



TECHNICAL MANUAL

November 2021

PoLYRENDER
THERMAL FACADE SYSTEM BY **CHAD**



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Introduction to PoLYRENDER

PoLYRENDER

PoLYRENDER, Thermal Façade Polystyrene Cladding System manufactured by CHAD Group Australia Pty Ltd provides a rendered weatherproof building cladding system of high thermal resistance. It consists of Grade M expanded polystyrene, mechanically secured to the exterior wall frame, ready for application of alkaline resistant fibreglass mesh render, texture, and finish coatings on site.

Technical Manual to be used by Professional Architects, Engineers, and Builders

This manual is intended for use by qualified and experienced architects, engineers, and builders. The authors, publishers, and distributors of this manual, sample specification and the associated drawings do not accept any responsibility for incorrect, inappropriate, or incomplete use of this information.

Using this Manual

This manual, including the design recommendations, sample specification and the associated drawings, are available in electronic format, with the express intention that designers will edit them to suit the particular requirements of specific construction projects.

Basis of the Specification and Drawings

The manual has been prepared in the context of The National Construction Code Vol 2 for Class 1 and 10 buildings. Architects, engineers, and builders should make themselves aware of any recent changes to these documents, to any standards referred to therein or to local variations or requirements. The authors, publishers and distributors of this specification and the associated drawings of this specification and the associated drawings do not accept any responsibility for failure to do so. In the preparation of this manual, the following convention has been adopted.

- All building design and construction must comply with the National Construction code and any relevant Australian Standards referred to therein.
- If the construction is not covered by either National Construction Code or Australian Standards, construction should comply with a balanced combination of current practise, engineering principles and supplier's information.

Applications

PoLYRENDER, Thermal Façade Polystyrene Cladding System is lightweight and therefore easy to install. It also has great insulation properties, and it is typically fixed to timber or steel framing. It has many uses in residential buildings, such as external walls, extensions, fences, bulkheads, and columns. Other thicknesses of EPS will yield other thermal resistance PoLYRENDER panel will provide an appearance of a rendered brick wall with depth of reveal at window that enhances its architectural appearance.

Sizes

PoLYRENDER panel is available as a 1.2m x 3.0m and 1.2m x 6.0m sheets in sizes of 75mm & 100mm. Other sizes are available upon request.

Structural code and load details

Scope

This section covers that structural design of POLYRENDER, Thermal Façade Polystyrene Cladding System for compliance with the structural requirements of the National Construction Code Vol 2.

National Construction Code

The structural design of POLYRENDER, Thermal Façade Polystyrene Cladding System within buildings is regulated by the National Construction Code. Refer to the section 'compliance with the National Construction Code'.

Loads

POLYRENDER, Thermal Façade Polystyrene Cladding System should be designed to withstand the loads set in the National Construction Code Standards:

AS/NZS 1170.0	Structural design actions Part 0: General principles
AS/NZS 1170.2	Structural design actions Part 2: Wind actions
AS 4055	Wind loads for housing
AS/NZS 4284	Building Facades

Fixing

1. The standard system (detailed in this manual) is designed for wind loading N1, N2, N3 and N4 in accordance with AS 4055.
2. The standard system (detailed in this manual) is not designed for wind loading N5, N6 or cyclonic wind in accordance with AS 4055.
3. The cladding system applies direct compression to the supporting studs, as a uniform line load.
4. The fixings of the cladding system are designed to transmit direct tension to the supporting studs under the action of wind suction, as a number of point loads.
5. The cladding system is not intended to resist racking loads. These must be resisted by structural plywood bracing systems complying with AS 1684, which provide both strength and a high degree of stiffness against inplane racking loads.

This system will also apply to a steel frame when the fixings are placed the same spacings as Timber framing.

NOTE: Screw length is dependent on the thickness of the panel used. As a guide the screw should be minimum 25mm longer than the panel + batten thickness for timber frame construction and 15mm longer than the panel thickness for steel frames.

As per test by "Ian Bennie and Associates"

Components Details

Fasteners	Timber Frame	Steel frame option
Screw (75mm panel)	10G x 100mm CSK Head Coarse Ribbed Class 3	10G x 90mm Tek Class 3
Screw (100mm panel)	10G x 125mm CSK Head Coarse Ribbed Class 3	10G x 115mm Tek Class 3
Washer	51mm diameter POLYRENDER washer	

Lateral Pressures

The following tables set out the requirements for fixings POLYRENDER panels 1200mm wide to studs.

Wind Classification	Ultimate Suction kPa		Number per square metre of standard fixings		Spacing (mm) of standard fixings to studs to 450mm or 600mm centres	
	Over 1.2m from corners	Under 1.2m from corners	Over 1.2m from corners	Under 1.2m from corners	Over 1.2m from corners	Under 1.2m from corners
N1	-0.5	-0.94	5	5	300	300
N2	-0.74	-1.30	5	5	300	300
N3	-1.16	-2.30	5	5	300	300
N4	-1.72	-3.01	5	5	300	300

Thermal Performance

Thermal Resistance of PoLYRENDER Façade Polystyrene Cladding System.

PoLYRENDER, Thermal Façade Polystyrene Cladding System provides a continuous insulation solution. This avoids thermal bridging which is common to batt products installed between the framing members and enhances the overall thermal performance of the wall.

Material	Total R value (winter)	Total R value (Summer)
75mm Steel	2.44	2.32
75mm Timber	2.51	2.38
100mm Steel	3.06	2.90
100mm Timber	3.13	2.97

Notes:

1. This table provides thermal resistance of PoLYRENDER panel single leaf, walls, without added insulation.
2. Thermal resistance of PoLYRENDER is based on AS 1366.3 Class M Expanded Polystyrene EPS board.
3. Allowances for air films and air spaces are included. There is no allowance for reflective foil.

Detailing and Installation

Introduction

All buildings are required to be built such that:

- The cladding panels are properly supported to resist horizontal wind and earthquake loads, (full list of structural actions identifies in the NCC) together with vertical gravity loads.
- The building is waterproof and damp proof.
- The required thermal resistance can be achieved.

Qualifications and Experience of Installers

POLYRENDER shall be installed only by qualified and experienced carpenters or other tradesmen, who are conversant with the techniques set out in the “Detailing and Installation” section of the POLYRENDER Technical Manual.

Structural Support

The connections and supporting structure must have sufficient combined capacity to transmit the horizontal in-plane and out of plane loads from the wall to the supports. The straightness and squareness of the frames should be checked before commencement of the installation, and within 3mm straightness to assure a “flat” surface finish.

Weatherproofing

Buildings must be constructed such that they are weatherproof. This may be achieved by ensuring that:

Damp-proof Course

The National Construction Code Volume 2 provides rules for construction and specifications of appropriate damp-proof courses to exclude rising ground water and the accompanying salts from contaminating the construction.

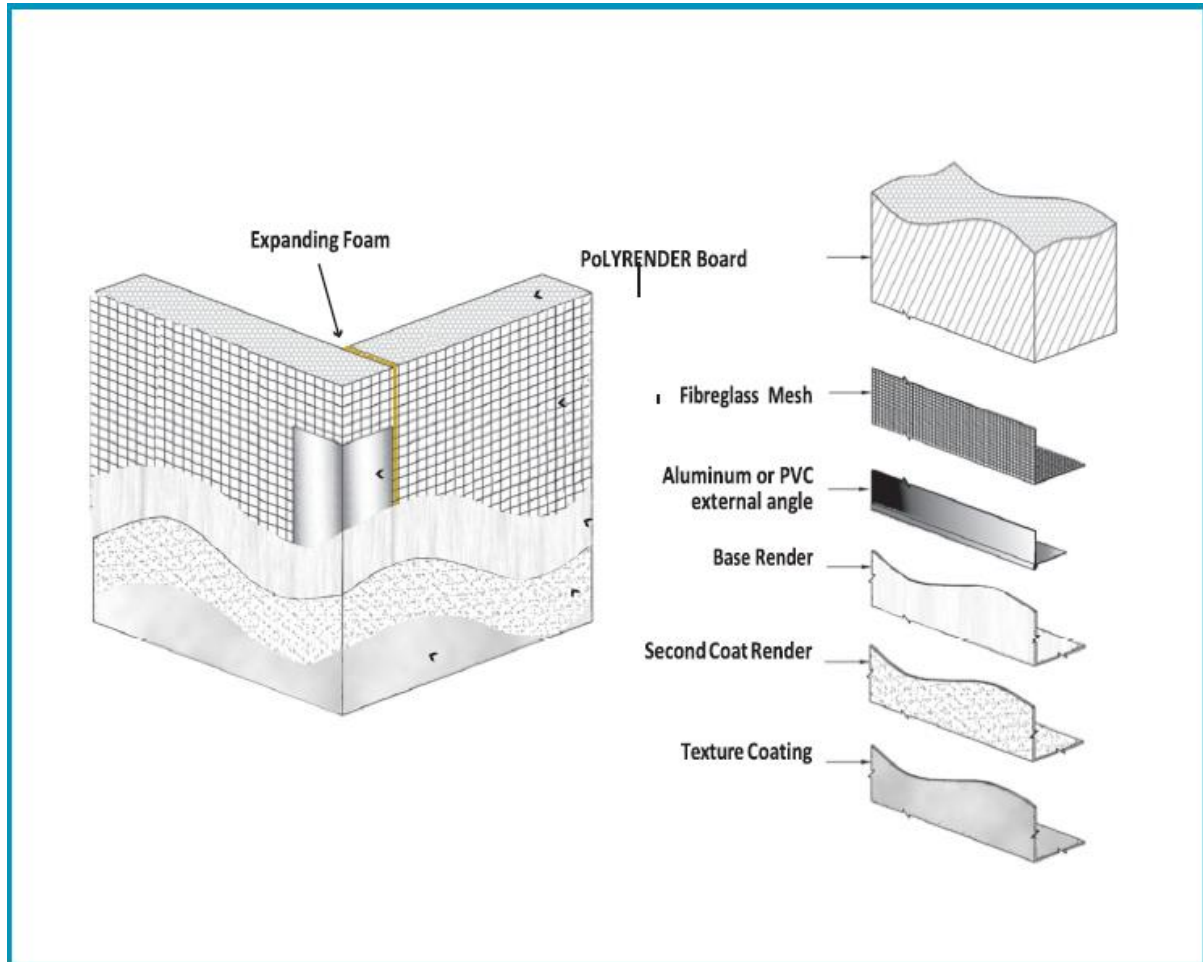
Flashings

Attention to detail is important.

- Flashings should be constructed in accordance with the National Construction Code Volume 2 as appropriate.
- Building must be correctly detailed to account for weatherproofing requirements, foundation movement, shrinkage, and the efficient removal of rainwater.
- Gutters and rainwater downpipes must be regularly inspected and kept clean, free of corrosion, and connected to a functioning storm and water system.
- Flashings must be secured, and joints sealed with flexible sealant (e.g., silicone or similar), which should be renewed over time as they deteriorate.

Preparation for PoLYRENDER Panel System

Typical Corner Detail – Exploded View



Internal & External Corner Fixing

1. Studs

Check the stud spacings (450 or 600) and ensure that all panels will be supported at the edges, as well as internal vertical joints. Extra studs (back blocking) may be required where joints do not correspond to studs. Each sheet needs fixing back to framing within 150mm of the sheet edge. Where sheet edges do not correspond to stud spacing, then a back blocking stud should be employed to strengthen the joint in the sheets. This could be a double stud scenario or a single stud on its side which is also fixed back to the framing structure in between the horizontal noggins.

2. Starter Trim

Install damp-proof Course (DPC) and starter trim at the bottom of the panel run). EPS will gradually absorb humidity or moisture if left exposed. It is our specification that the exposed edges of all panels are to be protected. Specifically, the bottom edge needs to be sealed with either an aluminium or PVC starter channel. Place a plastic washer in the starter trim to allow a space between the starter trim and the polystyrene so any water egress into the channel is able to escape through the weep holes in the start trim and not be absorbed into the polystyrene sheet. Use screw fixing with plastic washer to fix starter channel thru foam cladding back to framing member to hold the starter channel in place.

3. Breather Wrap

Install a minimum 60gsm breathable building wrap. Note system was tested with a polyethylene-based wall wrap which is non-perforated but a breathable wall wraps pf at least 60gsm must be used in the POLYRENDER system. Wall wrap should be installed in accordance with AS/NZS 4200.2 Installation requirements should be for pliable building membranes. It should be installed with a 150mm overlap between runs. Joins in the wall wrap or penetrations should be sealed with a flashing tape or weather seal tape back the penetration itself (i.e., pipe or window frame) we recommend PPA brand aluminium flashing tape.

4. Cutting

Measure the required lengths and cut the POLYRENDER panel using a straight-edge and timber blade in a circular saw. A fine-toothed hand saw can also be used.

5. Fixing

Erect each panel, ensuring it is square. Apply expanding foam to all joints (appropriate or compatible foam for use with polystyrene foam). Fischers PUP 750 expanding foam was used in the POLYRENDER test and is recommended. Fix the polystyrene sheets to the studs using the appropriate length class 3 galvanised screw through a fixing disk. 3 Galv screws, ensure all vertical joints are made at studs or back blocking of sheet joints is employed.

Screws 100mm to 75mm panel

Screws 125mm to 100mm panel

Fixing spacings

Max 300mm cc around the perimeter of the sheet minimum 20mm away from edge of sheet. Max 300mm cc up each stud

(with stud spacings maximum 600mm cc apart). Back blocking of joints in sheet where sheet joints do not correspond with framing studs or members.

6. Mesh

Apply 160gsm Alkaline resistant to whole wall surface. Add butterfly mesh at all openings.

7. External Angles and PVC beads

Install external angles and PVC beads to suit requirements Use expanding foam, render or galvanised nails (so the nail will not rust and rust through the render and texture at a later date) to hold the external angles in place before rendering while using a spirit level to achieve a plumb or level plane.

8. Openings

At window and door openings:

- Provide a 3mm expansion gap between the POLYRENDER sheets and aluminium, timber
- PVC window frames
- Provide for a 1 in 6 slope at windowsills
- Install aluminium corner trim
- Install POLYRENDER Weatherseal Tape for rain/moisture and wind protection around windows and doors

9. Control/Expansion Joints

Provide horizontal movement joints every 3.0m vertically and vertical movement joints every 4.8m horizontally, as well as at openings.

Backing Rod (if not using a preformed PVC or Aluminium bead) insert backing rod to the gap allowed for expansion and contraction, to control the depth of the Bostik Seal and flex caulking sealant.

10. Vertical Control joints

Install Expansion/control joints trim. Use aluminium or PVC bead.

Backing Rod (if not using a preformed PVC or Aluminium bead) Insert backing rod to the gap allowed for expansion and contraction, to control the depth of the Bostik Seal and flex caulking sealant.

11. Horizontal control joints and dissimilar substrates expansion joint:

Install backing rod, flexible sealant and cover with a moulding fixed to upper story only. Use aluminium or PVC bead.

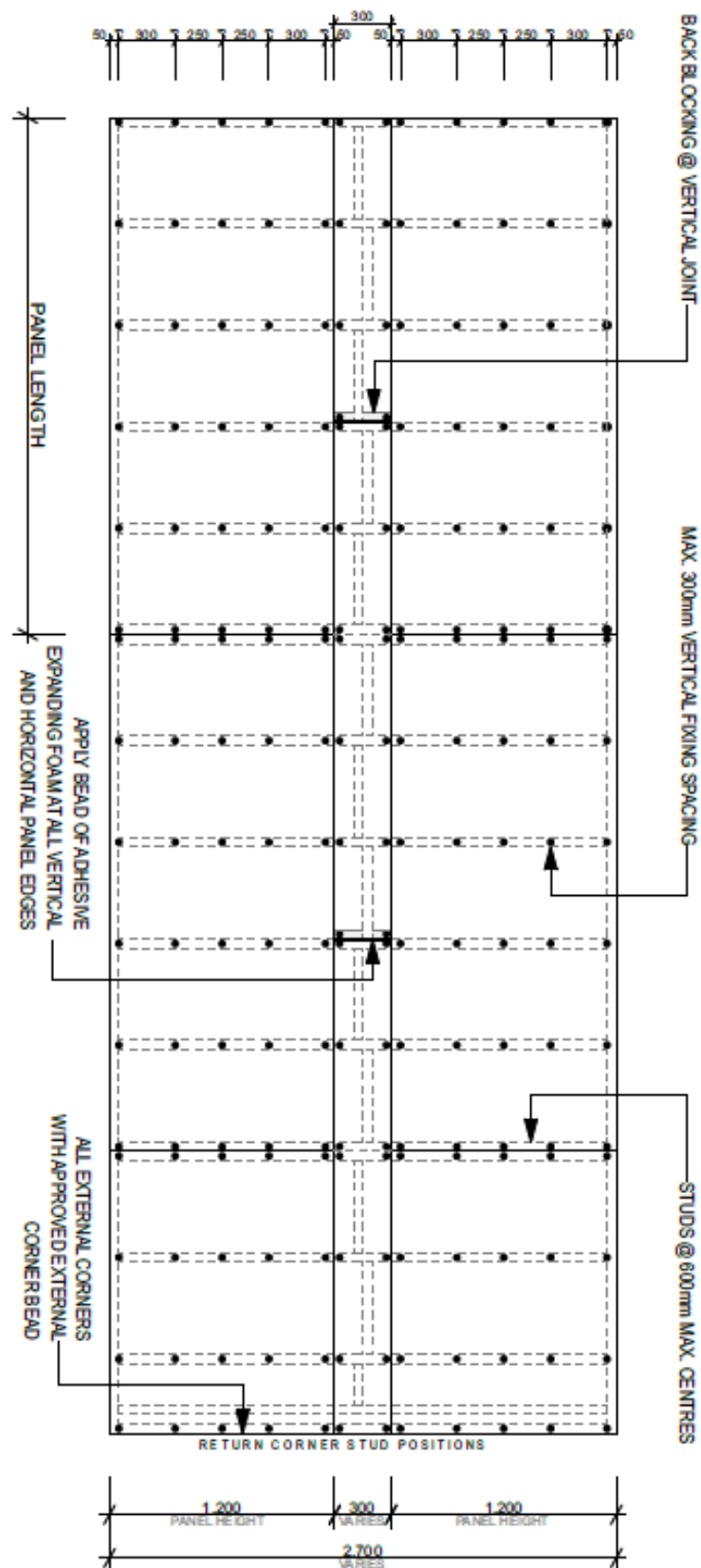
Backing Rod (if not using a preformed PVC or Aluminium bead) insert backing rod to the gap allowed for expansion and contraction, to control the depth of the Bostik Seal and flex caulking sealant.

12. Finish

Apply the acrylic finish coats in accordance to manufacturer specifications.

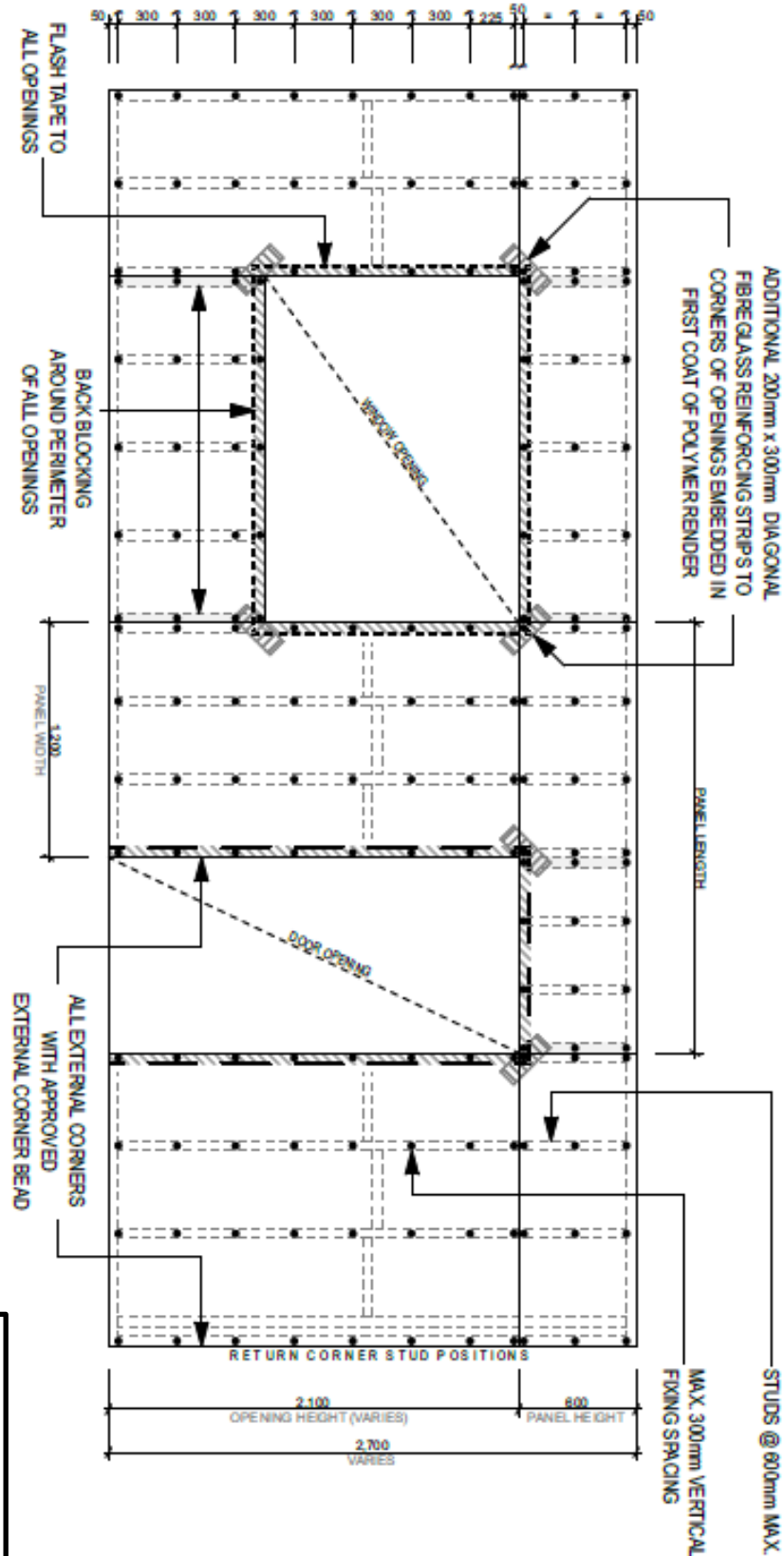
PoLYRENDER Typical Details

1. Typical Panel Layout Detail



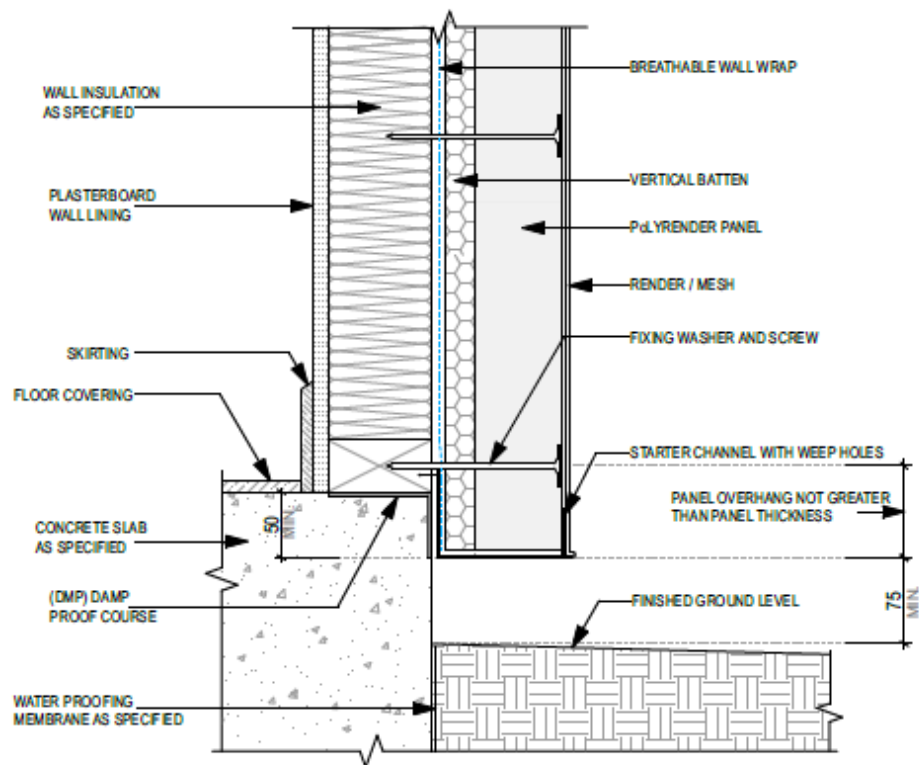
Typical details
for
PoLYRENDER
PANEL 75mm &
100mm
thickness.

2. Typical Panel Layout For Openings Detail

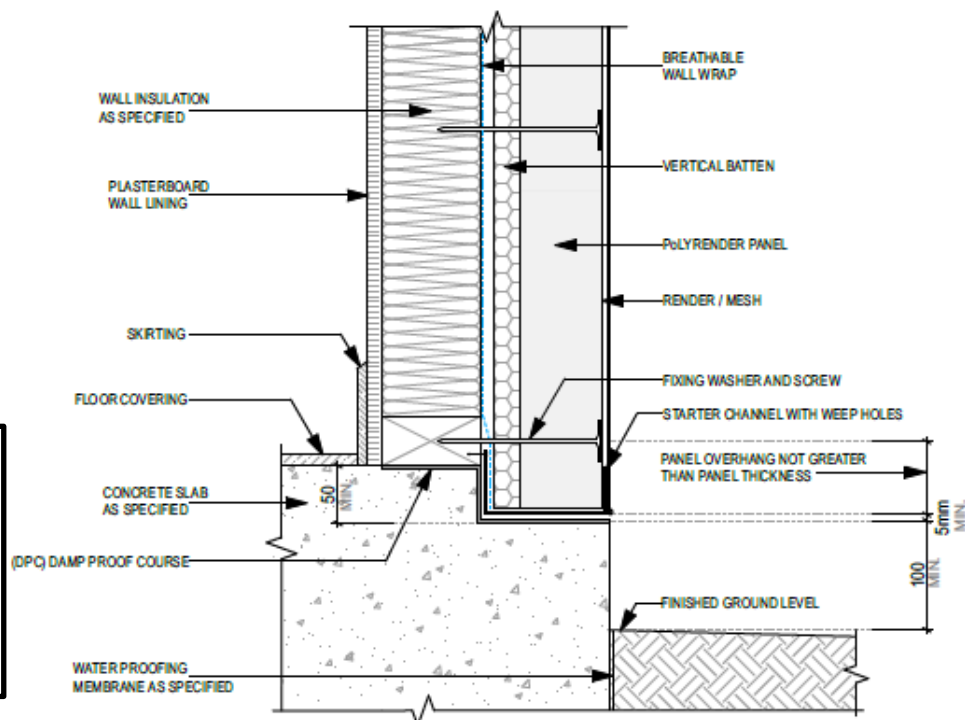


Typical details
for
POLYRENDER
PANEL 75mm &
100mm
thickness.

3. Typical Concrete Slab Edge Detail

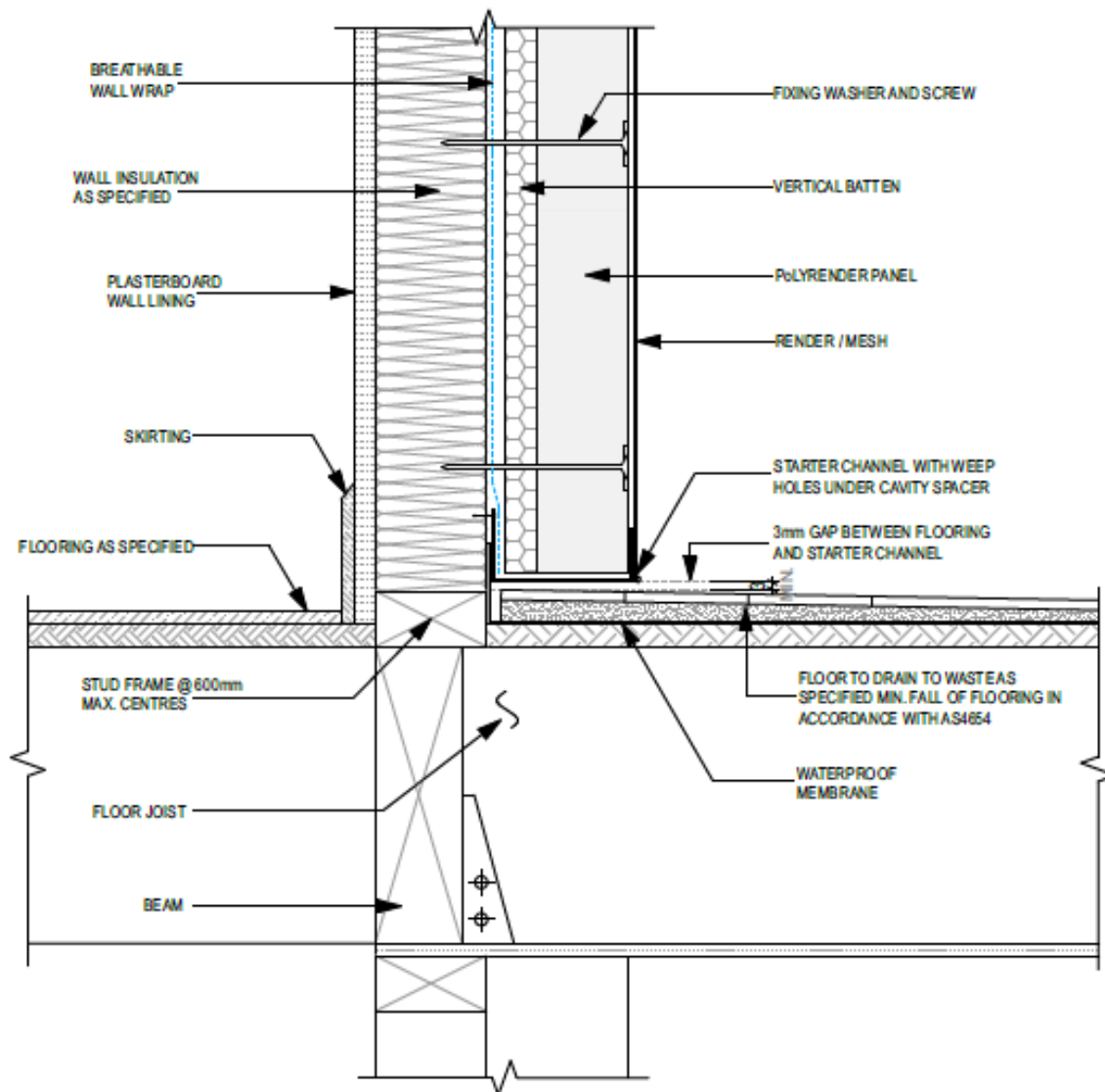


4. Typical Concrete Slab Rebate Detail



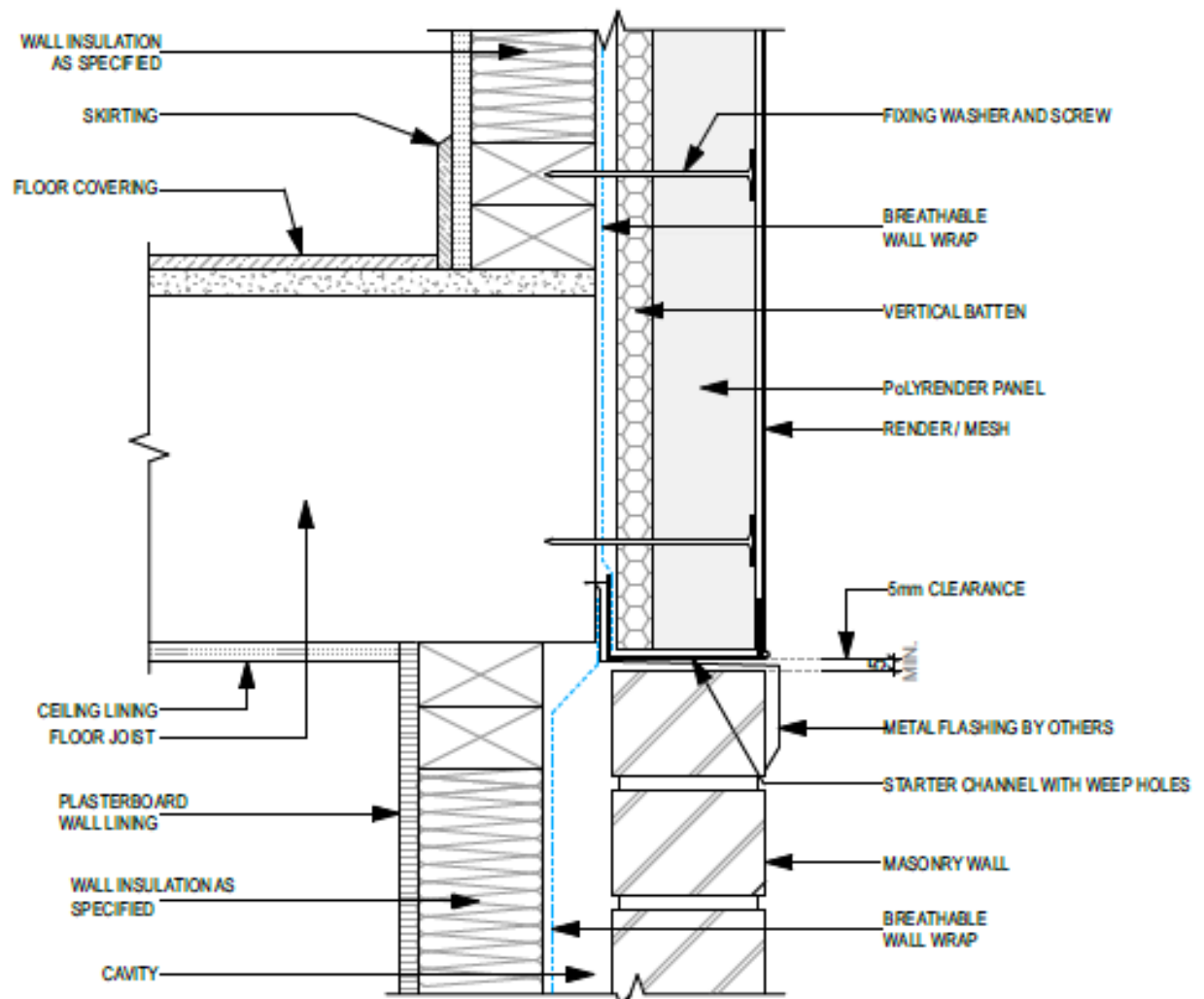
Typical details
for
PoLYRENDER
PANEL 75mm &
100mm
thickness.

5. Typical Wall to Balcony Detail



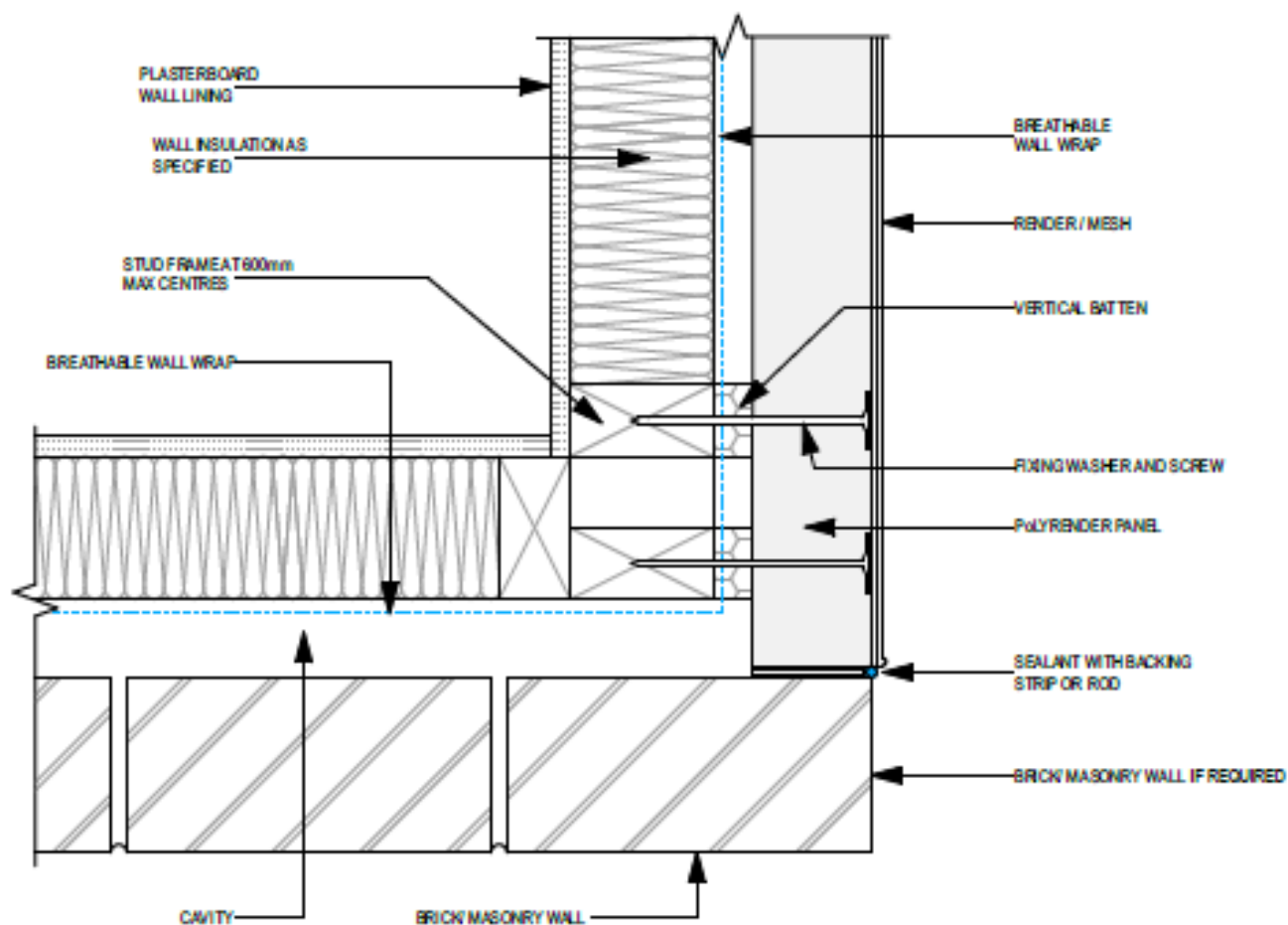
Typical details
for
PoLYRENDER
PANEL 75mm &
100mm
thickness.

6. Typical Masonry Over Masonry Wall Detail



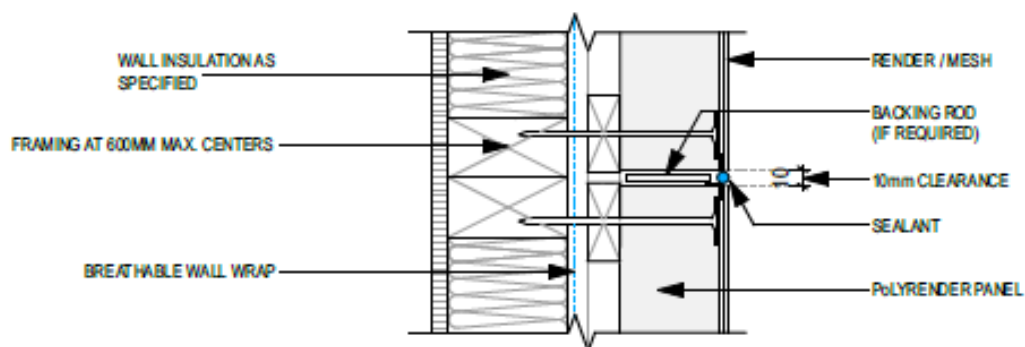
Typical details
for
PoLYRENDER
PANEL 75mm &
100mm
thickness.

7. Typical Junction to Masonry Wall Detail

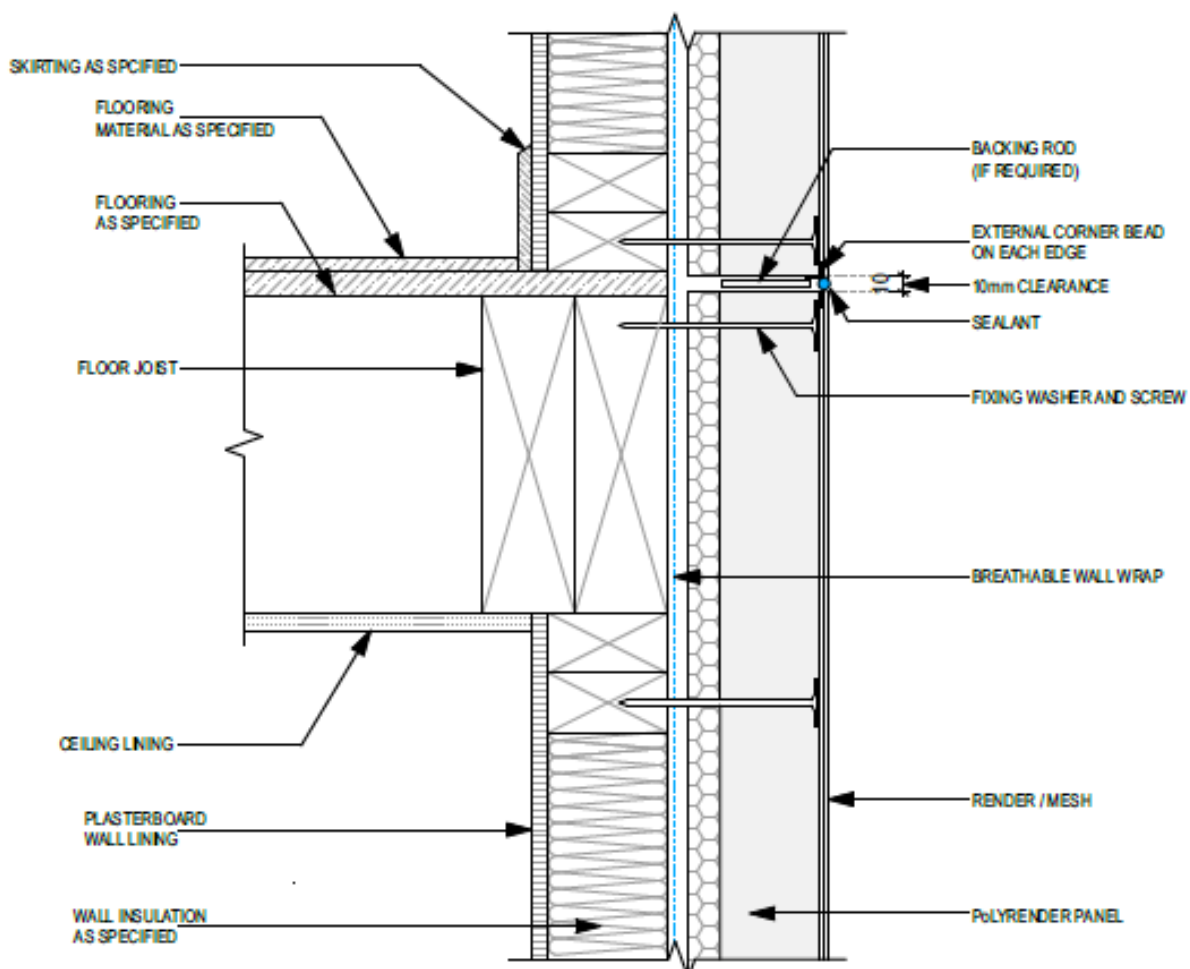


Typical details
for
PoLYRENDER
PANEL 75mm &
100mm
thickness.

8. Typical Horizontal & Vertical Expansion Joint Detail



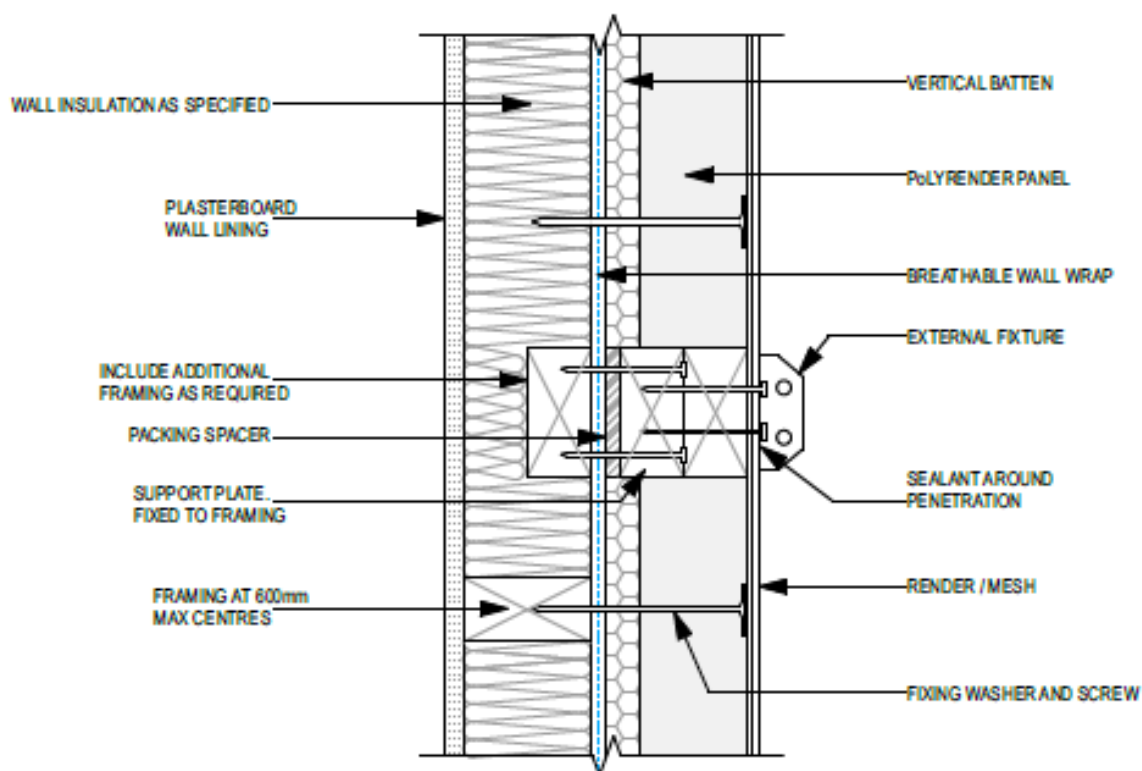
VERTICAL EXPANSION JOINT



HORIZONTAL EXPANSION JOINT

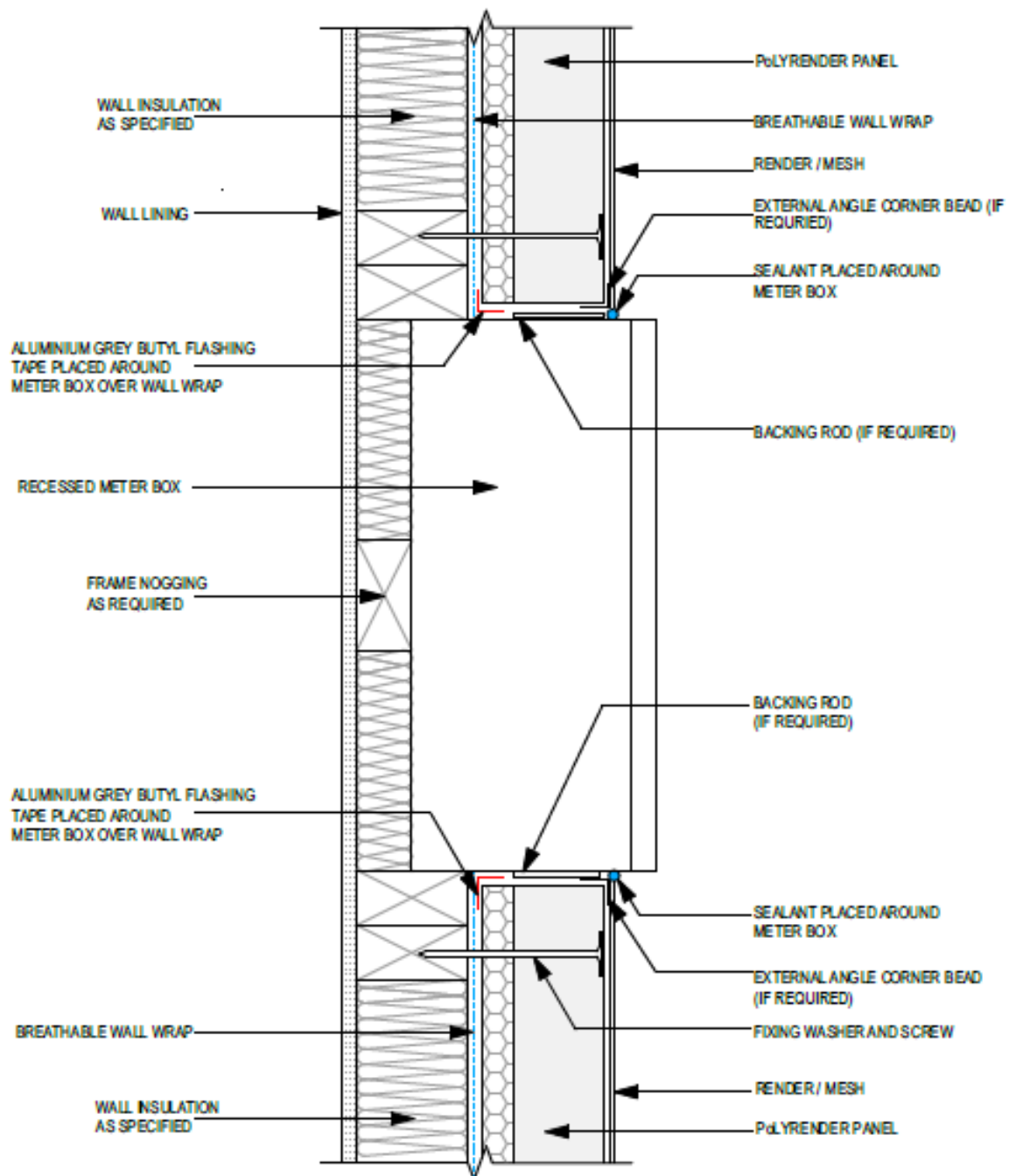
Typical details
for
PoLYRENDER
PANEL 75mm &
100mm
thickness.

9. Typical External Fixing Detail



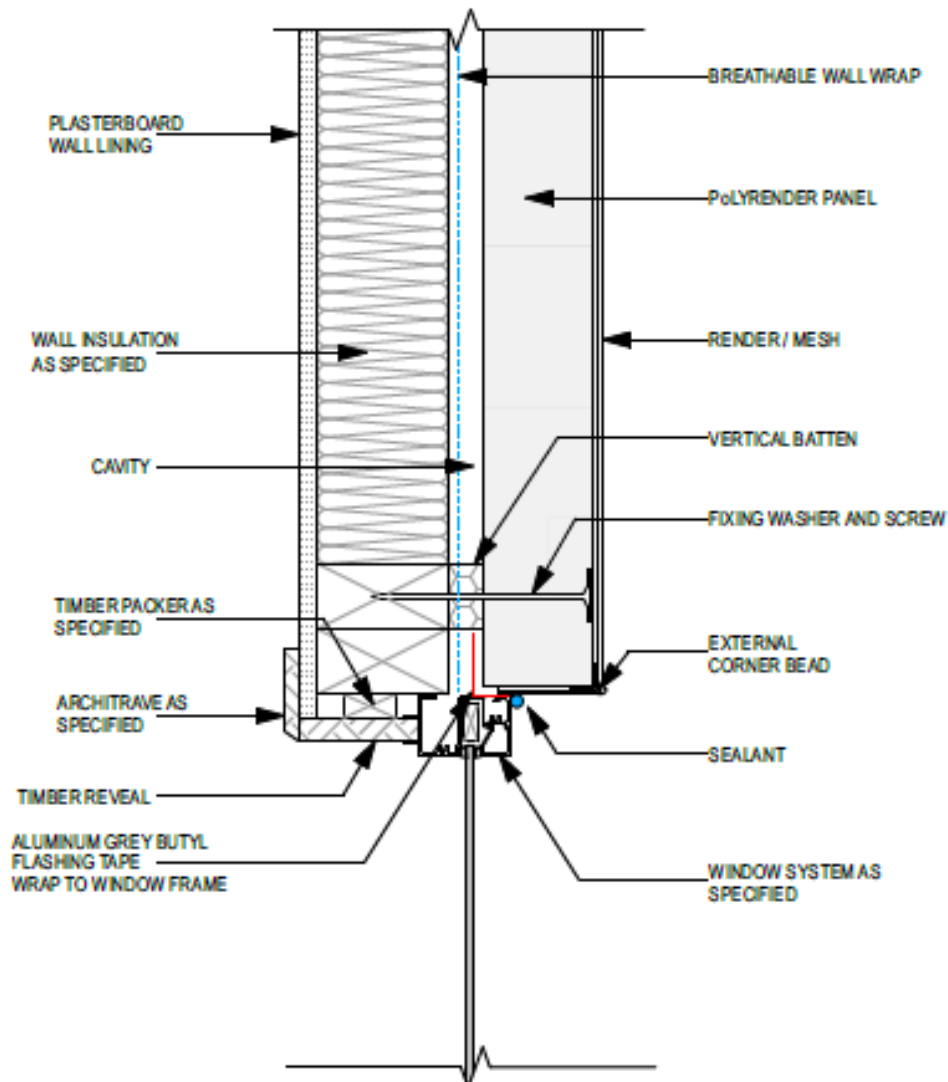
Typical details
for
PoLYRENDER
PANEL 75mm &
100mm
thickness.

10. Typical Meter Box Penetration Detail



Typical details
for
PoLYRENDER
PANEL 75mm &
100mm
thickness.

11. Typical Window Jamb Detail

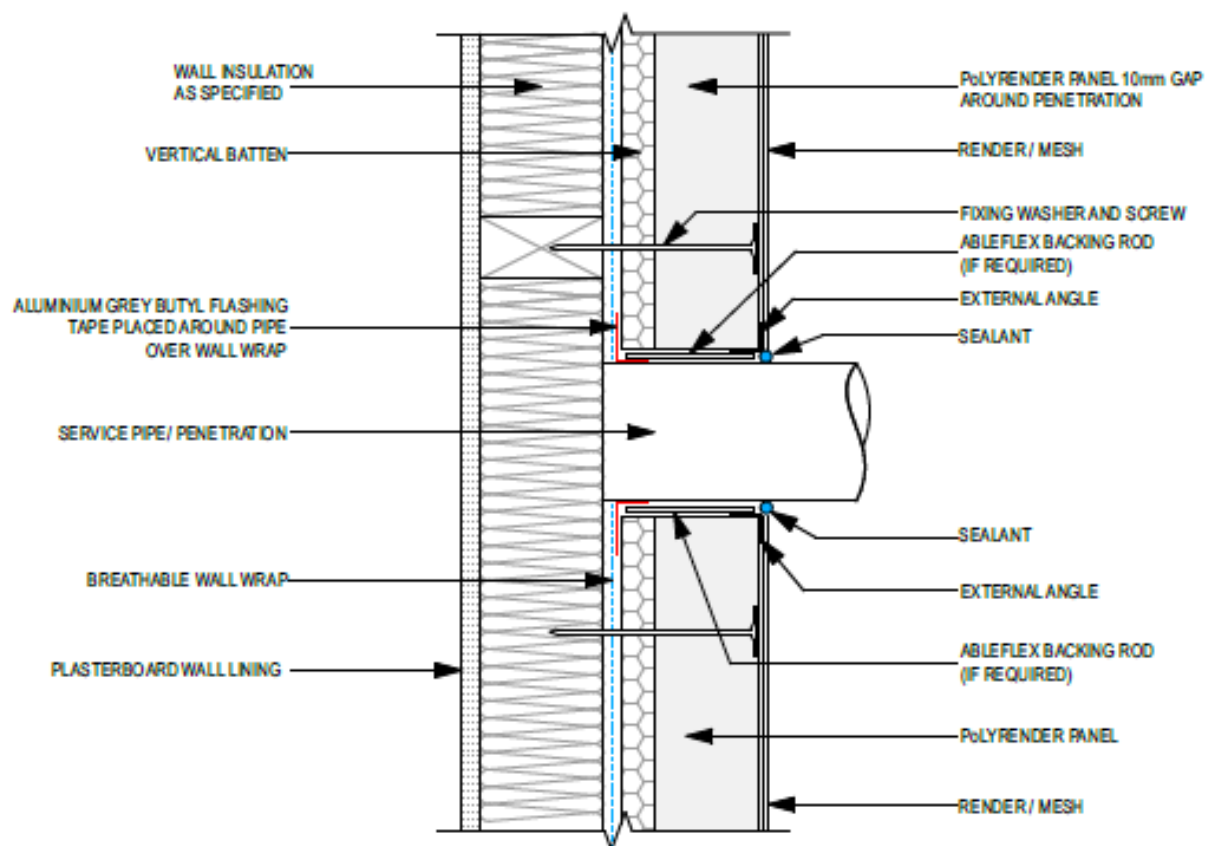


NOTE:

IF THE VERTICAL BATTEN IS INSTALLED WITHOUT A GAP TO THE JAMB, IT MUST BE CUT - THROUGH AT THE WINDOW HEAD TO ALLOW DRAINAGE OF WATER FROM THE SYSTEM

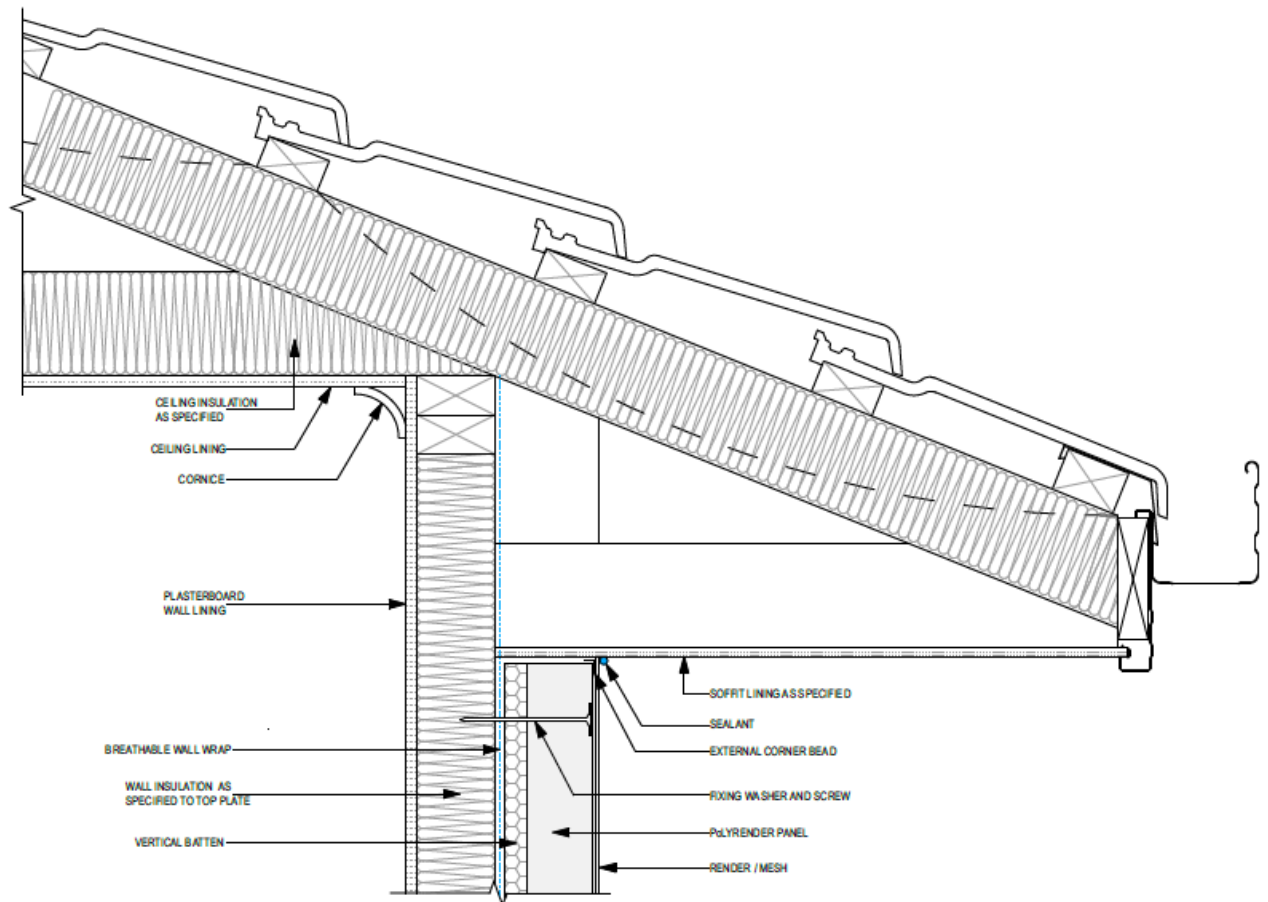
Typical details
for
PoLYRENDER
PANEL 75mm &
100mm
thickness.

12. Typical Service Penetration Detail



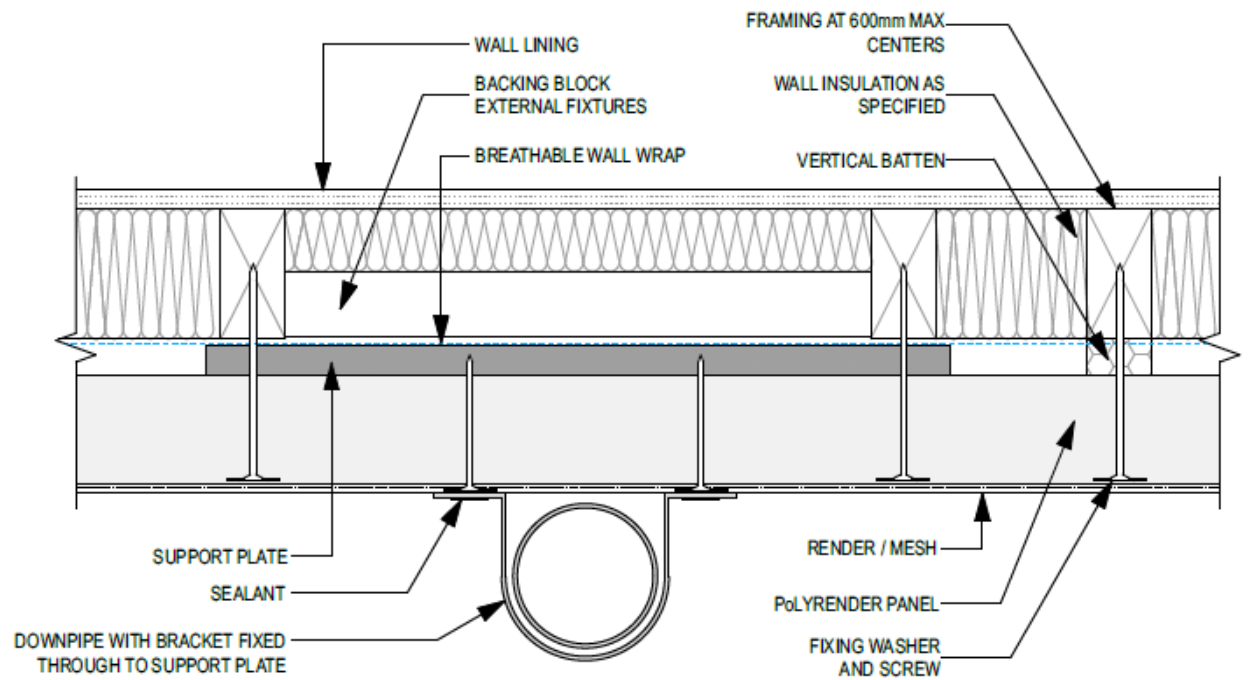
Typical details
for
PoLYRENDER
PANEL 75mm &
100mm
thickness.

13. Typical Eave Soffit Detail



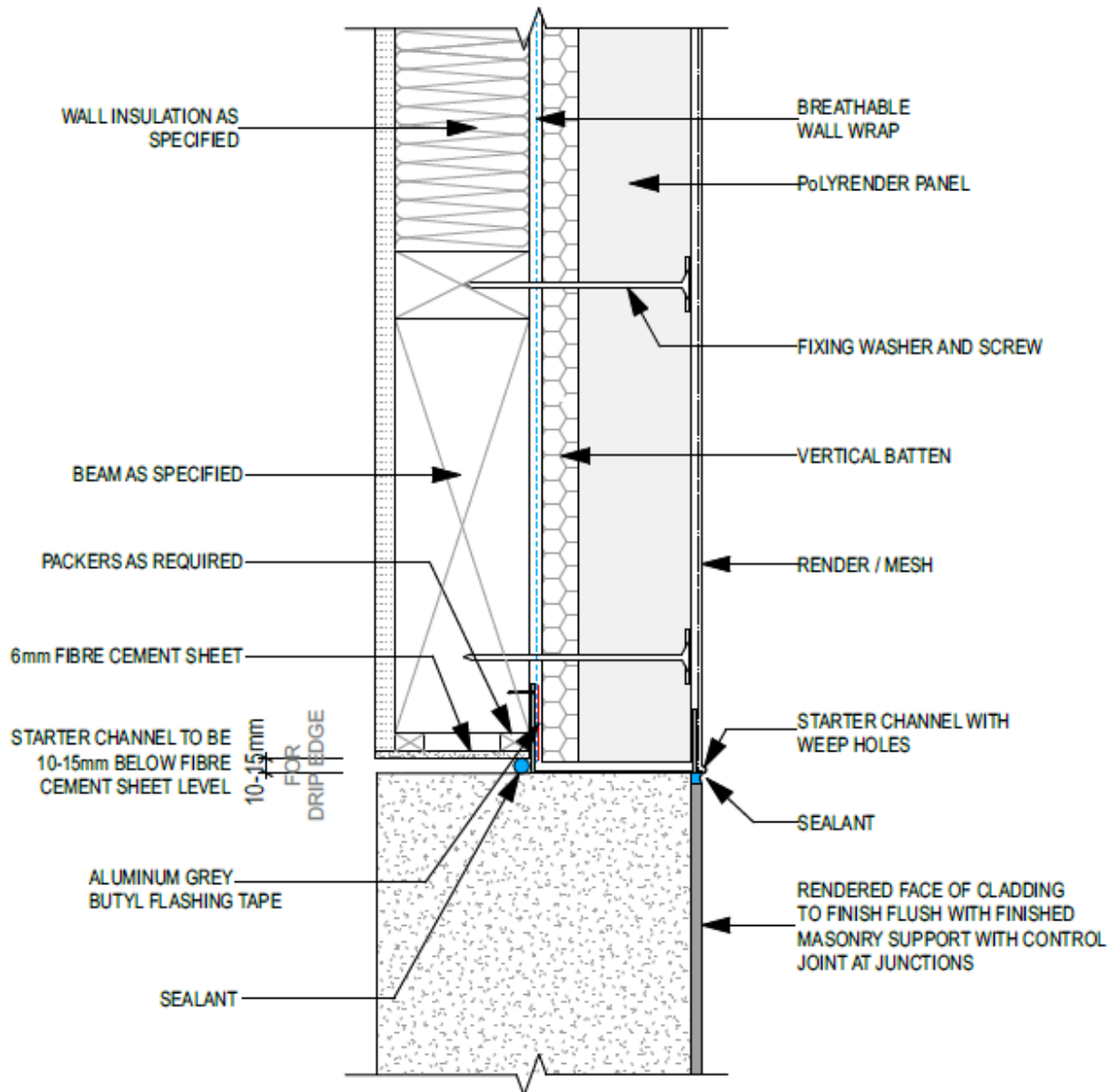
Typical details
for
PoLYRENDER
PANEL 75mm &
100mm
thickness.

14. Typical Downpipe Fixing Detail



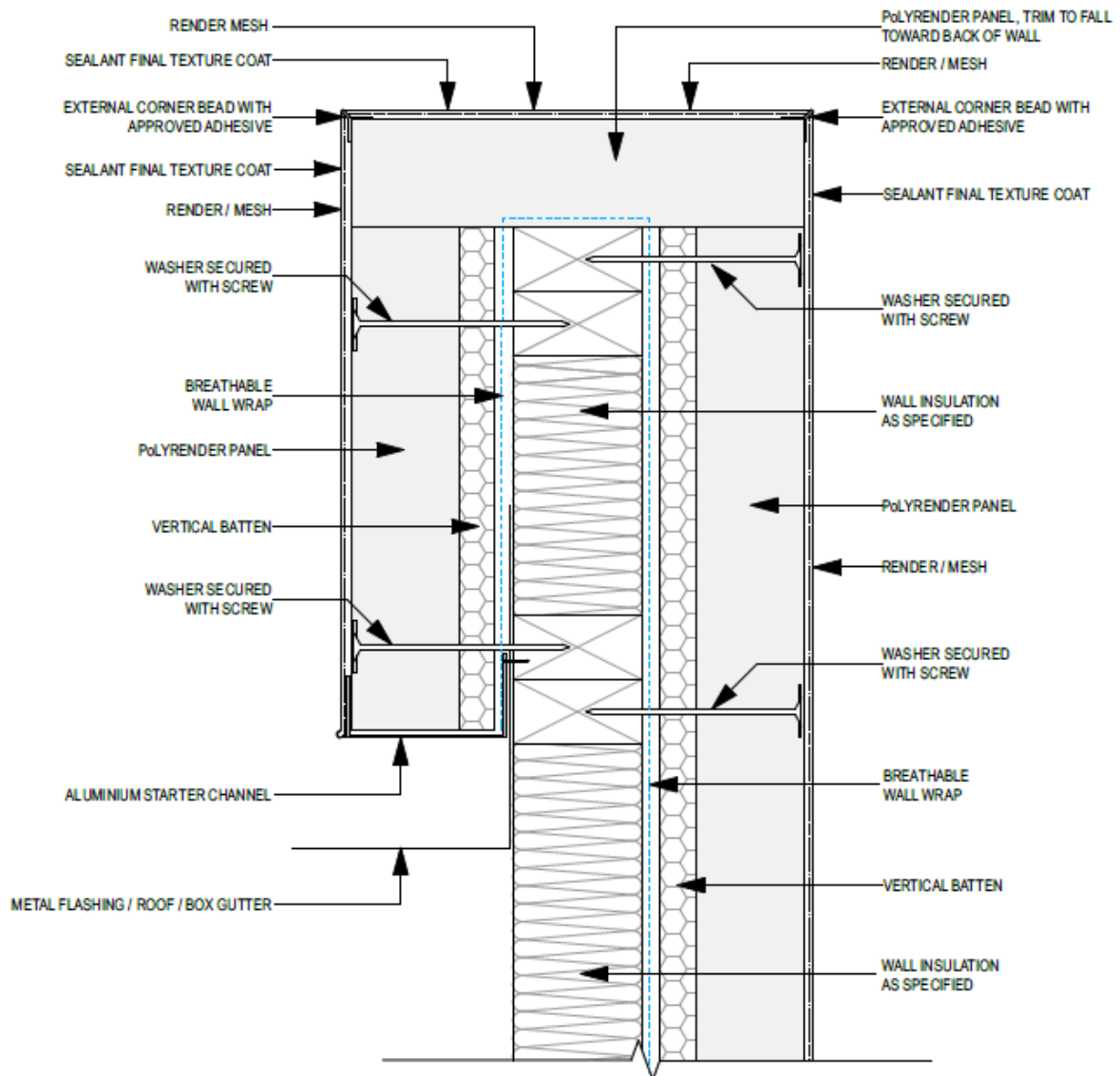
Typical details
for
PoLYRENDER
PANEL 75mm &
100mm
thickness.

15. Typical Garage/Bulkhead/Overhang Detail



Typical details
for
PoLYRENDER
PANEL 75mm &
100mm
thickness.

16. Typical Capping Parapet Wall to Metal Flashing Detail

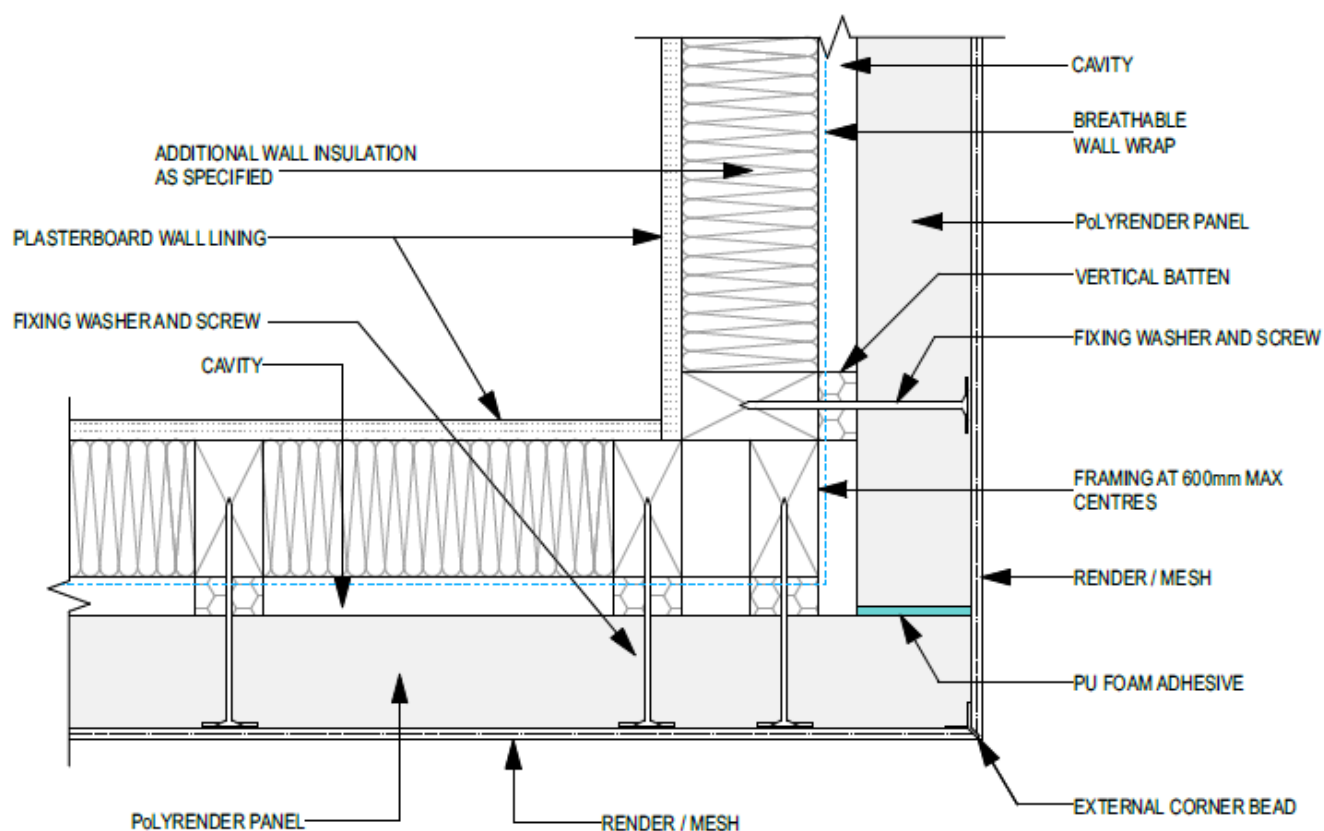


NOTE:

ALTERNATIVELY METAL FLASHING PARAPET
CAPPING TO BE INSTALLED BY ROOF PLUMBER

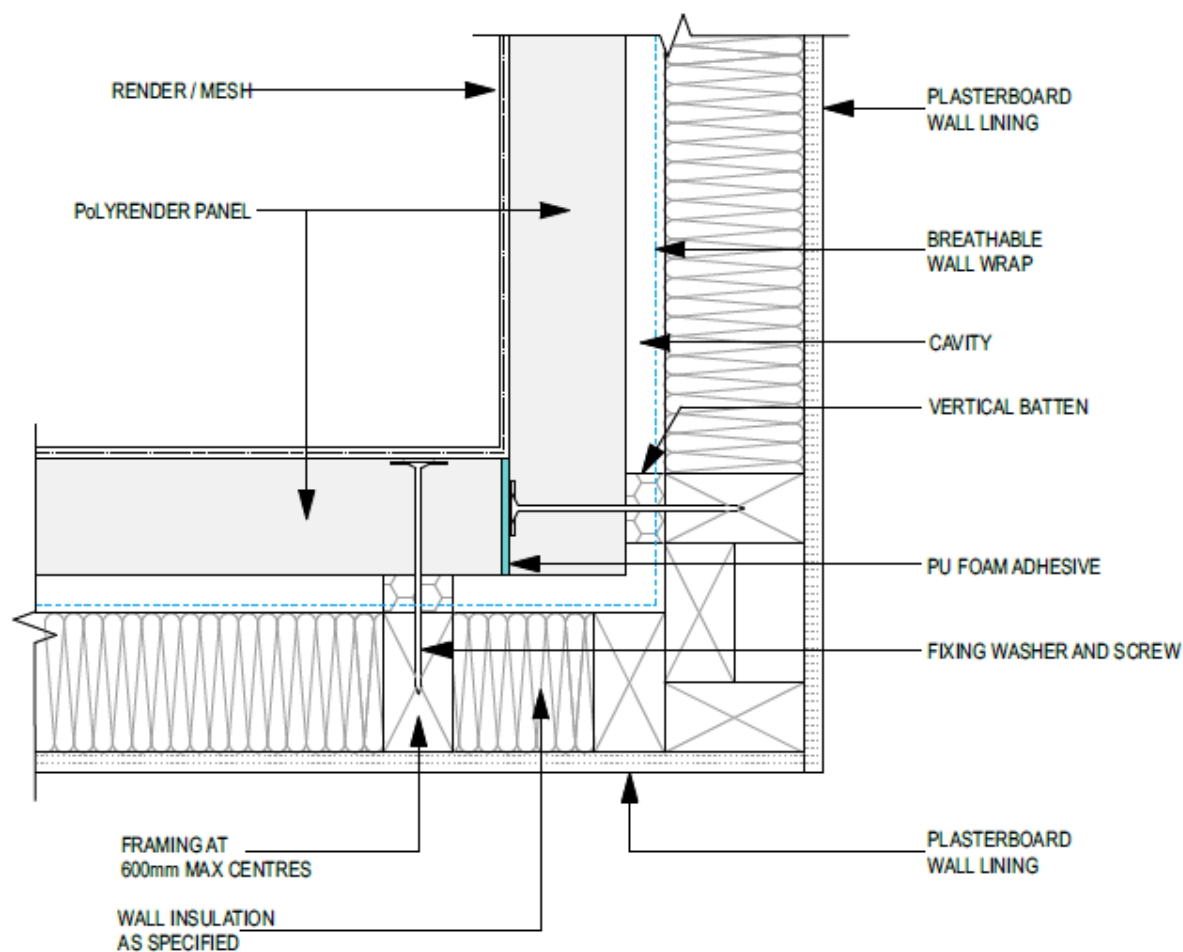
Typical details
for
PoLYRENDER
PANEL 75mm &
100mm
thickness.

17. Typical External Corner Detail



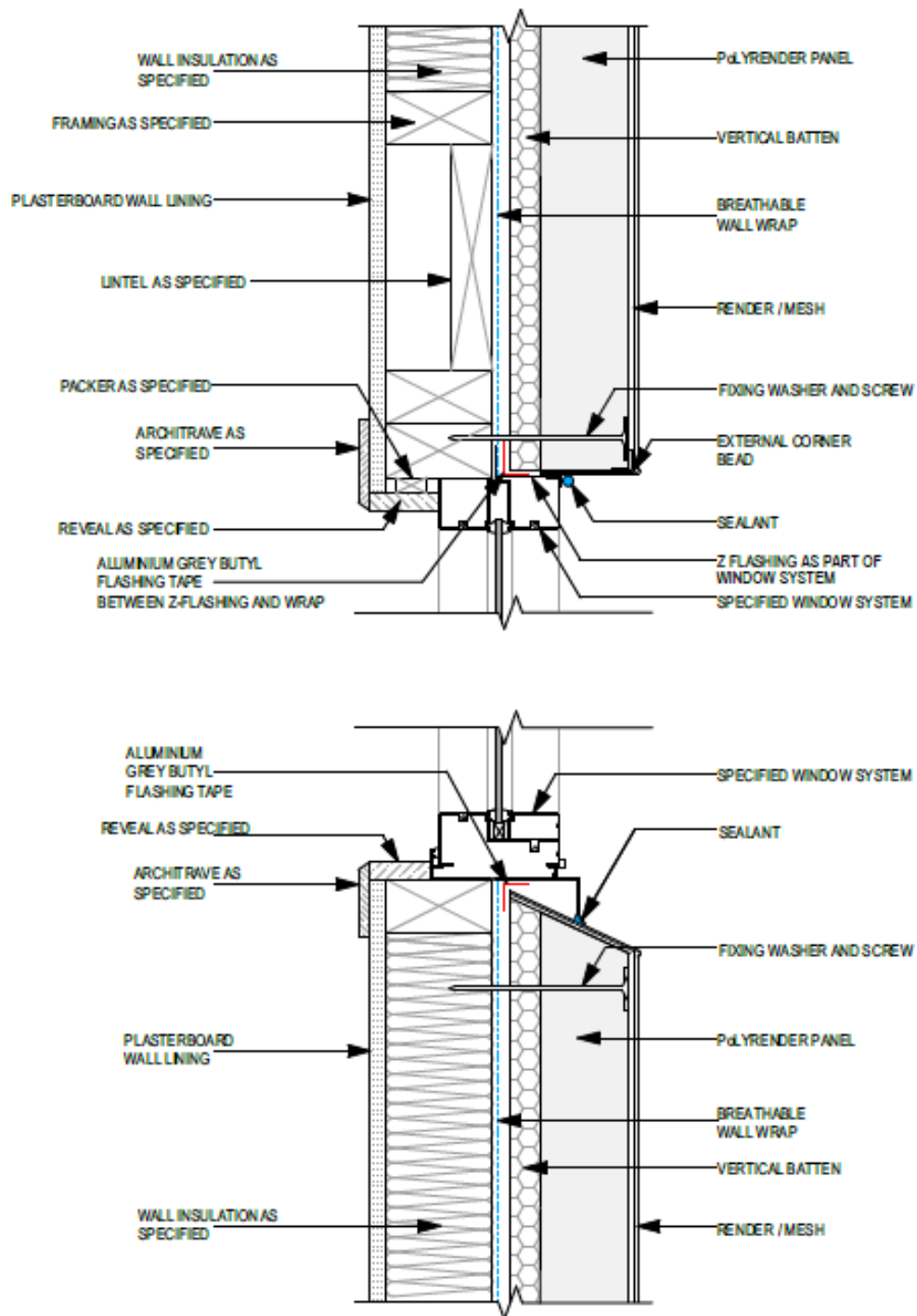
Typical details
for
PoLYRENDER
PANEL 75mm &
100mm
thickness.

18. Typical Internal Corner Detail



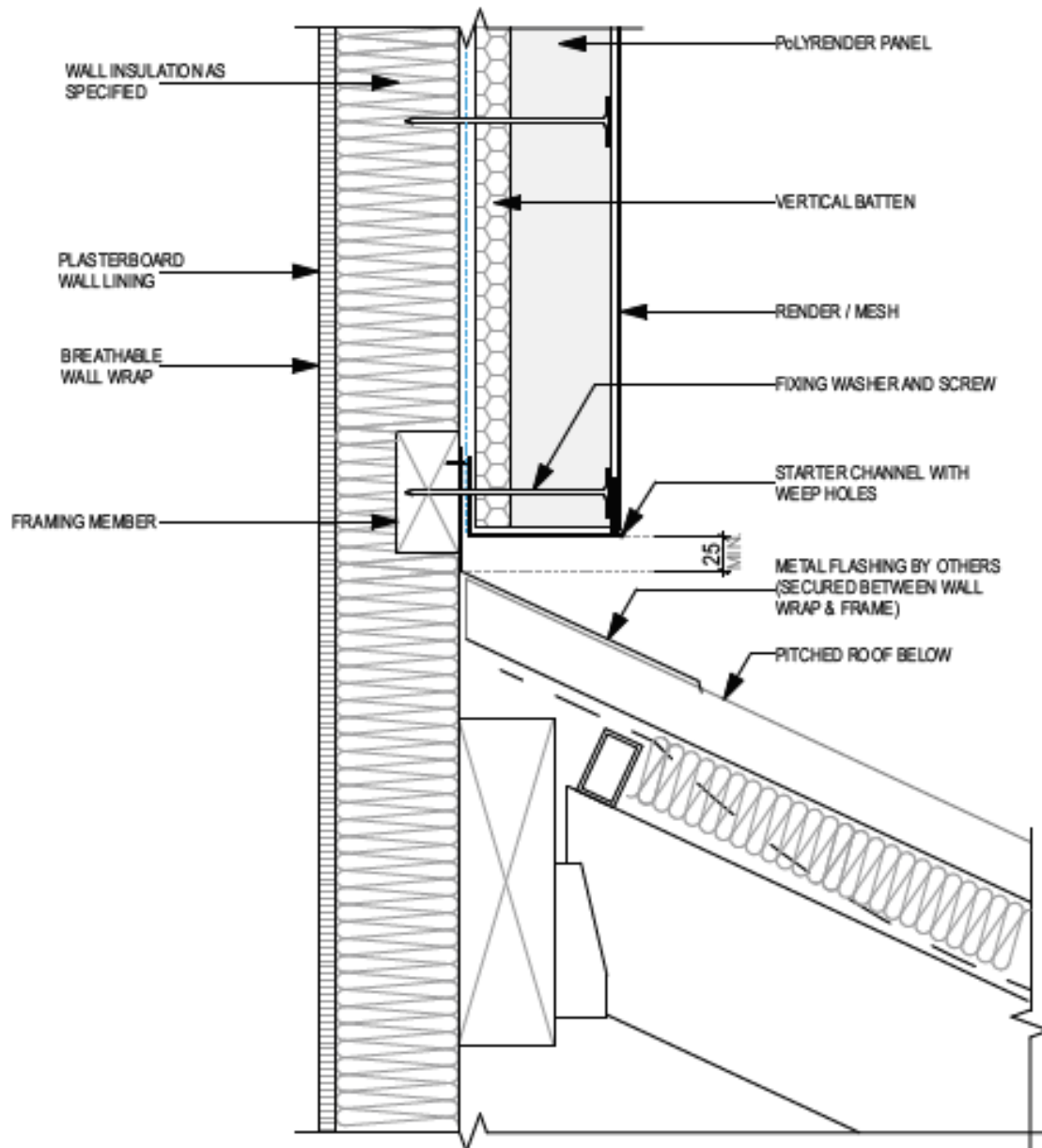
Typical details
for
PoLYRENDER
PANEL 75mm &
100mm
thickness.

19. Typical Window Head & Sill Detail



Typical details
for
PoLYRENDER
PANEL 75mm &
100mm
thickness.

20. Typical Wall Over Roof Detail



Typical details
for
PoLYRENDER
PANEL 75mm &
100mm
thickness.

Specification

Introduction

The building design and construction process involves three principal functions:

- Design, including product selection
- Manufacture and supply of all components; and
- Construction, including the attendant supervision, inspections, and certification.

Design

The design process must encompass the selection of the appropriate product for the particular design application. The architect for the particular design application. The architect and engineer for any building project share responsibility (and authority) to determine and communicate the design (within the constraints of National Construction code) to the builders. They are required to consider all relevant matters affecting the building and its components, and determine their designs drawing on professional training, experience, peer practices, ethics, client's requirements, published standards, research and the like. National Construction Code DTS (Deemed-to-Satisfy) provisions play an important part in this decision making (and in many cases will be adopted by the engineer or architect), although there are also many cases where the engineer or architect may specify details that are different from these. This information is communicated to builders by drawings and specifications.

Manufacture and Supply

There are two principal requirements of manufactures.

- Ensure that the company has a properly functioning management system, capable of delivering consistent product and service to predetermined specifications.
- Ensure that the nominated products satisfy the requirements of nominated national constructional code clauses.

Construction

The construction process must faithfully ensure that the design expectations have been met, and that the product has been installed in accordance with the manufacturer's instructions. However, the builder and the contractors must assume responsibility for the quality of the construction work.

Designers often take it for granted that builders and tradesman understand the detailed requirements for the construction of good quality buildings. This is not so; it needs to be clearly guided by competent and informed designers.

Specification - External Wall Insulation Cladding System

Scope

This section covers the specification and detailing of POLYRENDER, Thermal façade Polystyrene Cladding System.

Building regulations and standards

All materials and construction shall comply with the most recent version of:

- The relevant parts of the building regulations.
- The standards referred to therein.
- Other standards nominated in this specification; and
- Other relevant regulations

Relevant standards

AS 1366.3	Rigid cellular plastics sheets for thermal insulation – Rigid cellular polystyrene – Moulded (RC/PS – M)
AS 2498	Methods of testing rigid cellular plastics AS
AS 1684.2	Residential Timber framed construction Non-cyclonic areas
AS 1684.3	Residential Timber Framed Constructions Cyclonic areas
AS 1530	Methods for fire tests on building materials, components, and structures
AS 3660	Protection of buildings from subterranean termites
NASH STANDARD	Residential Low rise Steel framing

Commencement

Work shall commence as soon as practical after, but not before,

- a) The builder has issued:
 - A written order
 - The relevant contract drawings, specifications, and schedule of work
 - Written approval of any details provided by the contractor
- b) The structural framework has reached a stage to permit the work to proceed.

Preparation

Before fixing cladding to the framing or substrate, check and if necessary, rectify the alignment to ensure both levels and plumb

Fixing to Frames

Cladding shall be screwed through washers to timber or steel framing. Not closer than 20mm from edge and not further than 150mm from the edge.

Accessories

All necessary accessories and trim shall be installed. Aluminium or PVC External angle bead or start channel.

POLYRENDER Thermal Façade Polystyrene Cladding System components shall comply with this manual, building regulations & relevant standards, and shall consist of:

Expanded Polystyrene (EPS) Board (Stock code BPM751230 BPM751260 BPM1001230 BPM1001260)

Expanded Polystyrene (EPS) board shall be M Grade, fire retardant, vermin retarded, termite resistant, in accordance with AS 1366.3, with the following properties:

- Thermal resistance at a mean temperature of 23°C of a 50 mm sample in accordance with AS/NZS 4859.1 not less than 1.2 m².K/W.
- Compressive strength in accordance with AS 2498.3 not less than 105 kPa.
- Cross breaking strength in accordance with AS 2498.4 not less than 200 kPa.
- Water Vapour Transmission in accordance with AS 2498.5 not more than 520 mg/m².
- Dimensional stability in accordance with AS 2498.6 not more than 1%.
- Flame Propagation Surface Ignition of Vertically Oriented Specimens in accordance with AS 2122.1.
- Residue for 2 second Ignition Median Percent not less than 30%, Standard Deviation not less than 27%.
- Flame duration 5 second Median Percent not more than 2 seconds, Standard Deviation not more than 3 seconds.

PVC angle or bead (Stock code RST75 RST100)

PVC Beading shall be polyvinyl chloride virgin material, UV stabilised, marine grade extruded to the specified shapes.

Screws (Stock code SF100500 SF125100)

Screws shall be drill point counter-sunk ribbed head with coarse thread, Class 3 - Sizes TS90 & S100 (10-8 x 100 for 75 mm board), TS125 & MS125 (10-8 x 125 for 100 mm board). For applications closer to breaking surf than 1 km, Grade 304 or 316 stainless steel screws shall be used.

Washers (Stock code PW40500)

Washers shall be minimum 51 mm diameter. Washers are Screwtec Polypropylene 51mm washers

Fibreglass Mesh (Stock code FWM1, FWM1, FWMA12, FWM12)

Site-installed fibreglass 5 x 5 mm mesh, 160 g/m² mesh, shall be alkali resistant and self-adhesive

Polyurethane Sealant/Caulking. (Stock code SNF 600)

Bostik Seal N Flex 1 is a low modulus, one component, Class-A polyurethane sealant. When cured it will form a tough, flexible seal capable of cyclic expansion and compression movement of 100% (+ 50%) of the original installed joint width. It has excellent resistance to normal weathering conditions such as rain, sunlight, snow, sleet, ozone, atmospheric contamination, and pollution. This ability enables it to retain its original properties after years of exposure

Aluminium External Bead (Stock code RLC30)

Aluminium Render-Lock External Corner beads are made from a high-grade aluminium material. We recommend aluminium angles as they do not rust or cause rust damage and rust corrosion in all acrylic base render applications. Our aluminium angles are certified for external application in all environments. This includes extreme environments such as: high humidity, industrial pollution, and air borne salt particles and seashore residences. Depending on how you install the angle, you can build the render from 2.5mm thickness to 12mm. Aluminium Render-Lock corner beads should be imbedded into the acrylic base coat.

Backing Rod (Stock code **BROD**)

Backing Rod is a closed cell polyethylene foam. Supplied in circular section cords of varying diameter. Backing rods are primarily used as a backing strip for expansion or control joints or as a gap filler for any open joints. The backing rod is inserted into the designated expansion/control joint and used as a joint profile former to support elastomeric sealants.

Pro Render (Stock code **RENDERP**)

Chad Surface Coating Dry Mix Pro render is a superior quality cement based, polymer modified render containing washed and graded medium silica sand, acrylic powder, and proprietary additives. It is suitable for rendering fibre cement sheets and similar substrates. CHAD Surface Coating' Dry Mix products are manufactured to stringent quality standards, from the highest quality raw materials available, all of which are blended to accurate specifications to ensure product performance and reliability is "built into every bag, every time!" CHAD Surface Coating Pro render provides the ideal base for the subsequent application of variety of top coating's including CHAD Surface Coating Decorative Textures and Finish range coatings.

Trade Render Second Coat (Stock Code **RENDERT**)

CHAD Surface Coating' "Trade" Render is a superior quality cement based, render containing washed and graded fine silica sands, acrylic powder to increase adhesion and strength and proprietary additives to aid workability. It is suitable for all exterior & interior masonry wall SKIMCOAT rendering and patching requirements. CHAD Surface Coating' Dry Mix Products are manufactured to stringent quality standards from the highest quality raw materials available, all of which are blended to accurate specifications to ensure product performance and reliability is "built into every bag, every time!" CHAD Surface Coating Render provides the ideal base for the subsequent application of variety of topcoat's including CHAD Surface Coating Decorative Textures and Finish range coatings.

Texture coating Chad Surface Coatings Texture (Stock code **TEXSC (white base)** or **TEXSCC (clear base)**)

CHAD Surface Coatings Texture in Fine, Medium, and Coarse are a durable marble-based texture coating, ideal for providing an attractive finish on correctly prepared domestic & commercial, exterior & interior wall surfaces. It can be trowel applied or sprayed. Generally, it is trowel applied and finished to achieve an even coarse or fine granular appearance low build protective coating displaying excellent resistance to weathering and excellent exterior durability. It is a system product of the Chad Surface Coating Wall Coating System and requires being top coated with CHAD Surface Coating Membrane for total exterior durability and performance.

Expanding Foam (Stock code **BGF750**)

Elastic Polyurethane foam adhesive designed for use to bond substrates along the edge of the POLYRENDER Panels. This is used because of its high adhesion and good flexibility. Used to install EPS wall sheets, Base channels and PVC or Aluminium Angles.

- Open time 20 to 30 minutes depending on temperature, maximum bond achieved within 12 to 72 hours depending on temperatures and thickness.

Cladding of Domestic Dwelling

The following specification is generally suitable for cladding domestic dwellings, subject to confirmation by the Designer and the Engineer. A suitable support framing system must also be provided, (AS1684) for timber and NASH Standards for metal frame. PoLYRENDER Panels shall be screw fixed to vertical timber studs.

Unless specified otherwise by the designer, the following details and tables shall be used for the cladding of domestic dwellings with 75 mm or 100mm thick PoLYRENDER Panels.

General Notes

1. The standard system (detailed in this manual) is designed for wind loading N1, N2, N3 and N4 in accordance with AS 4055
2. The standard system (detailed in this manual) is not designed for wind loading N5 and N6 or cyclonic wind in accordance with AS 4055

Notes

1. The total thermal resistance, R, of thermal wall systems comprising insulation board, fixings and high-build multilayered weatherproof coating shall be not less than the following.
 - The value specified in the Building Regulations for the particular application. Where total thermal resistance is specified, an allowance shall be made for internal air film of 0.12, external air film of 0.03, and appropriate values for render, plasterboard, reflective or non-reflective cavities and other wall components, if incorporated into the construction.
 - Any value specified for purposes of enhanced comfort or energy saving.
2. The stated thermal resistances are the minimum values required for compliance for AS 1366.3 Class M for the expanded polystyrene
3. These values may be used, in conjunction with the thermal properties of other components, to satisfy:
 - Performance requirement NCC Vol 2 P2.6.1 using variation methods V2.6.2.1 or V2.6.2.2.
 - Deemed-to-satisfy provision NCC Vol 2 3.12.1.4, using table 3.12.1.3

National Building Code Compliance

Scope

This section describes the means whereby PoLYRENDER satisfies the performance requirements of the National Construction Code.

Performance requirements, Deemed-to-satisfy & Alternative Solutions

All building design must comply with the relevant state building regulations, which are incorporated into the National Construction Code Volume 2. These define the performance requirements, generally in very broad terms, and the means of compliance through the following paths, each of which has equal status under the national construction code.

- Deemed-to-satisfy provisions, which may include:
 - Acceptable Construction Manuals (e.g., Nominated Standards)
 - Acceptable Construction Practise (e.g., forms of construction reproduced in the national construction code itself)
- Performance Solutions (e.g., Designs based on test results and engineering principles).

Compliance Statement

POLYRENDER, Thermal Façade Polystyrene Cladding System Insulation and render components, consisting of:

- Expanded polystyrene, 75mm or 100mm thick complying with Class M of AS 1366.3:1992 with Self Adhesive 160g/m² alkali resistant fibreglass reinforcement and 5mm polymer render
- Fixed to stud framing by type 3 Galv. screws and 51mm diameter PP washer
- Aluminium or PVC weatherproof beading
- Acrylic based texture membrane coating

Complies with National Construction Code of Australia (NCC)

1. NCC Volume 2 Performance requirements for wind loading, damp proofing, weatherproofing, and energy efficiency -3.12.1.1 (a), P2.2.2, P2.1.1 & P2.2.3

Thickness of Expanded polystyrene (mm)	Thermal Resistance R m ² K/W
75	1.8
100	2.4

2. To determine the total thermal resistance of the wall system, the following should be added to these values -0.00 for the render, 0.03 for the external air film, 0.12 for the internal air film and appropriate values for plasterboard, reflective or non-reflective cavities and other wall components, should they be incorporated into the construction.
3. A POLYRENDER, Thermal façade polystyrene cladding system, consisting of 75mm or 100mm Grade M EPS with 10mm plasterboard on either 75mm or 90mm studs will provide total thermal resistances tabulated below.

Material	Total R value (winter)	Total R value (Summer)
75mm Steel	2.44	2.32
75mm Timber	2.51	2.38
100mm Steel	3.06	2.90
100mm Timber	3.13	2.97

Notes

1. This table provides the thermal resistance of POLYRENDER panel single leaf walls, without added insulation.
2. Thermal resistance of POLYRENDER is based on AS 1366.3 Class M expanded Polystyrene EPS board.
3. Allowances for air films and air spaces are included. There is no allowance for reflective foil.

Subject to the following conditions and limitations:

1. Product selection, and incorporation into the building design, shall be made by a person who:
 - Is conversant with the applicant and technical aspects of the product; and
 - Has ready access to the relevant technical information related to the product use.
2. Product installation shall be carried out by a competent carpenter or other tradesman under the direction of a builders, both whom:
 - Are conversant with the method of product installation; and
 - Have access to all relevant technical information on product installation.

Warranty

CHAD Group Australia Pty Ltd as the manufacture of POLYRENDER, Thermal Façade Polystyrene Cladding System products, provides a seven-year warranty as follows:

1. CHAD Group Australia provides the warranty from date of purchase for replacement of defective product only
2. CHAD Group Australia will be in no circumstances liable for any loss or damage (including consequential loss), whether direct or in direct to persons or property.
3. CHAD Group Australia will not be responsible and/or liable to any person in any way for incorrect fixing, installing, finishing, and rendering by any person.

Warranty is null and void if product is not installed in accordance with guidelines given and set by this manual.

For more information about premium plaster services, plaster products, PoLYRENDER, Thermal Façade Polystyrene Cladding System, Façade products and accessories, insulation, and paint; contact CHAD Group Australia on (03) 9544 8899 or visit www.chadgroup.com.au today.

WAREHOUSE

(03) 9544 8899

EMAIL

sales@chadgroup.com.au