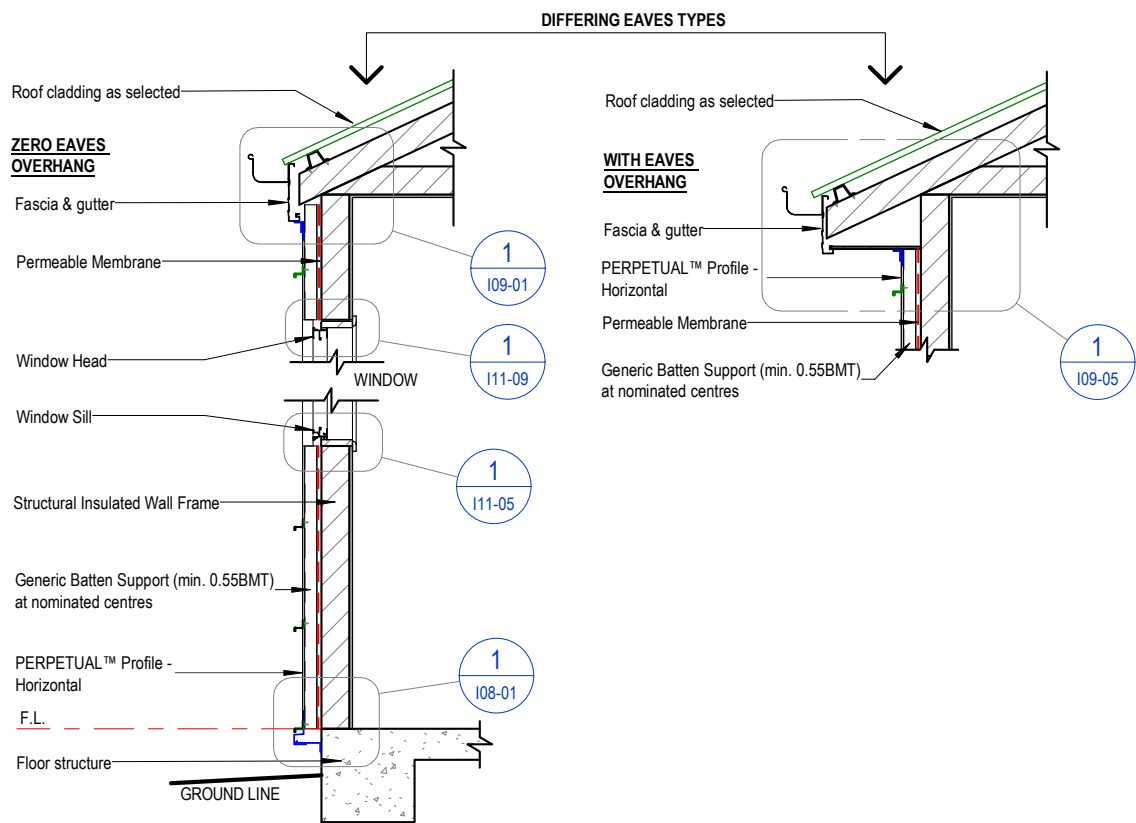


Figure 7.7.1.3

PERPETUAL™ Horizontal Wall Cladding External Corner - I05-01

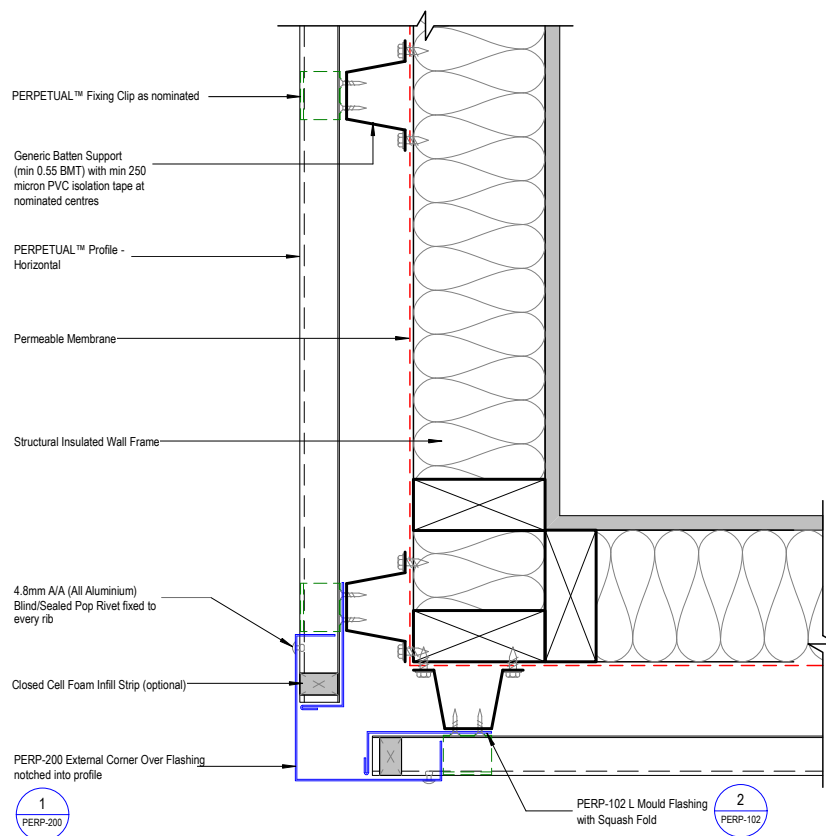


Figure 7.7.1.4

PERPETUAL™ Horizontal Wall Cladding Internal Corner - I06-01

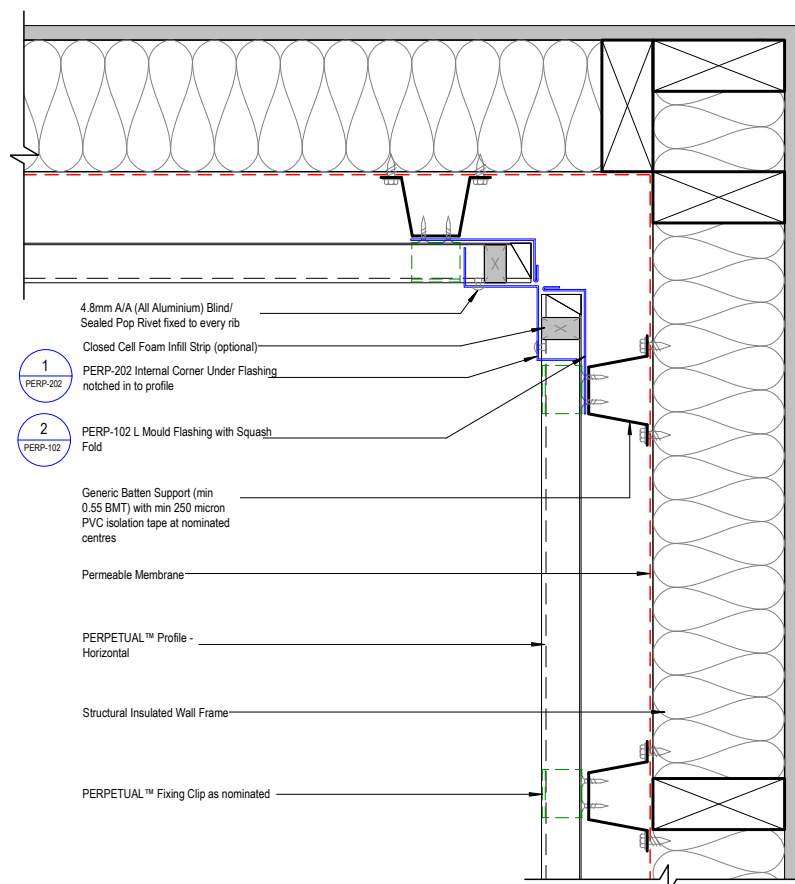


Figure 7.7.1.5

PERPETUAL™ Horizontal Wall Cladding Wall Closure - I07-01

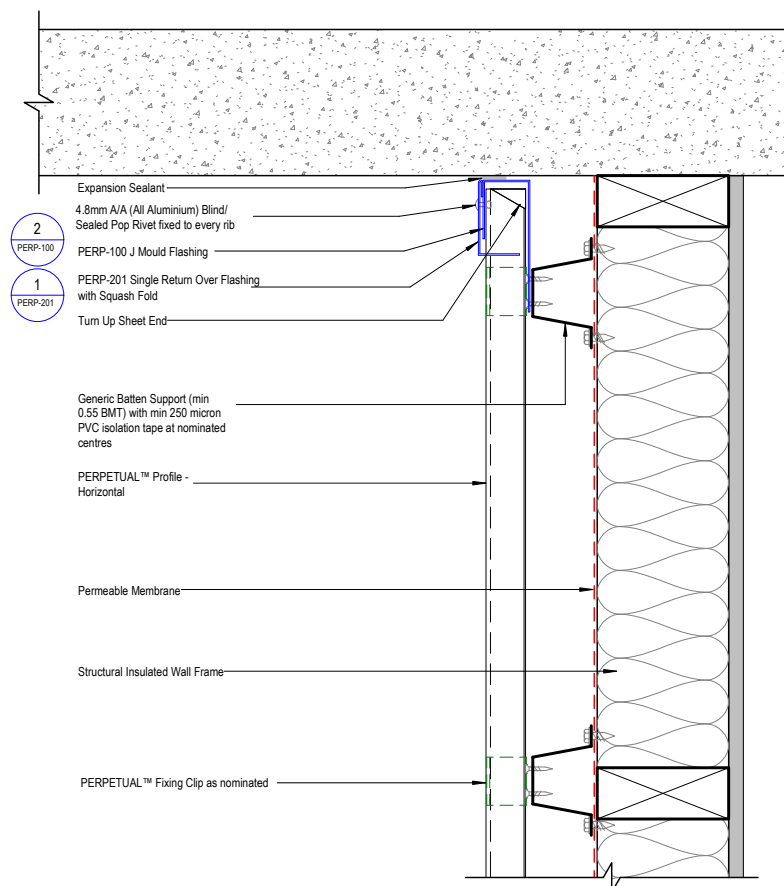


Figure 7.7.1.6

PERPETUAL™ Horizontal Wall Cladding Wall Base - I08-01

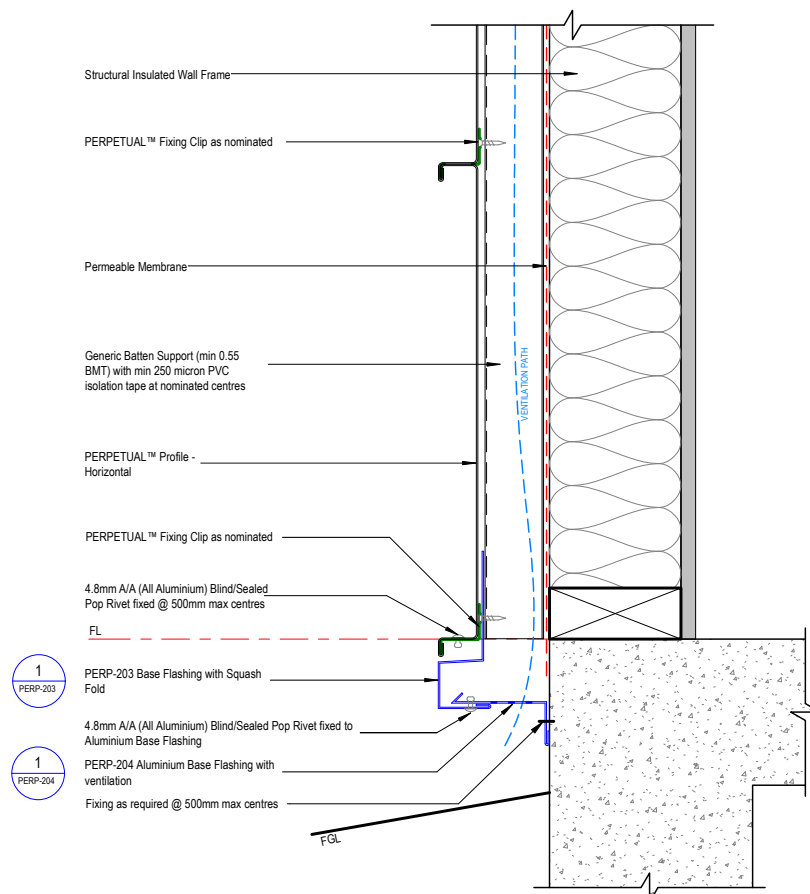


Figure 7.7.1.7

PERPETUAL™ Horizontal Wall Cladding Top Of Wall - Zero Overhang - I09-01

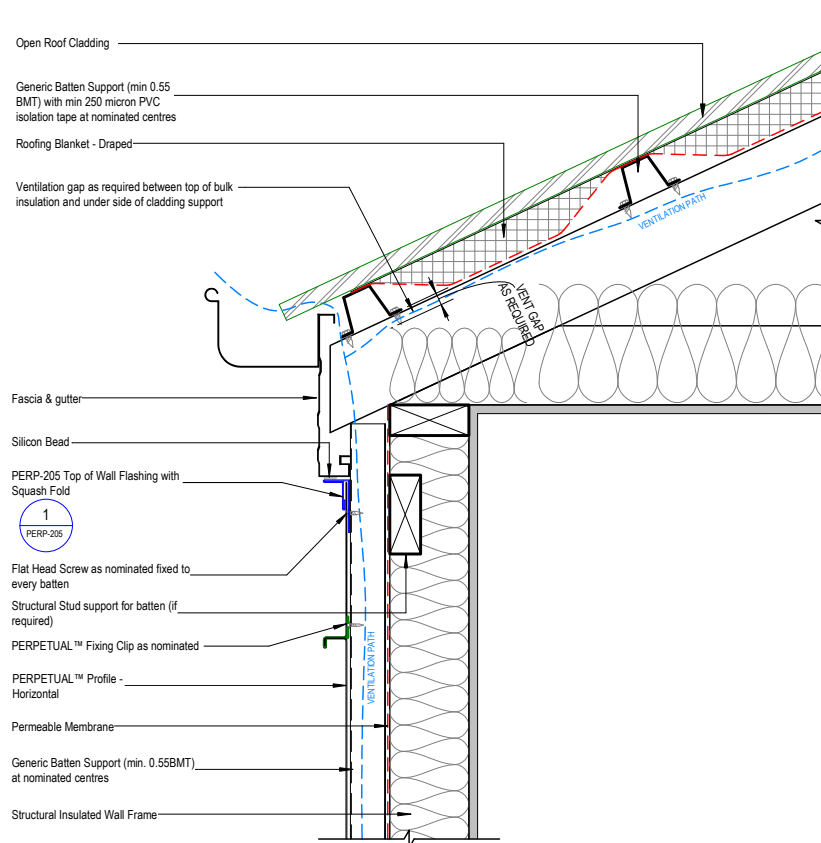


Figure 7.7.1.8

PERPETUAL™ Horizontal Wall Cladding Top Of Wall - Overhang - I09-05

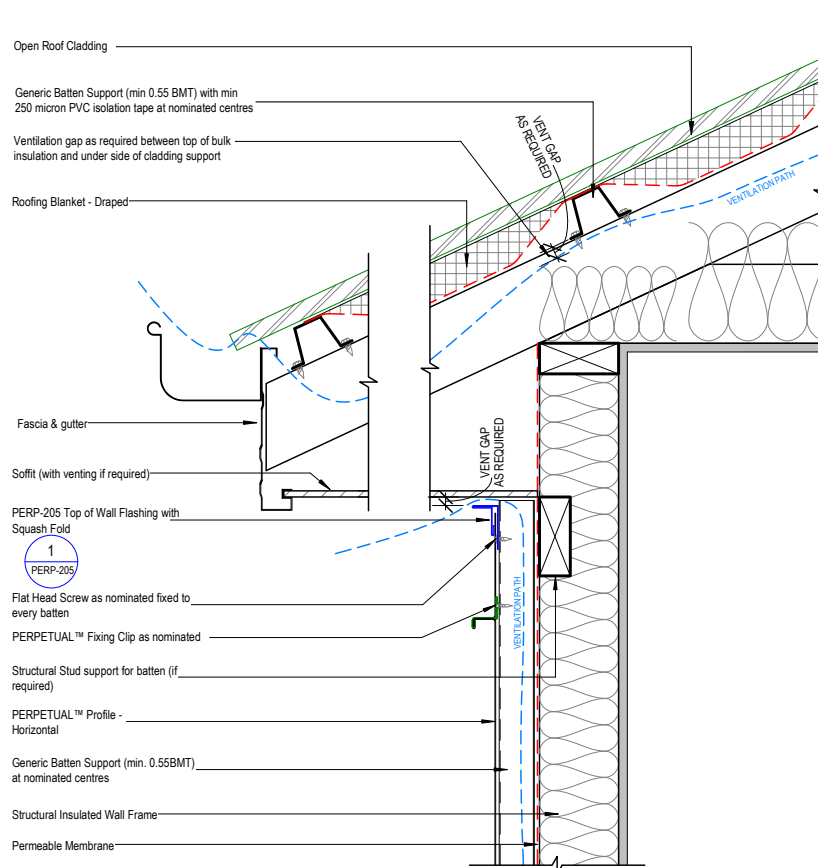


Figure 7.7.1.9

PERPETUAL™ Horizontal Wall Cladding Wall Closure - I11-01

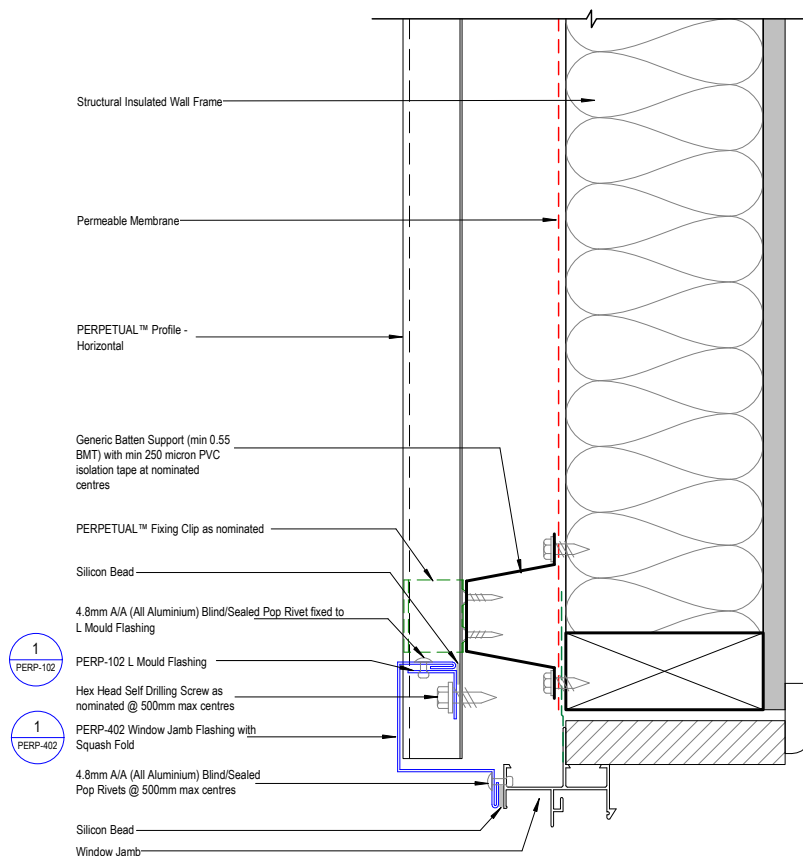
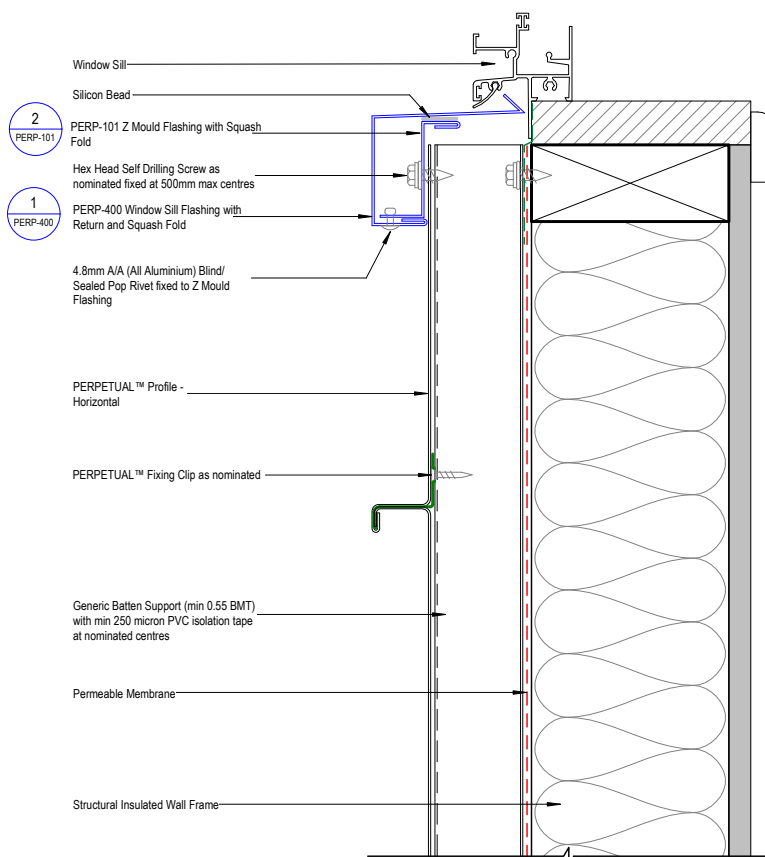


Figure 7.7.1.10

PERPETUAL™ Horizontal Wall Cladding Window Detail - Sill - I11-05



7.7.2 PERPETUAL™ VERTICAL WALL CLADDING ON BATTENS

Figure 7.7.2.1

PERPETUAL™ Vertical Wall Cladding on Battens General Arrangement – Plan View - I04-05

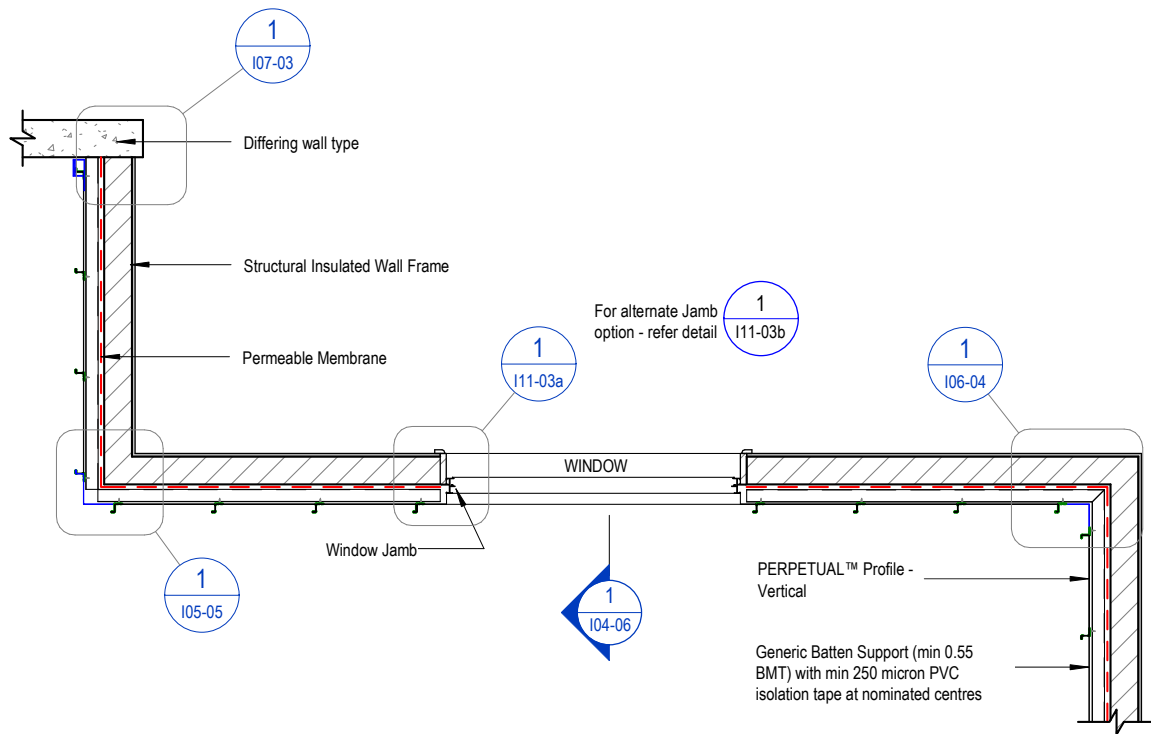


Figure 7.7.2.2

PERPETUAL™ Vertical Wall Cladding on Battens General Arrangement – Section View - I04-06

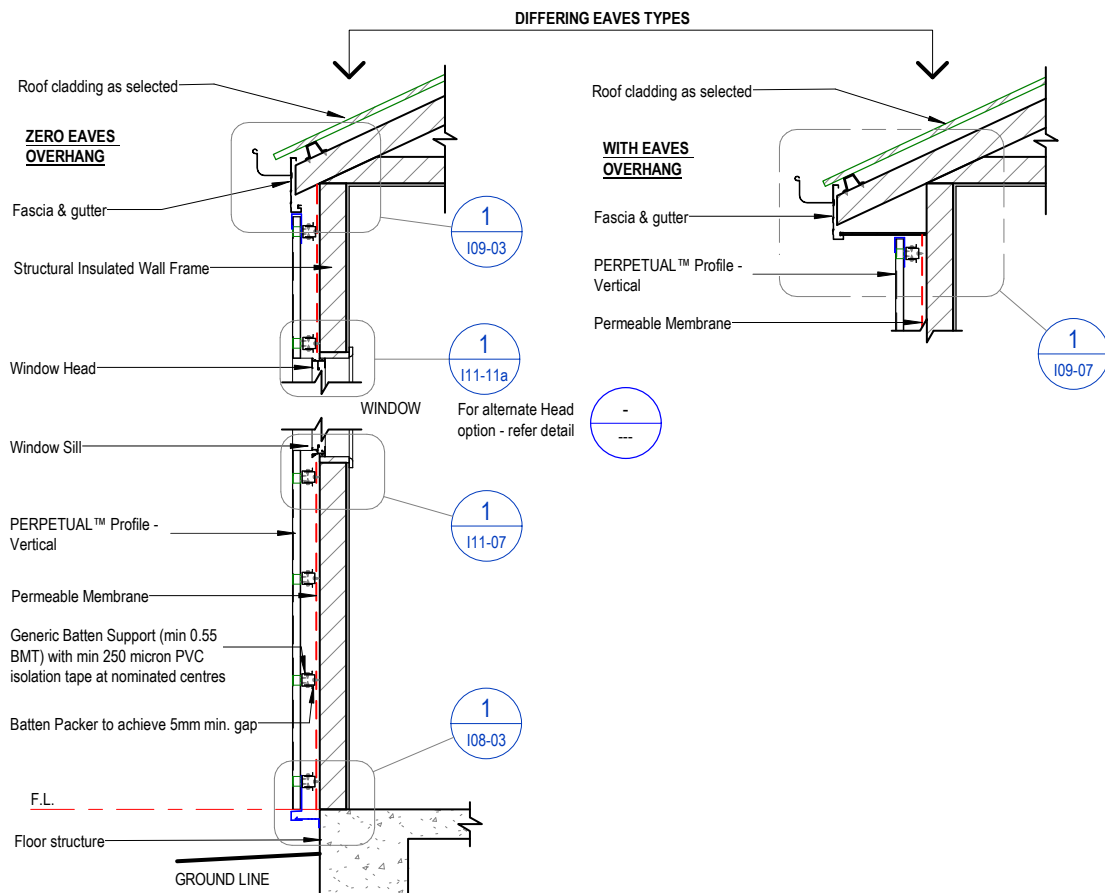


Figure 7.7.2.3

PERPETUAL™ Vertical Wall Cladding External Corner - Vertical Fix - I05-05

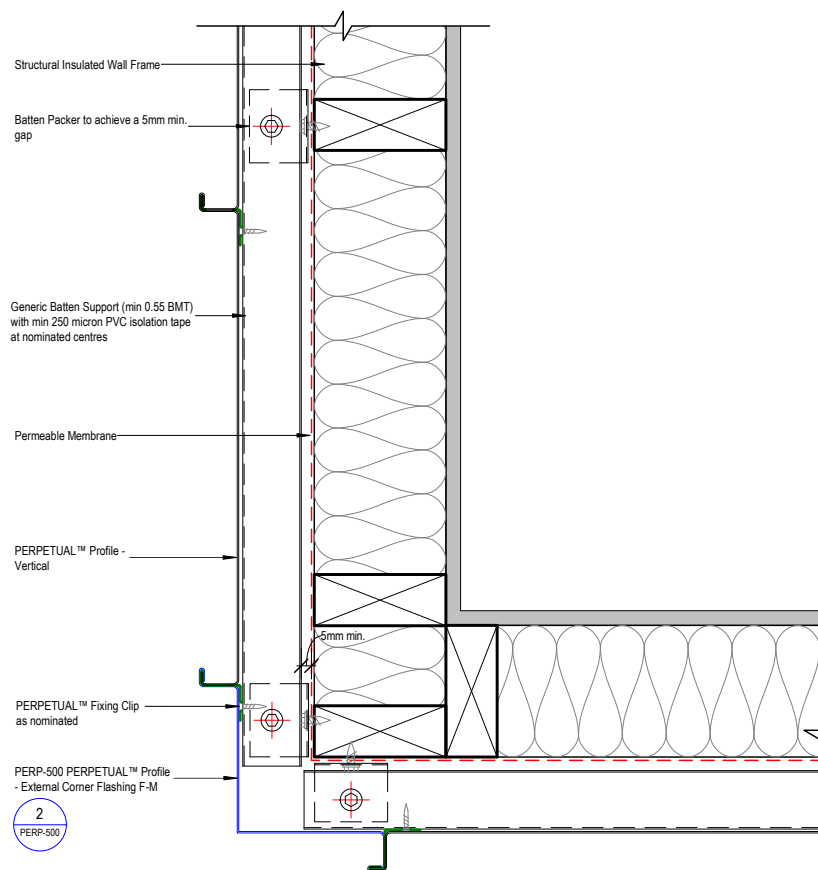


Figure 7.7.2.4

PERPETUAL™ Vertical Wall Cladding Internal Corner - Vertical Fix F-F - I06-04

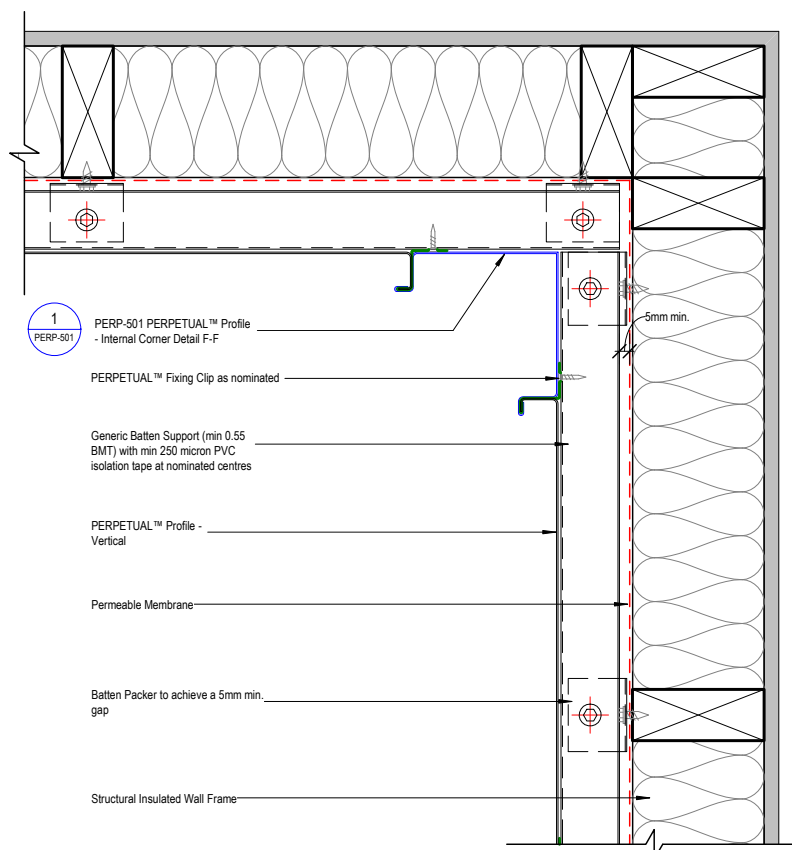


Figure 7.7.2.5

PERPETUAL™ Vertical Wall Cladding Wall Closure - I07-03

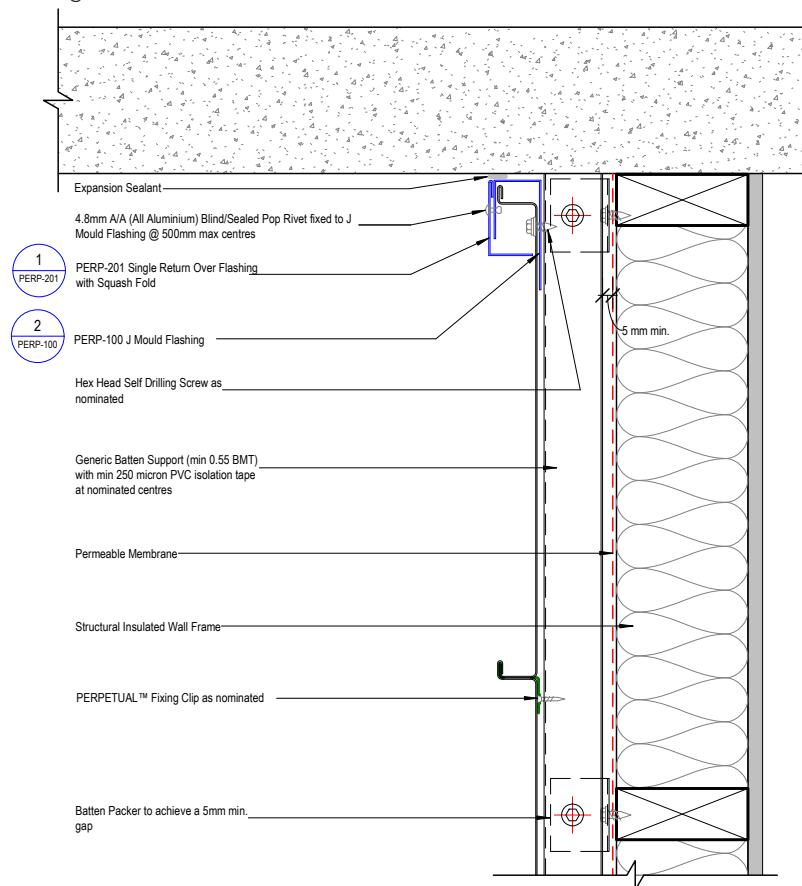


Figure 7.7.2.6

PERPETUAL™ Vertical Wall Cladding Wall Base - I08-03

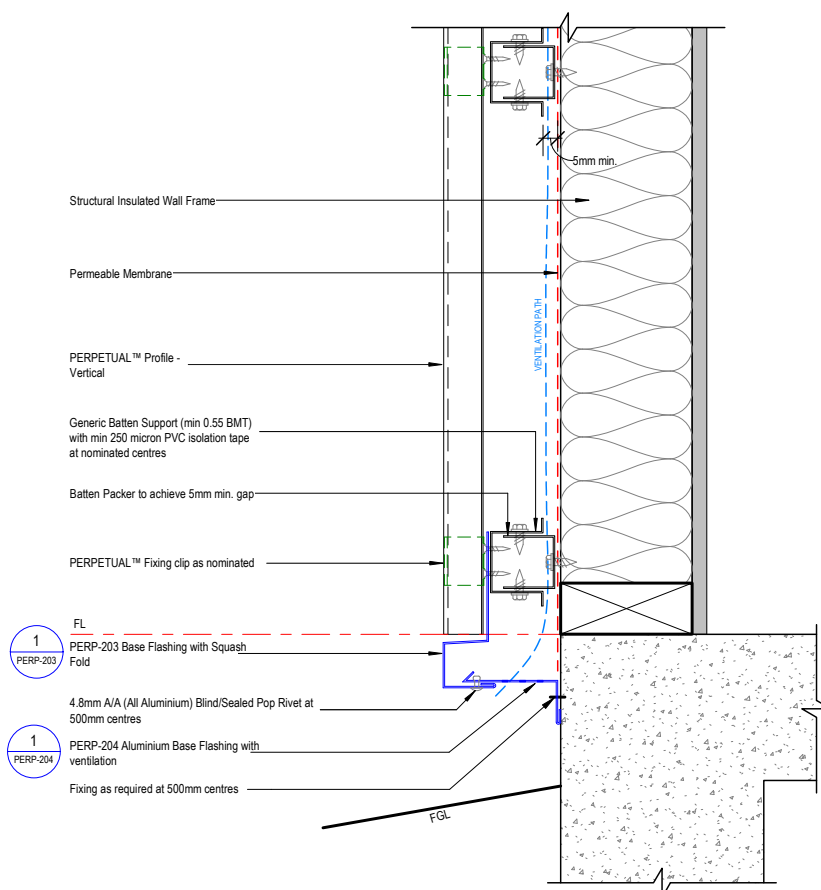


Figure 7.7.2.7

PERPETUAL™ Vertical Wall Cladding Top Of Wall - Overhang - I09-07

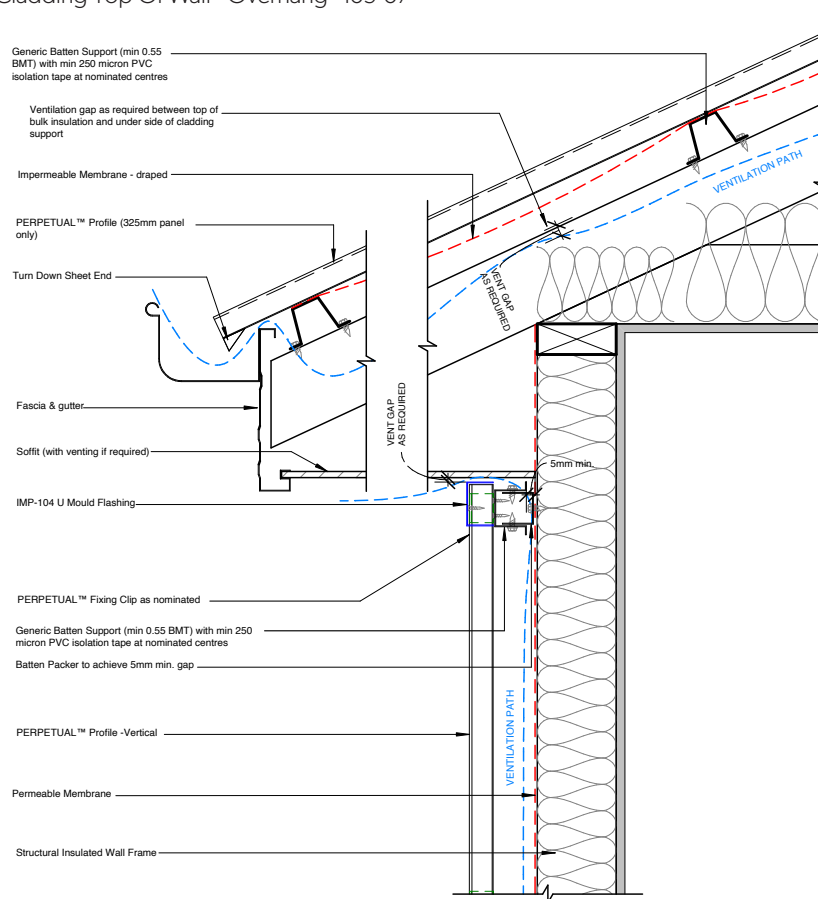


Figure 7.7.2.8

PERPETUAL™ Vertical Wall Cladding Window Detail - Jamb - I11-03a

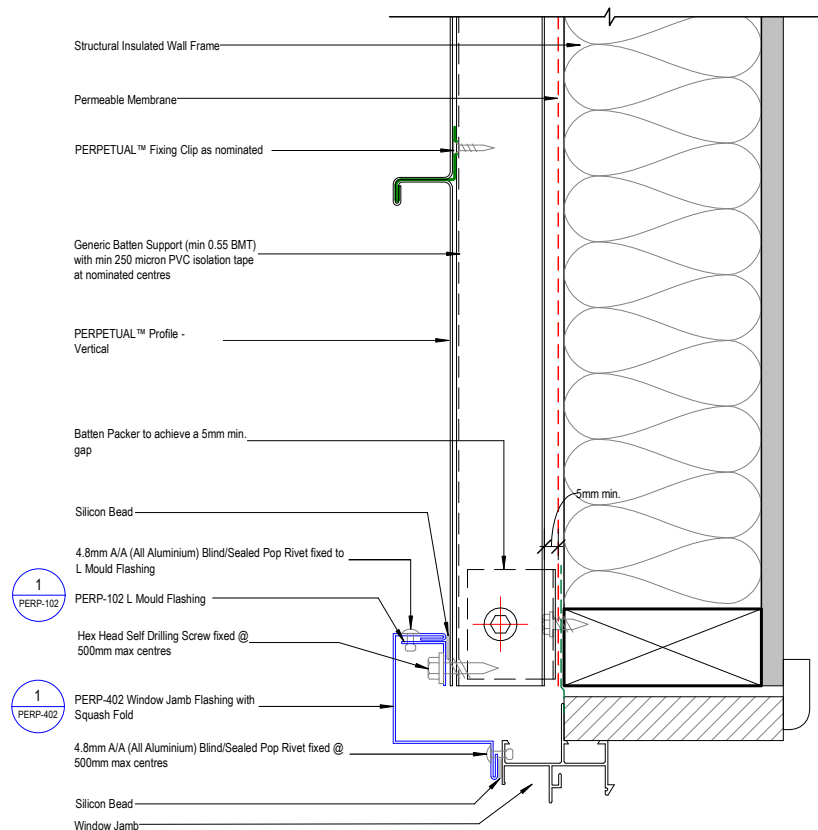


Figure 7.7.2.9

PERPETUAL™ Vertical Wall Cladding Window Detail - Jamb - I11-03b

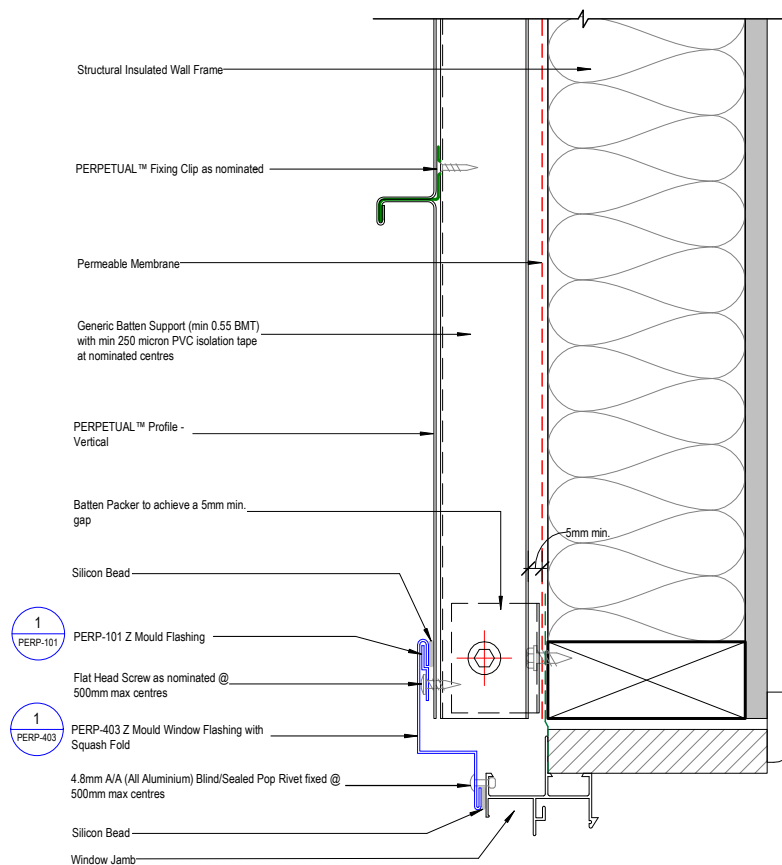
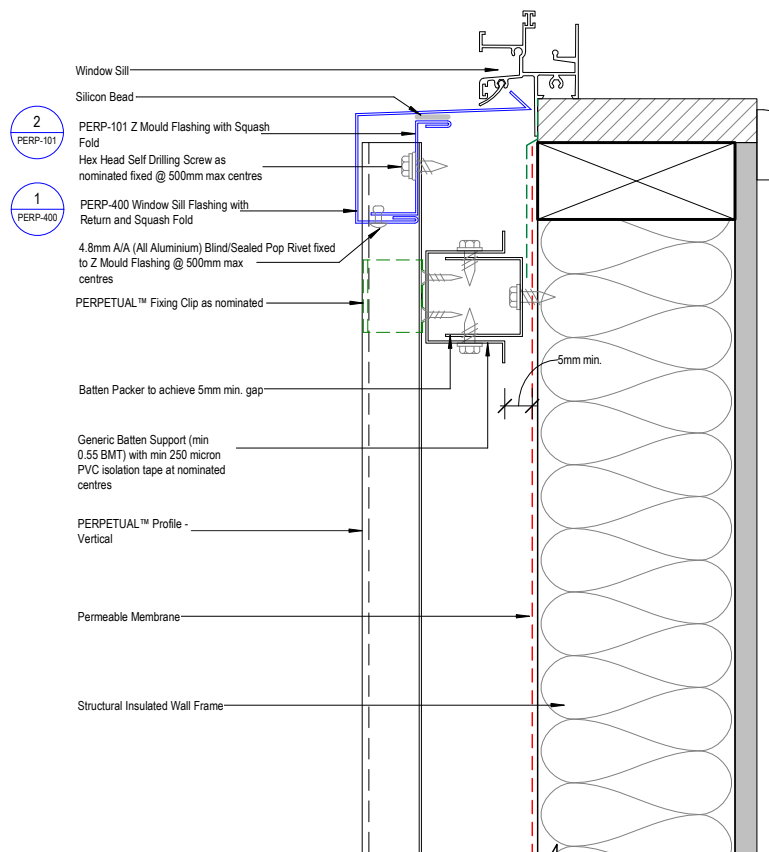


Figure 7.7.2.10

PERPETUAL™ Vertical Wall Cladding Window Detail - Sill - I11-07



7.7.3 PERPETUAL™ ROOF CLADDING ON BATTENS

Figure 7.7.3.1

PERPETUAL™ Roof Cladding On Battens General Arrangement – Plan View - I04-09

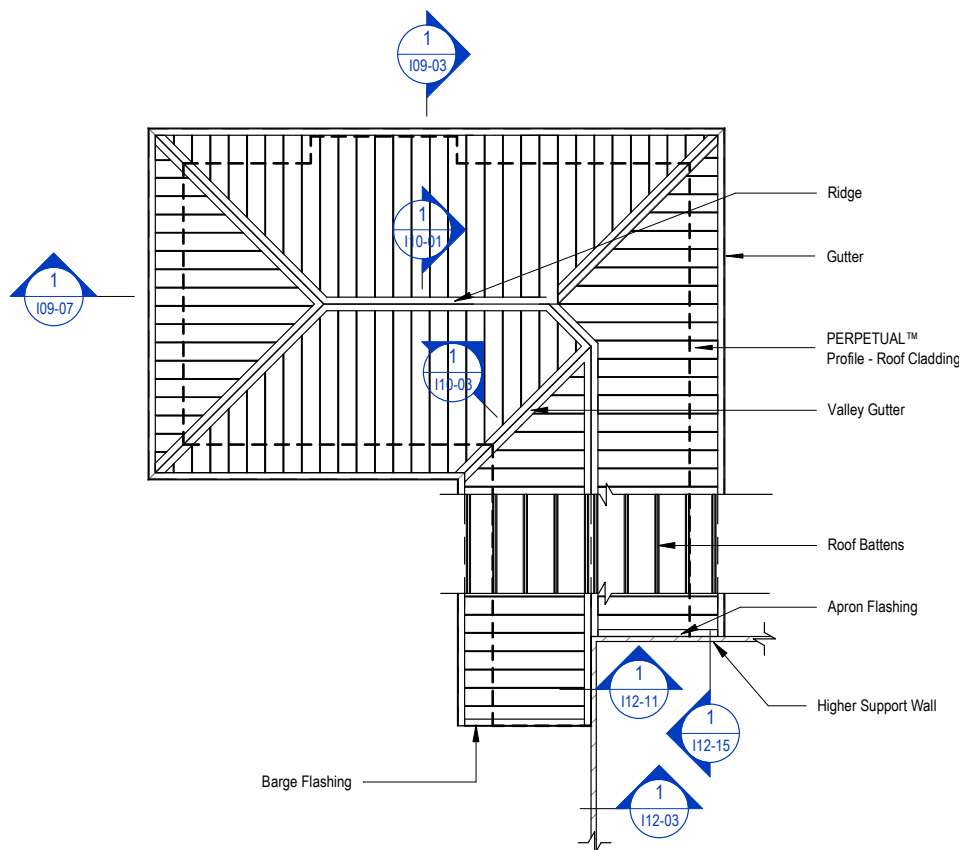


Figure 7.7.3.2

PERPETUAL™ Vertical Wall Cladding Top of Wall - Zero Overhang - I09-03

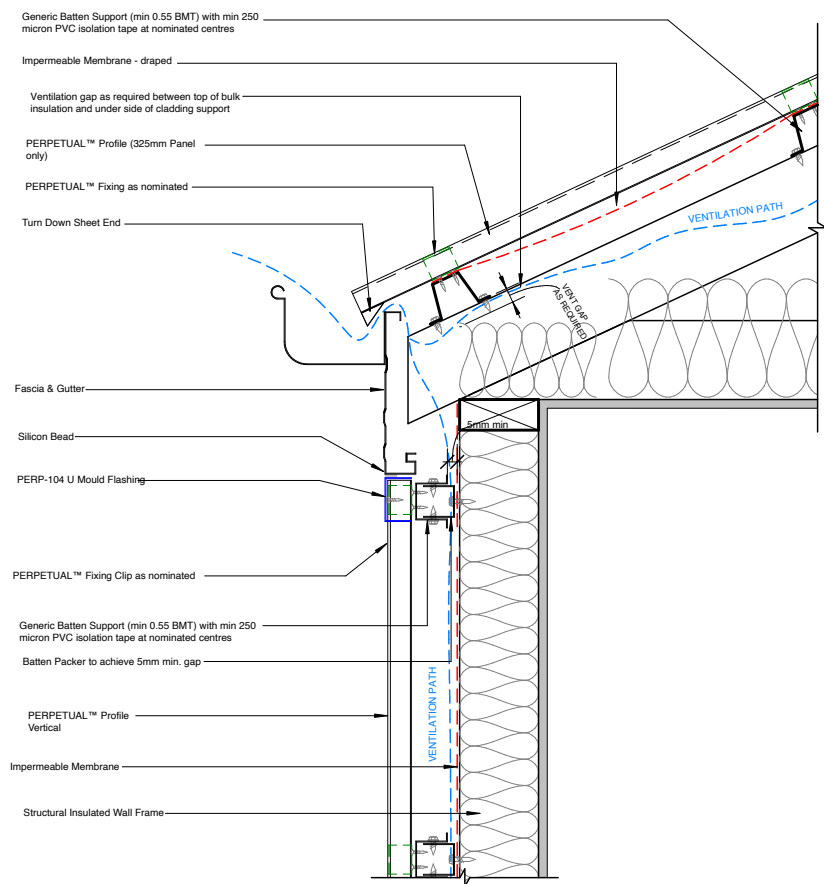


Figure 7.7.3.3

PERPETUAL™ Unsupported Cladding Roof Detail - I10-01

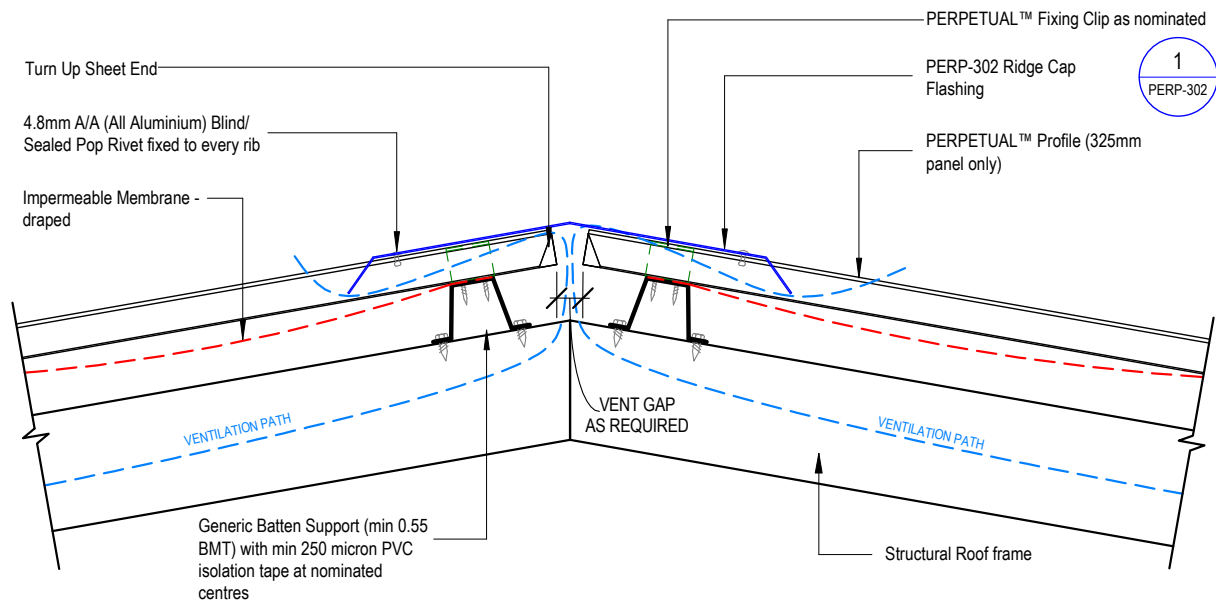


Figure 7.7.3.4

PERPETUAL™ Horizontal Wall Cladding Roof Detail - I10-08

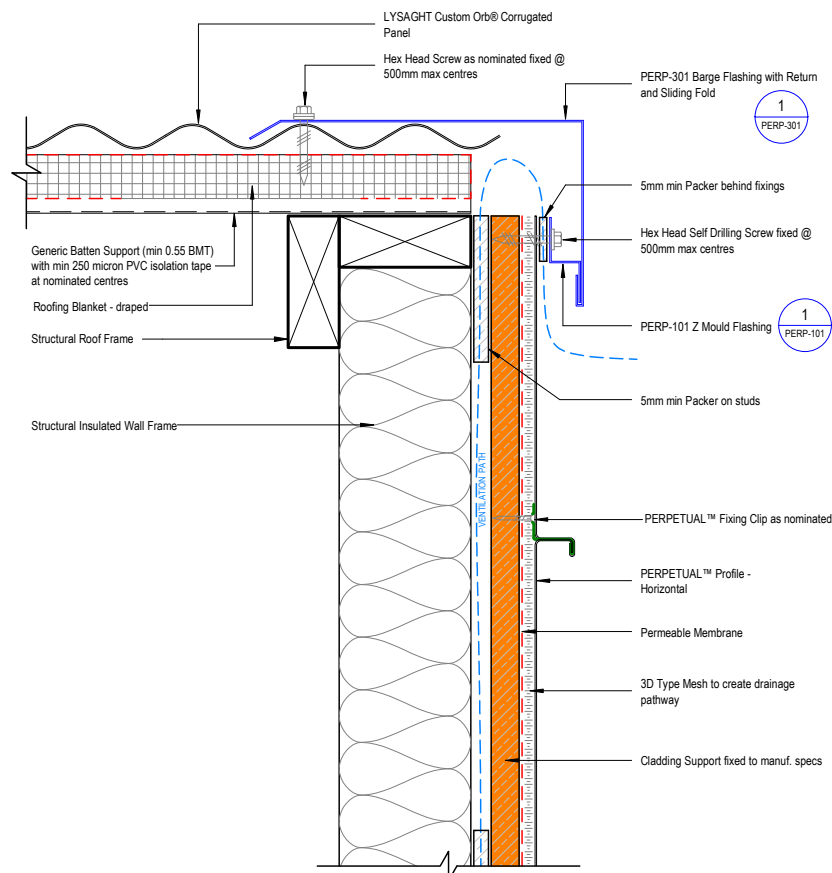


Figure 7.7.3.5

PERPETUAL™ Vertical Wall Cladding Top of Wall - Zero Overhang - I12-03

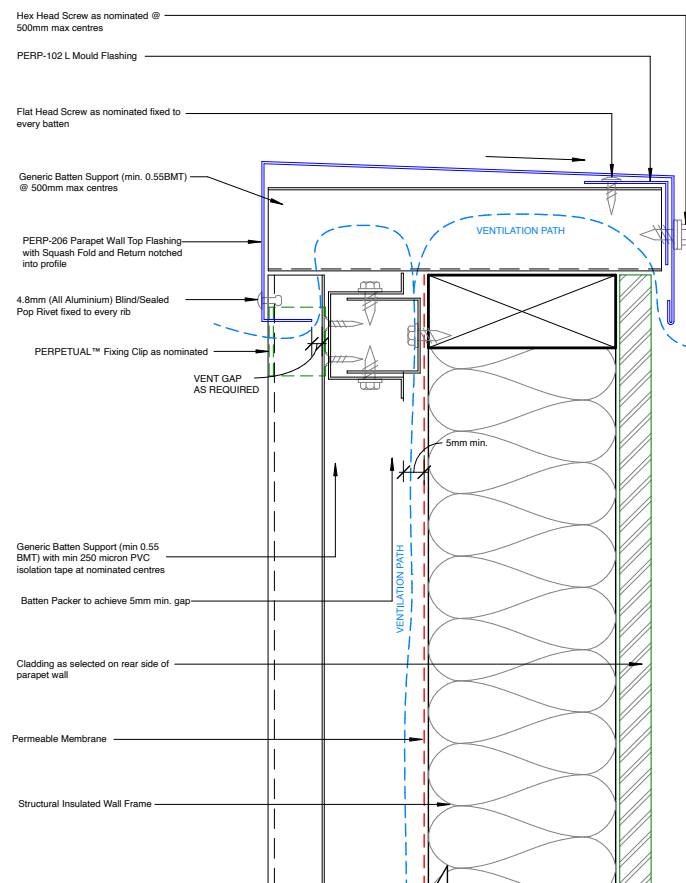


Figure 7.7.3.6

PERPETUAL™ Vertical Wall Cladding Wall to Roof Detail - Vertical Fix - I12-11

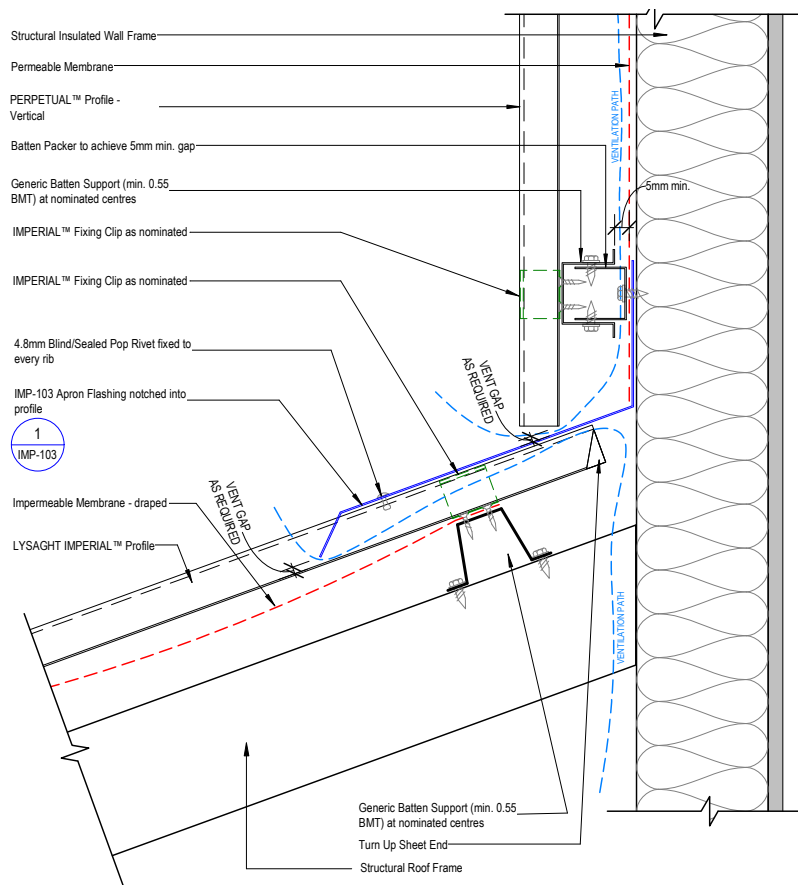
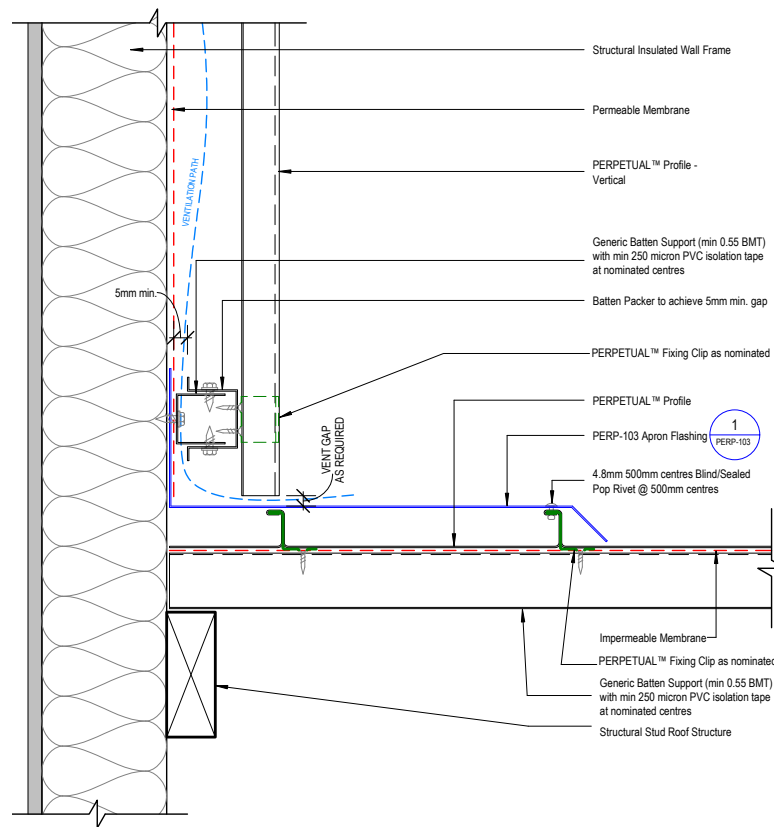


Figure 7.7.3.7

PERPETUAL™ Wall Cladding Top of Wall - Zero Overhang - I12-15



8.0 AS/NZS 1530.3 Flammability Test Certificate

Certificate of Test

Quote No.: NE7281

REPORT No.: FNE11321A

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

TRADE NAME: Permalite

SPONSOR: BlueScope Cold Form Solutions Pty Ltd trading as Permalite Aluminium Roofing Solutions
20 Fairbairn Place
EAGLE FARM QLD 4009
AUSTRALIA

DESCRIPTION OF SAMPLE:

The sponsor described the tested specimen as polyester paint system applied onto a range of profiled aluminium roof/wall sheeting: LT7-2, VRib-1, Alspan-1, and Waveline-2. For the test, the specimens were tested on a range of paint colours from darkest to lightest shades.

Nominal base metal thickness (BMT):	0.9-mm
Nominal total dry film thickness (DFT) of primer and top coat (exposed side):	20-µm
Nominal dry film thickness (DFT) of backing coat (unexposed side):	9-µm
Nominal total mass:	2.6 kg/m ²
Colours:	various (green, grey, white)

TEST PROCEDURE: Six samples were tested in accordance with Australian Standard 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	N/A	N/A
Smoke Release (log ₁₀ D)	-1.840	0.158

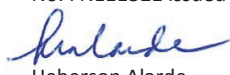
For regulatory purposes these figures correspond to the following indices:

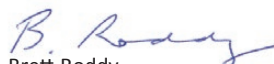
Ignitability Index (0-20)	Spread of Flame Index (0-10)	Heat Evolved Index (0-10)	Smoke Developed Index (0-10)
0	0	0	2

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: 6 January 2015

Issued on the 6th day of February 2015 without alterations or additions. This certificate supersedes Report No. FNE11321 issued on 14 January 2015.


Heherson Alarde
Testing Officer


Brett Roddy
Team Leader, Fire Testing and Assessments

Copyright CSIRO 2015 ©. Copying or alteration of this report without written authorisation from CSIRO is forbidden.



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

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



PRODUCT DESCRIPTIONS

- All descriptions, specifications, illustrations, drawings, data, dimensions and weights contained in this catalogue, all technical literature and websites containing information from Lysaght are approximations only. They are intended by Lysaght to be a general description for information and identification purposes and do not create a sale by description. Lysaght reserves the right at any time to:

- a) supply Goods with such minor modifications from its drawings and specifications as it sees fit; and
- b) alter specifications shown in its promotional literature to reflect changes made after the date of such publication.

DISCLAIMER, WARRANTIES AND LIMITATIONS OF LIABILITY

- This publication is intended to be an aid for all trades and professionals involved with specifying and installing Lysaght products and not to be a substitute for professional judgement.
- Terms and conditions of sale available at local Lysaght sales offices.
- Except to the extent to which liability may not lawfully be excluded or limited, BlueScope Steel Limited will not be under or incur any liability to you for any direct or indirect loss or damage (including, without limitation, consequential loss or damage such as loss of profit or anticipated profit, loss of use, damage to goodwill and loss due to delay) however caused (including, without limitation, breach of contract, negligence and/or breach of statute), which you may suffer or incur in connection with this publication.

**FOR DETAILED PRODUCT INFORMATION,
MANUALS AND PROJECT CASE STUDIES VISIT:**

[LYSAGHT.COM](https://lysaght.com)

The colour swatches shown have been reproduced to represent actual product colours as accurately as possible. However, we recommend checking your chosen colour against an actual sample of the product before purchasing, as varying screens and devices may affect colour tones and finishes.

COLORBOND®, SUPERDURA®, ZINCALUME®, LYSAGHT® and ® colour and product names are registered trademarks of BlueScope Steel Limited and ™ colour and product names are trademarks of BlueScope Steel Limited. © 2026 BlueScope Steel Limited. ABN 16 000 011 058. All rights reserved.



INSPIRATION TO BUILD BETTER