

BLACK BOOK ONE





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INTRODUCTION

PRODUCT RANGE

SPECIFICATION DATA

COLOURS & FINISHES

INSTALLATION
GUIDANCE

KINGSPAN EUROPE



Why Kingspan Benchmark?

With over 25 years experience, Kingspan Benchmark is a trusted leader in the design, manufacture and supply of high quality, innovative custom-made insulated architectural panel façades and integrated solutions.

Benchmark brings together all the elements to help you create stunning architectural façades to perfectly suit your building designs and specifications, backed with the confidence of full warranties, building regulation compliance and thorough testing procedures.

With inspirational façades and bespoke architectural panels in exciting colours, textures and finishes from metallic to high pressure laminates and ceramic tiles, Benchmark's team of expert project managers and designers can help you achieve your build project goals. Benchmark offers fully integrated wall façade systems with bespoke finishing touches including flashings, preformed corners and steel framing solutions that boost the aesthetic appeal of a building and help raise the standard in architectural performance.



Aten Infotech
HEUSDEN-ZOLDER, BELGIUM.

Introduction

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What are Benchmark insulated façade systems?

Lifetime insulation continuity, thermal performance and air tightness

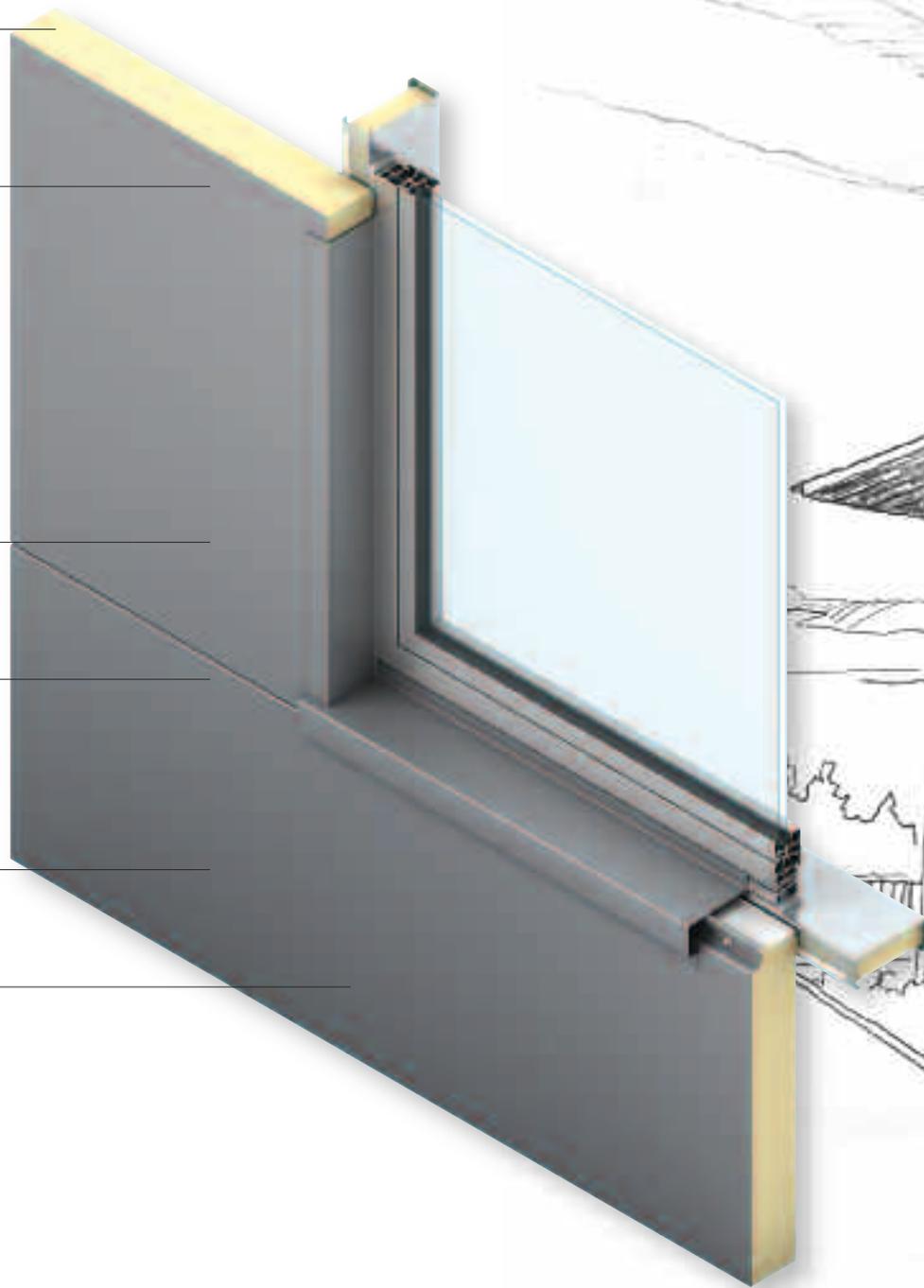
Accelerated build speed through single component installation

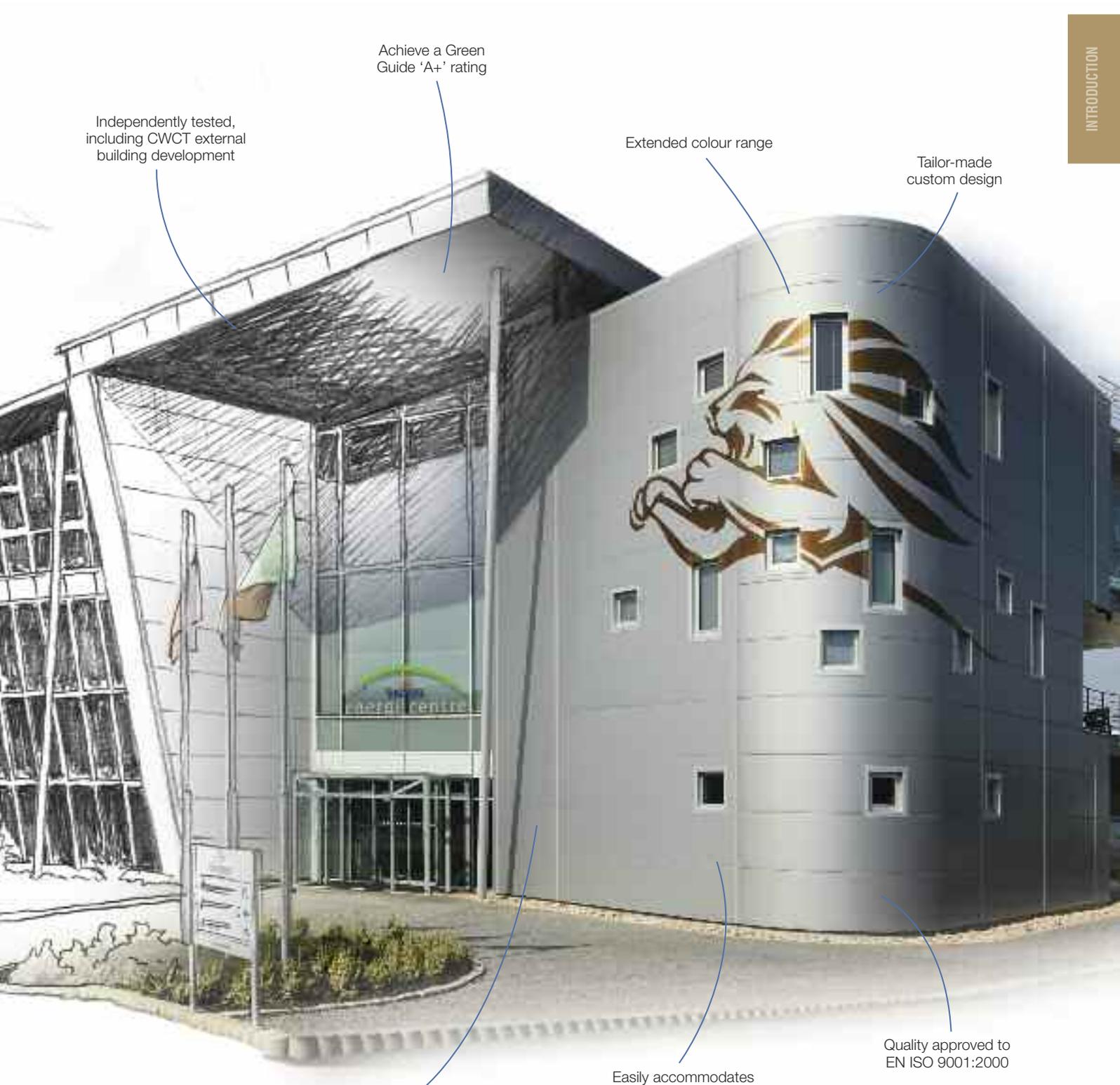
FireSafe system

Architecturally enhancing package

Suitable for vertical or horizontal applications

Available with Total Benchmark Guarantee





Achieve a Green Guide 'A+' rating

Independently tested, including CWCT external building development

Extended colour range

Tailor-made custom design

Simple integration with doors, windows and glazing

Easily accommodates openings and complex facades

Quality approved to EN ISO 9001:2000



Architectural Design & Flexibility

The Kingspan Benchmark Designwall and Karrier System ranges are more than insulated wall panels. They are building envelope systems that can be tailor-made for custom, out of the ordinary projects.

Innovation through the years has made creative design freedom possible with architectural panels, manufactured using both structurally laminated and foamed-in-place techniques.

Additionally, the Karrier System combines the proven benefits of Kingspan insulated panels with a vast range of exciting colours, textures and finishes providing premium façades for signature buildings.



University of York
YORK, UK

Joint Options

The Designwall series offers a range of aesthetic joint finish options – top hats, box framing and trimless ends. Trimless ends feature a recessed vertical joint that, in combination with variable reveals, creates a clean modular façade appearance.



Evolution joint options



Aluminium Frame



Inline Black



Inline Silver



Q2



Q4



Q2A



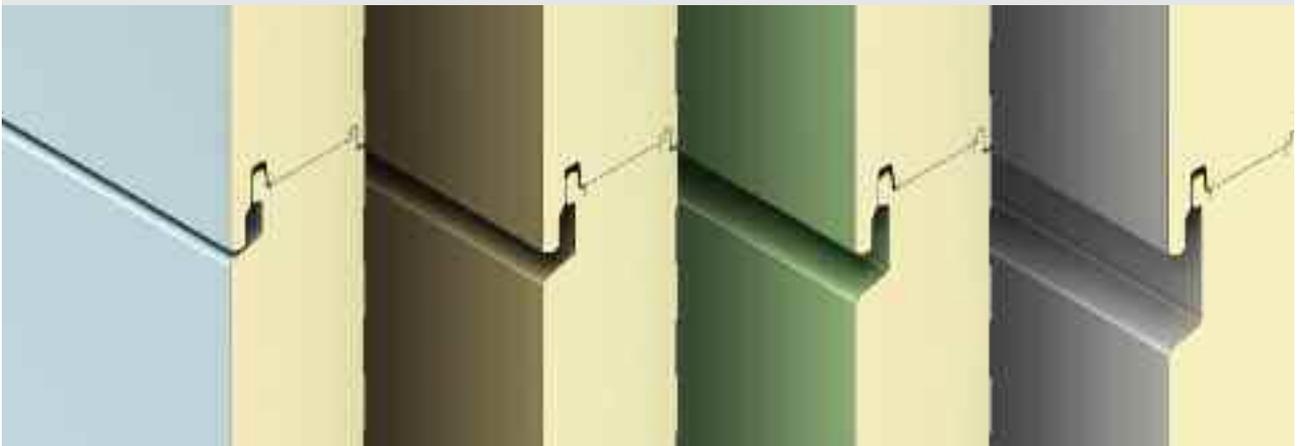
Peter Beckers BMW
GENK, BELGIUM.



Architectural Design & Flexibility

Variable Reveals

- Various reveal heights provide a custom linear appearance
- In combination with trimless ends, create a clean modular façade
- Reveal heights of 0, 10, 20 and 50mm
- Custom reveal 'accent' colour options available
- Reveal options dependent on panel selection



Clark State
Community College
SPRINGFIELD, OH, USA.

Variable Module Widths and Lengths

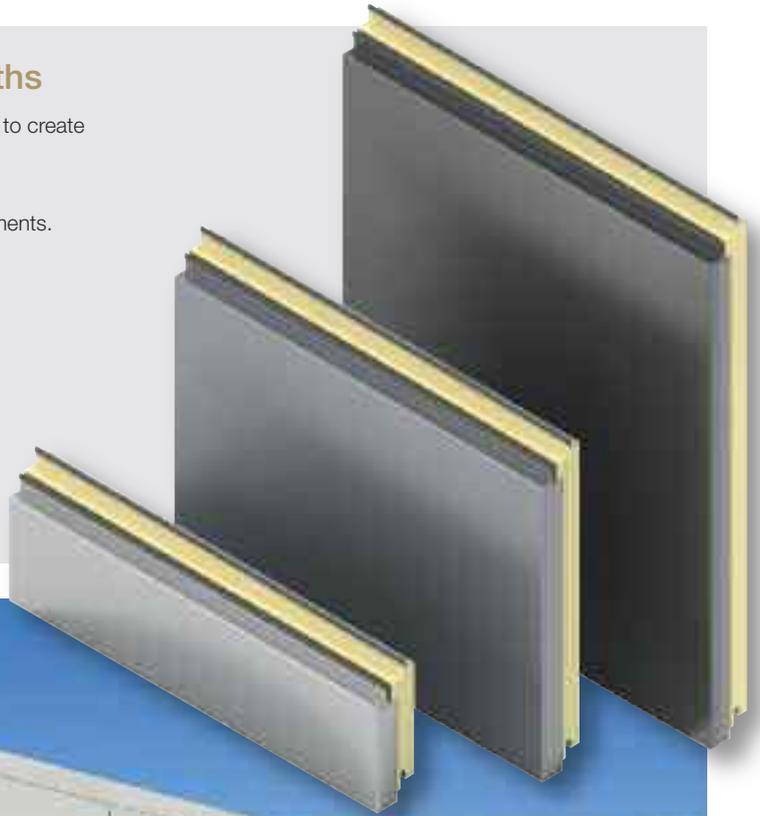
Variable widths and lengths of façade systems are available to create more detail:

■ Inspiration

- Widths vary from 250mm – 1100mm in 10mm increments.
- Lengths can be between 250mm – 4.2 metres.
Standard lengths are between 2 and 4 metres (max).

■ Evolution

- Widths of 600mm, 900mm, 1000mm are available.
 - Standard lengths are between 2 and 6 metres (max).
- Panels less than 2 metres long can be supplied.





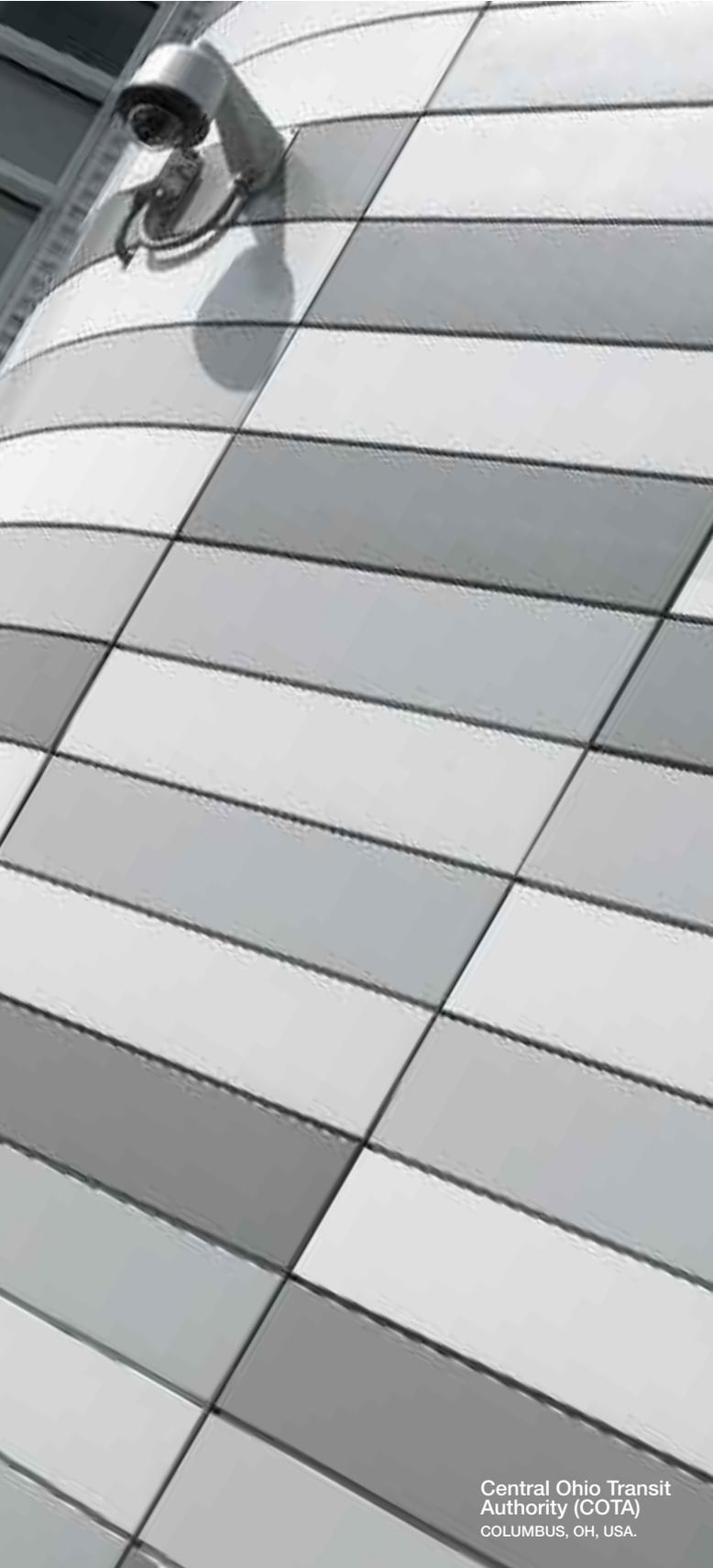
Architectural Design & Flexibility

Custom Corners

Bespoke preformed corners are essentials to the aesthetics of a building. Internal and external, vertical and horizontal units are available in the following options:

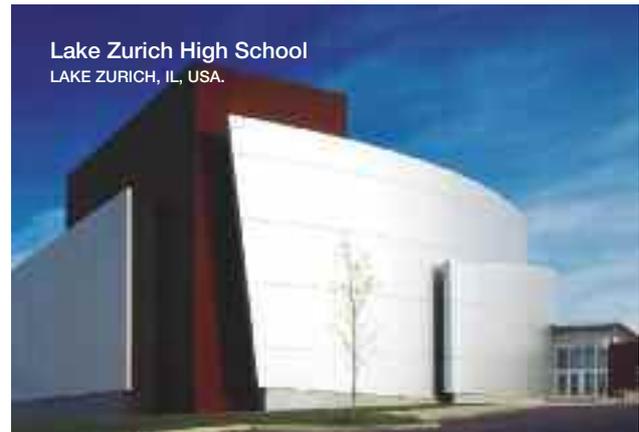
- Radius corners
- Cranked corners
- Mitred corners
- Chamfered corners
- Column encasements





Radius options

- Horizontal radius panels
- Segmented panels



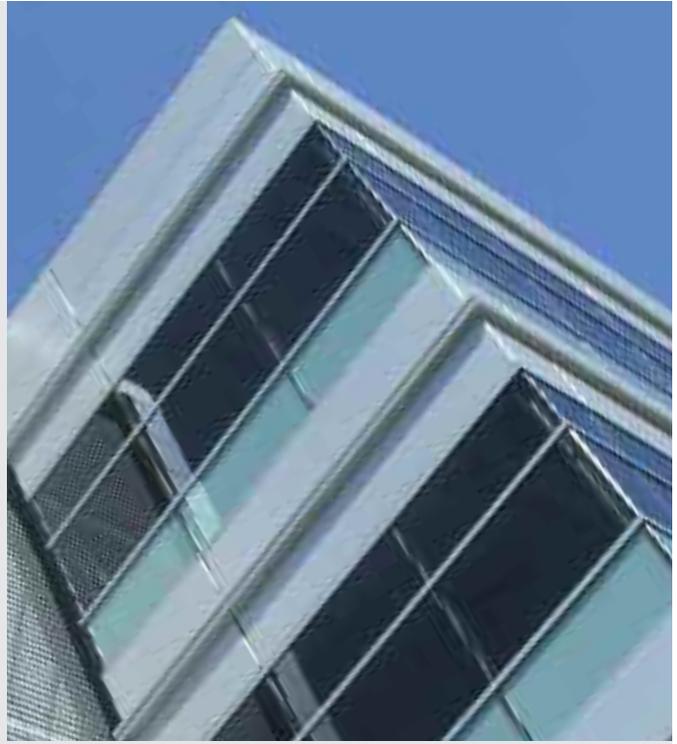
Central Ohio Transit Authority (COTA)
COLUMBUS, OH, USA.



Architectural Design & Flexibility

Integrated window systems

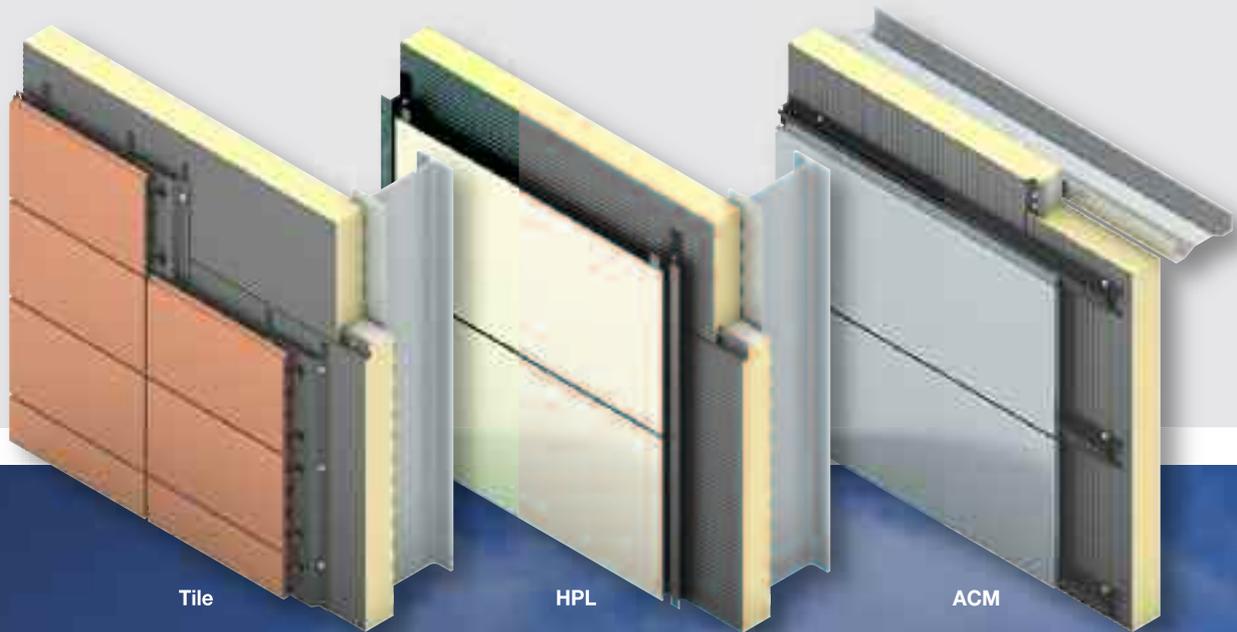
- Designed to integrate with Designwall panel systems.
- Aesthetically pleasing – no secondary flashings or additional sight lines.
- Designed to preserve and maintain the same weather proofing principles as insulated panels.



Engineered Façade System Options

The Engineered Façade System features a range of façade colours, finishes and textures, including:

- **HPL** featuring Trespa® high pressure laminates.
- **Tile** featuring ceramic tiles from Agrob Buchtal.
- **ACM** featuring Alucobond aluminium composite material.



Tile

HPL

ACM



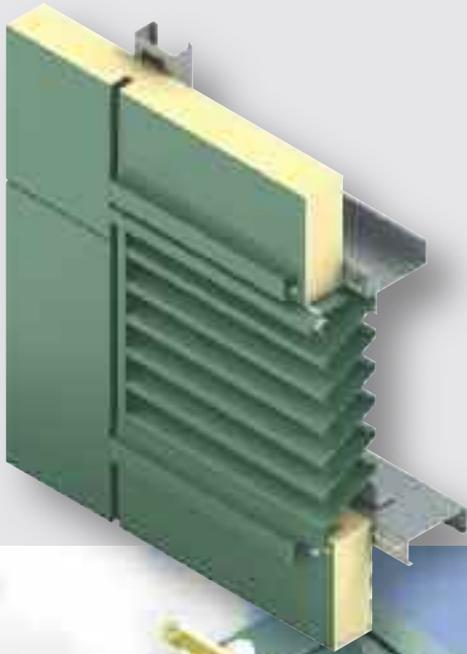
Higher Broughton
Community Hub
SALFORD, UK.



Architectural Design & Flexibility

Integrated Louvres and Solar Shading

- Designed to integrate with Designwall panel systems.
- Tailor-made for custom appearance.
- Solar shading reduces a building's energy consumption.
- Available in a variety of finish options.

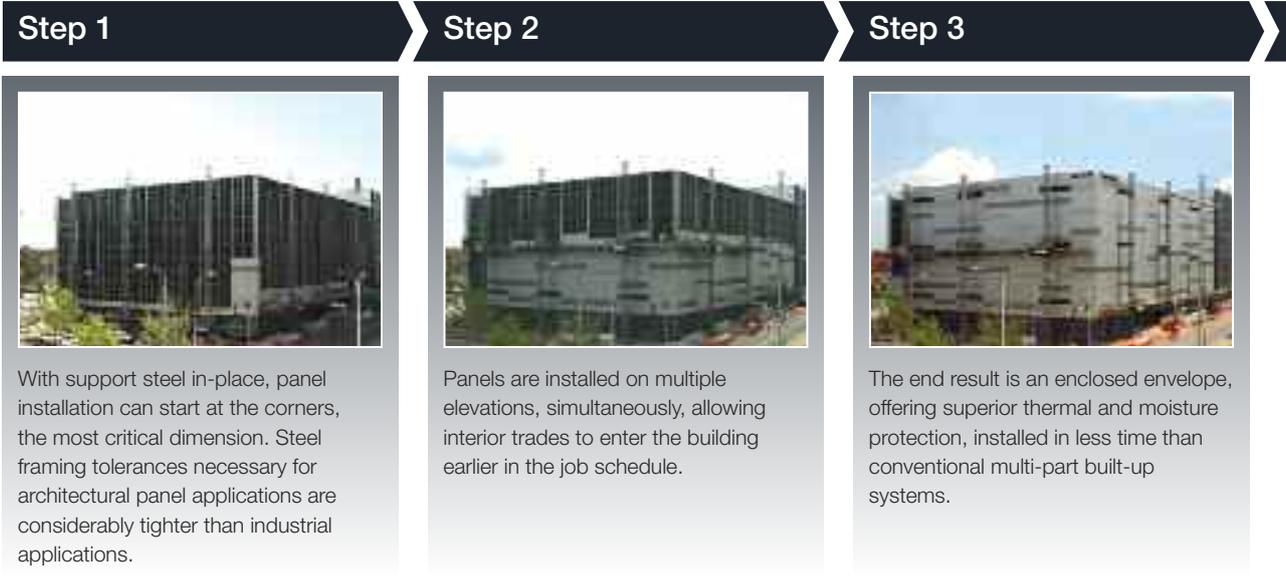




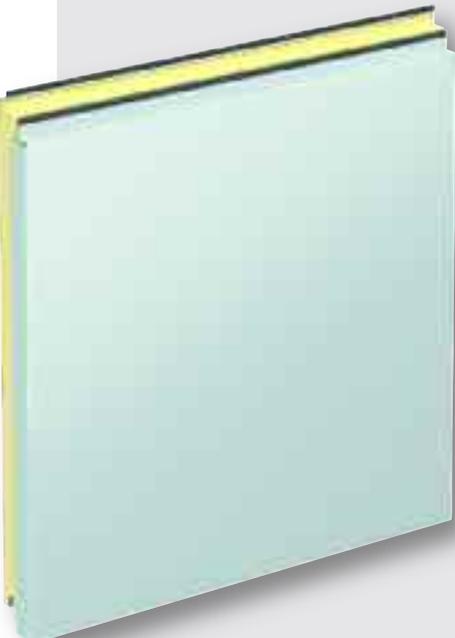
MRI Scanner Unit
NORWICH, UK.



Build Speed



Architectural insulated panels are a single component system that increase the speed of build, minimise delays reduce the need for multiple trades and promote earlier internal fit-out.



1

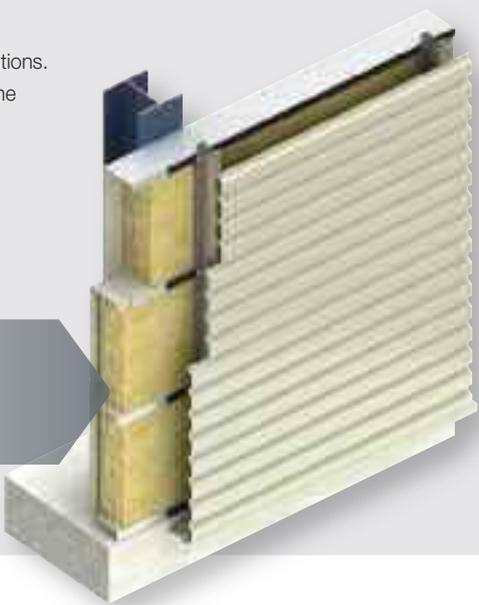
Single Component vs Cassette System

Compared to a multi-part, site assembled, cassette wall system, the Kingspan Benchmark panel as a single component allows for up to 50% faster installation time.

Panels are lightweight, easier to handle and can be installed in all weather conditions. The single component nature reduces the need for multiple trades on site and the associated workmanship quality issues.

This allows the site installation of the wall system to be removed from the building programmes' critical path.

- *Multi-component*
- *Multi-fix*
- *Weather limited*
- *Quality defects*

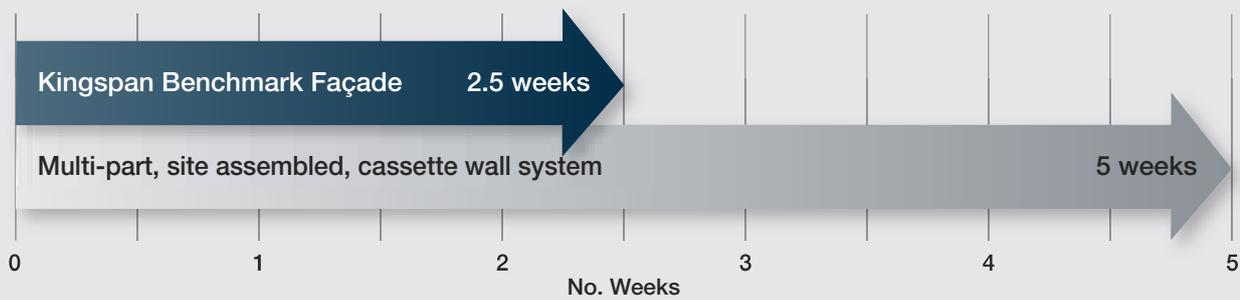


Step 4



Verizon
ROANOKE, VA, USA.

Installation Time: area 5,000m²



System Performance



Thermal

Kingspan Benchmark insulation cores provide superior thermal performance with tested U-values. Most importantly, the insulation is on the exterior of the building structure to provide the best possible thermal envelope by reducing thermal bridging typical of cavity wall systems. In addition, the panels feature excellent insulation core-to-core contact, which provides an unbroken thermal shield against heat transfer.

The combination of the vapour diffusion-closed external facing with a closed-cell PIR/IPN rigid urethane core achieves a high insulation performance, currently the best of all well-known insulating systems in the construction industry.



Acoustic

Kingspan Benchmark façade panels have a minimum single weighted sound reduction index R_w of 25dB. For the installed Karrier systems, please refer to specific product data sheets for detailed information.



Structural

Kingspan Benchmark panels consist of two metal faces positioned on either side of a core that is a thermally insulating material, which is firmly bonded to both faces so that the three components act compositely when under load. The individual layers by themselves have limited flexural rigidity and cannot therefore bear loads but, by combining the two outer surface layers with the core, a shear rigid composite section is formed.



Fire

Kingspan Benchmark façade panel systems are widely recognised by investors, property insurers, designers and constructors for their superior fire performance and reducing fire risk. The systems are tested and approved to European and country specific standards, complying with all relevant building regulations.

Please refer to specific product data sheets for detailed reaction to fire and fire resistance characteristics.



Superior Airtightness and Weathertightness

One of the biggest sources of building heat loss (or heat gain) is air leakage, i.e., 'leaky buildings'.

Kingspan Benchmark panels are rigorously tested to ensure that they remain both airtight and weathertight over the lifecycle of a building.

The easiest, fastest and most cost-effective strategy to reduce energy demand and construction costs is to utilise the high thermal performance and superior airtightness benefits of Benchmark façade systems.



Testing & Accreditation



Kingspan Benchmark panels have been extensively tested for compliance with various industry standards and building safety codes.

Fire Performance: Kingspan Benchmark insulated panels have been tested and comply with National Building Regulations and standards. Panels with **FireSafe** IPN core are classified as B-s1,d0, according to EN 13501-1.

Additionally, FireSafe Insurer Approved Systems are available.

Thermal Performance: Kingspan Benchmark insulated façade panels are available with a ThermalSafe IPN insulation core that achieves a outstanding thermal conductivity of $\lambda \leq 0.020$ W/mK, according to EN 13165 – *Thermal insulation products for buildings – Factory made rigid polyurethane (PUR) products.*

Air Leakage: Panel joints have been tested for air penetration in accordance with national requirements.

Structural: All Kingspan Benchmark façade panels comply with EN 14509 – *Self-supporting double skin metal faced insulating panels – Factory made products – Specifications.* In addition to this, national application and system approvals are available.

Kingspan Total Benchmark Guarantee:

All systems are available with the Total Benchmark Guarantee, offering thermal and structural performance guarantee.



Renault Dealership
PONT-L'ABBÉ, FRANCE.

EnvelopeFirst™ Strategy

Kingspan has developed EnvelopeFirst™ – a design strategy for optimising a building’s performance and the first step on the route to Net-Zero Energy Buildings.

The most effective, and affordable, energy saving measure available to a building is the application of a high performance building envelope system that provides guaranteed thermal and airtightness performance over the building’s operational life.

Kingspan offer a wide range of building envelope systems that can provide significant performance benefits towards the overall energy efficiency of a building and the optimum specification, size and amount of HVAC equipment – the largest end use of energy and source of GHG emissions in commercial buildings.

The next step, once the building envelope is as efficient as possible, is the implementation of additional energy efficiency measures (EEMs).

Finally, the integration of renewable technologies enables a building to achieve net-zero energy targets, and even become a net-energy producer.



EnvelopeFirst™

The first step to Net-Zero Energy Buildings. The most improvement for the least cost.



Energy Efficiency Measures (EEMs)

Building services and controls.

Net-Zero Energy Buildings

A building's envelope, services and renewables must be considered on a 'whole building design' basis in order to optimise energy performance to achieve EU targets.

INTRODUCTION



Whole Building Design (WBD)

The design, construction and/or retrofitting of high-performance low- and net-zero energy buildings demands an integrated, 'whole building design' approach. In comparison to conventional design and construction processes, WBD examines the integration of all building components, systems and equipment to determine how they work together to save energy and reduce the buildings overall impact on the environment.

WBD considers all impacts and influences associated with a building; site, orientation, energy, materials, acoustics, indoor air quality, and natural resources.

“Building insulation is the most cost-effective solution to reduce energy and greenhouse gases.”

Source: McKinsey Global Institute.



Insulate & Generate

EnvelopeFirst™ + integrated renewable technologies.



Net-Zero Energy Buildings

Highly energy efficient buildings that are energy neutral over the course of a year.

Service & Support



Technical Services

Kingspan Benchmark boasts an in-house technical service department that advises and supports designers, specifiers and installation contractors in the areas of building design, product application and integration, code compliance and site-work installation practices.

At Kingspan Benchmark, we provide our customers with extensive building envelope performance expertise and experience to supply technical designs and cost effective construction application solutions on all projects. We can work with you to advise and recommend wall solutions for your project, from the design concept stage through the installation of the panels. We offer a fast, project specific, tender bid and specification service in partnership with recommended installers and contractors.

Call Benchmark to speak to one of our advisors, or submit an enquiry at:

Germany: www.kingspanbenchmark.de

Hungary: www.kingspanbenchmark.info

Poland: www.kingspanbenchmark.pl

Czech Republic: www.kingspanbenchmark.cz

We will respond to your enquiry with tailored solutions.

All Kingspan Benchmark products are fully supported by relevant testing, certification and accreditations to ensure compliance, and are guaranteed for operational performance and service life durability.

Field Service Support

Our field services team provides off- and on-site installation training and support in order to guide our installers to deliver 'in-place' products that fulfill customers' requirements and expectations. We offer a site inspection service throughout the construction process as well as advice on mechanical handling solutions.

Quotations

To receive a quote for your designs, including pricing and lead times, call the Benchmark team.

Customer Service

Our dedicated team provides focused customer service for all commercial pre- and post-order administration, delivery scheduling, and installer support, ensuring a seamless, coordinated customer experience.

To ensure high levels of satisfaction, we regularly conduct customer surveys to gather important feedback that help us keep a pulse on the marketplace.

Sales Team

The Kingspan Benchmark sales team is available to provide advice, presentations and one-to-one service. Visit the relevant Kingspan Benchmark website for your country, and select your location to identify the nearest sales manager.

Marketing Support

Our marketing team aims to provide a fast turnaround on standard sample and literature requests, eliminating delays with planning and client approval of material, so that your project begins on-time. Additional marketing support is provided through the use of project case studies.

Contact Us

Kingspan Benchmark is located:

Head Office: Benchmark Façades Europe, Am Schornacker 2, 46485 Wesel, Germany, Tel: +49 281 9 52 50 12

Benchmark Façades Hungary, 2367, Újhartyán, Horka dűlő 1. Hungary, Tel: +36 29 573 400

Benchmark Façades Poland, ul. Przemysłowa 20, 27-300 Lipsko, Poland, Tel: +48 48 378 3100

Benchmark Façades Czech Republic, Vážní 465, Hradec Králové, 500-03, Czech Republic, Tel: +420 495 866 111

- Benchmark
- Manufacturing and Sales
- Sales



INTRODUCTION

Market Sectors

Auditorium



Convention and Exhibition Centre



Office



University



Healthcare / Medical Research



Arena



Museum



Education



Technical College





Glazer Children's Museum
TAMPA, FL, USA.

Product Range

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PRODUCT RANGE



M3 Corporate HQ
TUCSON, ARIZONA, USA





Products at a glance...

Benchmark - more than just insulated wall panel systems...

It is building envelope solutions that can create out of the ordinary projects. Innovation through the years has made creative design freedom possible with architectural systems manufactured using both structurally laminated and foamed-in-place techniques.

Benchmark systems are a critical first step on the route to Net-Zero Energy buildings, combining superior airtightness and moisture control with impressive U-values that dramatically improve a building's energy efficiency.

From the design stage through installation, the Kingspan Benchmark team offers support to architects, the design teams and contractors which can include custom detailing, assistance with design, application, drafting and installation training to ensure successful project completion.

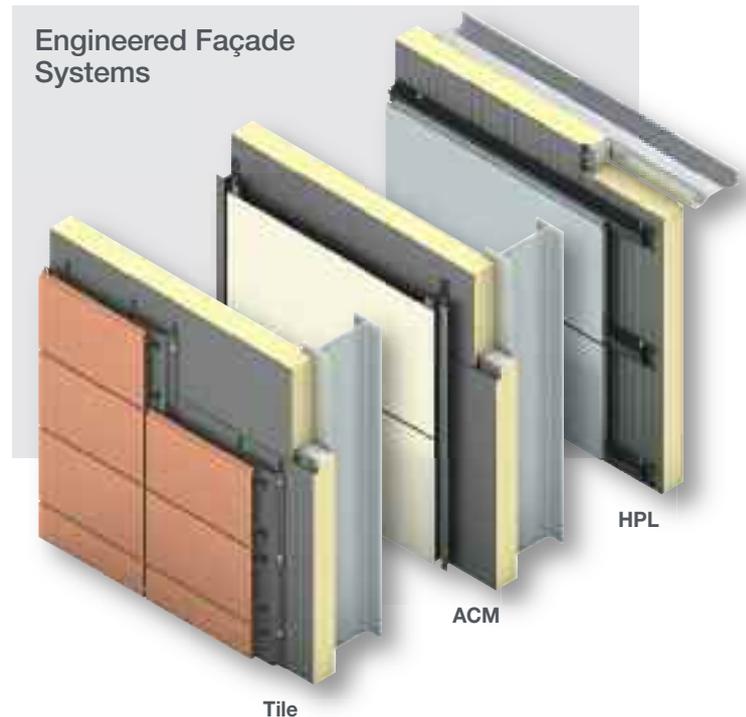
Start with the **EnvelopeFirst™**

PRODUCT RANGE

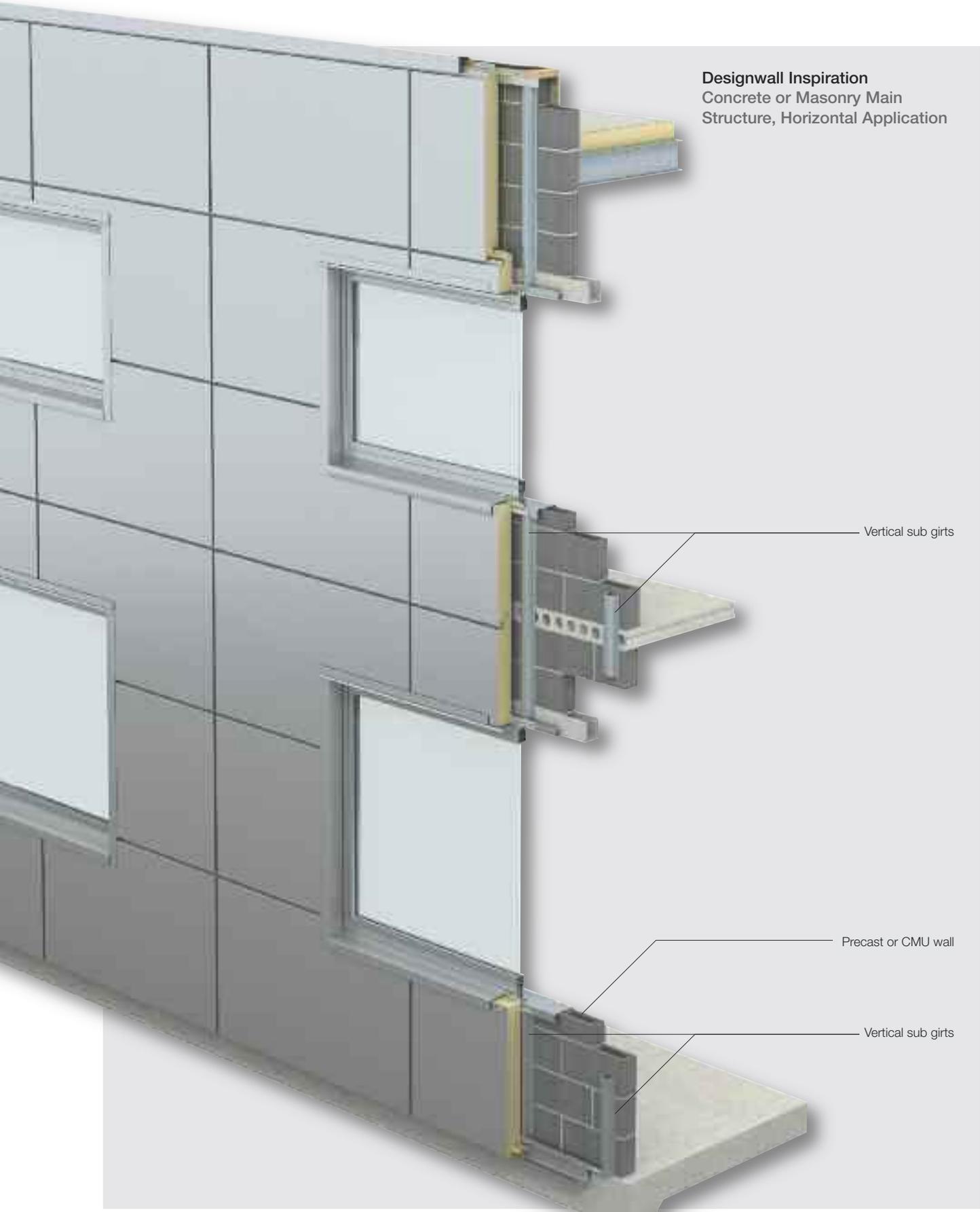
Designwall Evolution



Engineered Façade Systems



Concrete / Masonry



Designwall Inspiration
Concrete or Masonry Main
Structure, Horizontal Application

Vertical sub girts

Precast or CMU wall

Vertical sub girts

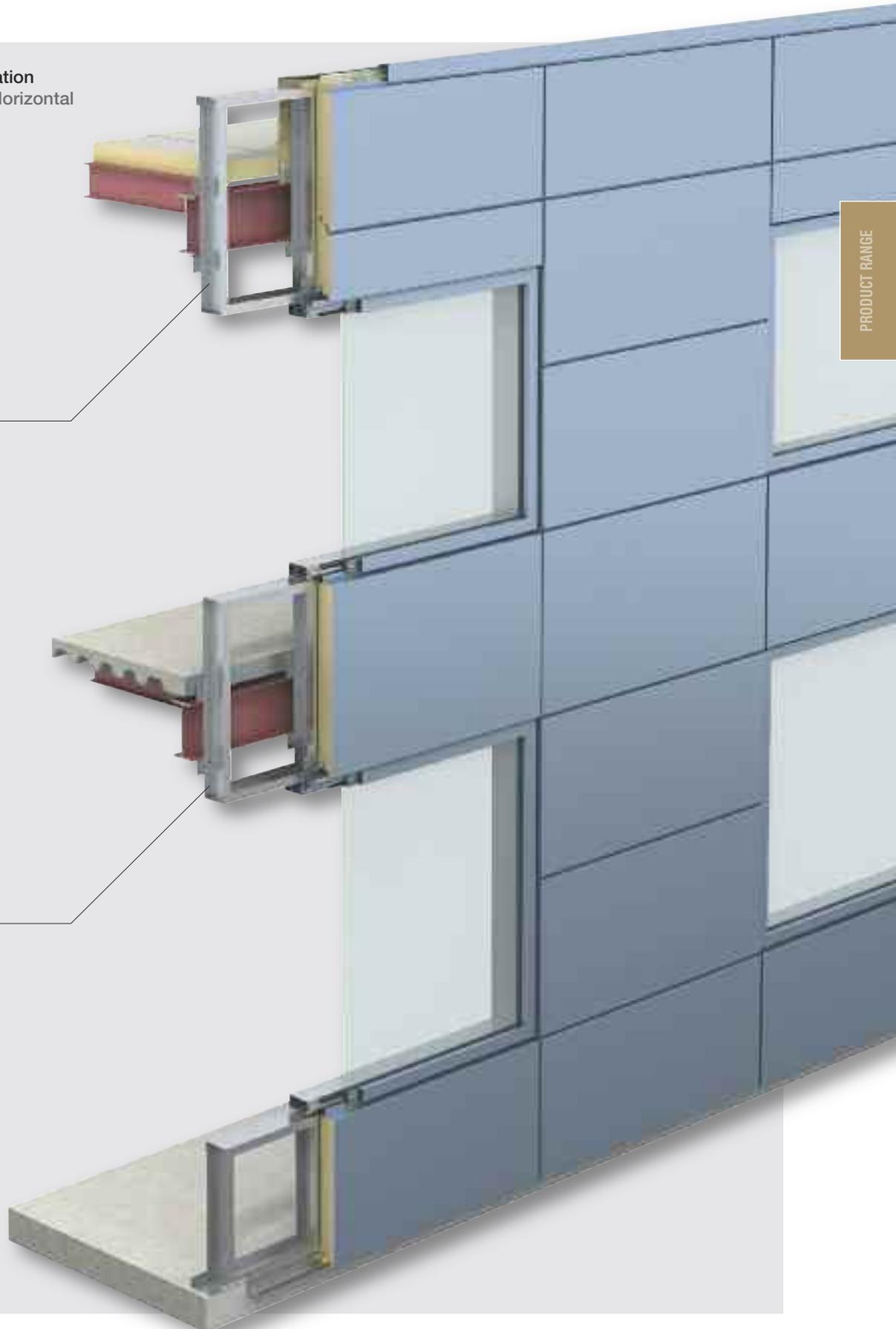
Steel

Designwall Inspiration
Structural Steel, Horizontal
Application

Vertical studs

Vertical studs

PRODUCT RANGE



Designwall Matrix®

This advanced façade element complete with thermal insulation is a real eye catcher with its flat surface finish and the clean-cut, square-edged design. Its visual appearance is most striking and it is a product specially created for demanding and modern industrial architecture.

The dimensions of the panels give buildings a distinctive and stylish look. Individual, distinguished and elegant – an abundance of possible designs provides wide range of opportunities for achieving outstanding architecture. The Matrix® facade system is both reliable and trend-setting.

Product Specification

Thickness

80 – 160mm

Width

600 – 1,000mm

Lengths

1,000 – 6,000mm

Surfaces

Steel: Exterior / interior flat profile

Standard Metal Gauge

0.75 exterior / 0.5 interior

Core Material

Rockwool D2 mineral fibre insulation

U-Value

0.27 – 0.52

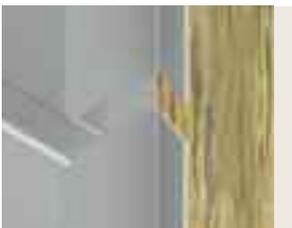
Manufacturing Process

Structurally laminated



Designwall Matrix® Joint Options

Horizontally Applied





PRODUCT RANGE

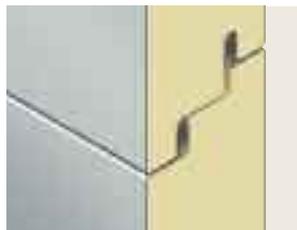


Designwall Inspiration Joint Options

Horizontally Applied



Reveal Joint – 10 or 20mm



Tight Joint

Designwall Inspiration



Benchmark Inspiration is an insulated, tailor-made modular façade system, that offers the high aesthetics of a conventional ventilated rainscreen system, but integrates the advantages of an insulated panel system.

Structurally laminated construction in variable modular length and width allows for maximum design flexibility for custom fabricated applications.

Product Specification

Thickness

80 – 150mm

Widths

Standard widths: 375, 500, 750 and 1,000mm

To order widths: 250 – 1,100mm in 10mm increments

Lengths

250 – 4,200mm

Surfaces

Steel: Flat surface on both sides

Standard Metal Gauge

0.7 exterior / 0.6 interior

Core Material

Polyisocyanurate

U-Value

0.16 – 0.29

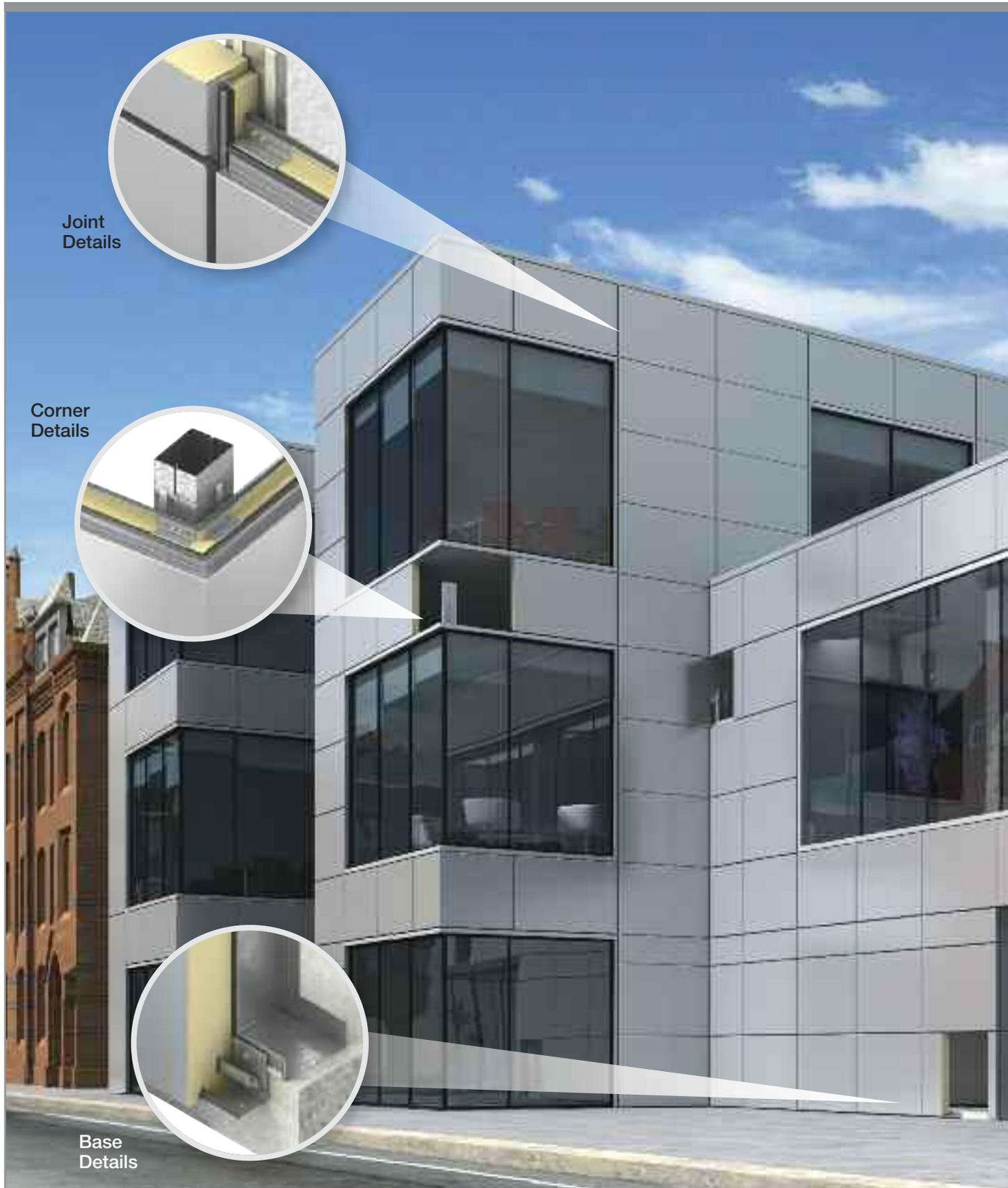
Manufacturing Process

Structurally laminated



“Designwall Inspiration features a double-gasket shiplap joint to maximise thermal efficiency and create a double barrier against air and water penetration.”

Designwall Inspiration



Joint
Details

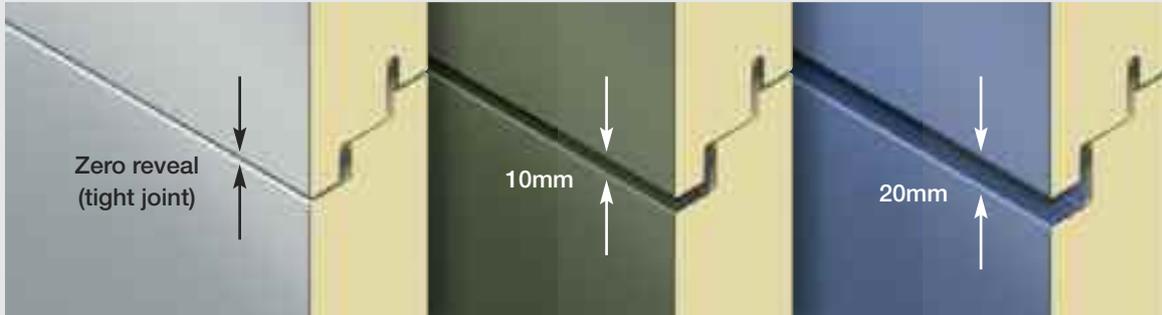
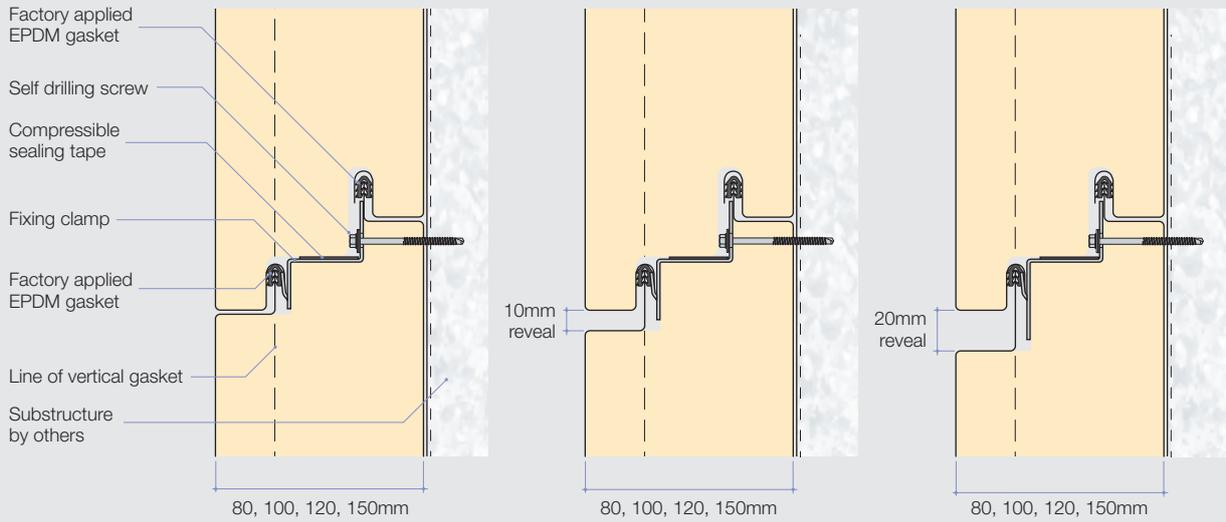
Corner
Details

Base
Details

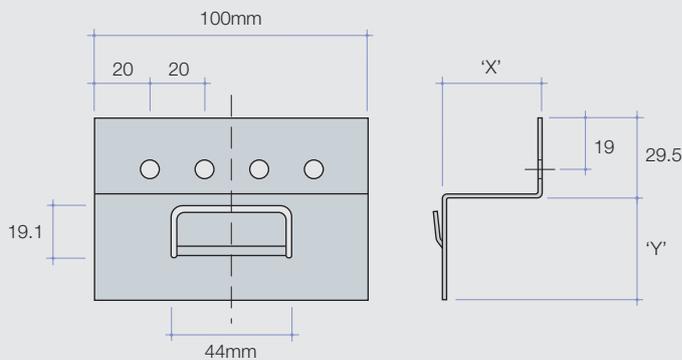


PRODUCT RANGE

Side Joint Detail - Reveal Options Horizontal Application



Fixing Clamp Detail Horizontal Application

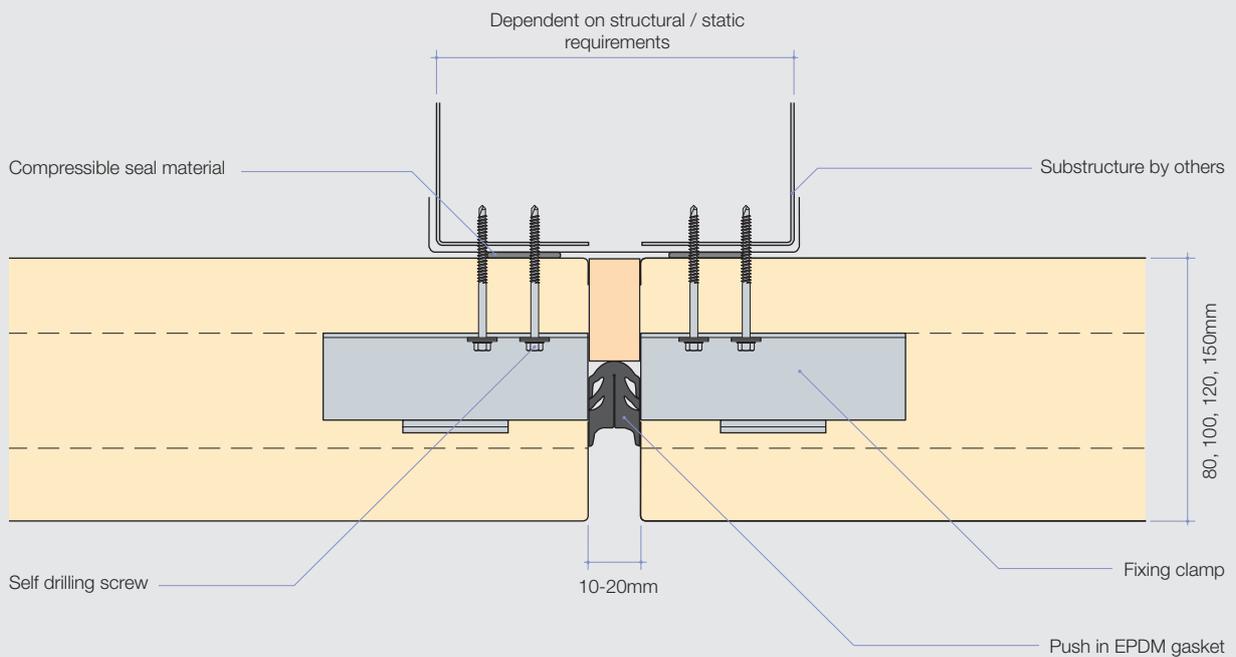


Panel Thickness (mm)	Dimension 'X' (mm)
80	14.95
100	34.95
120	54.95
150	84.95

Reveal (mm)	Dimension 'Y' (mm)
0	17.50
10	27.50
20	37.50

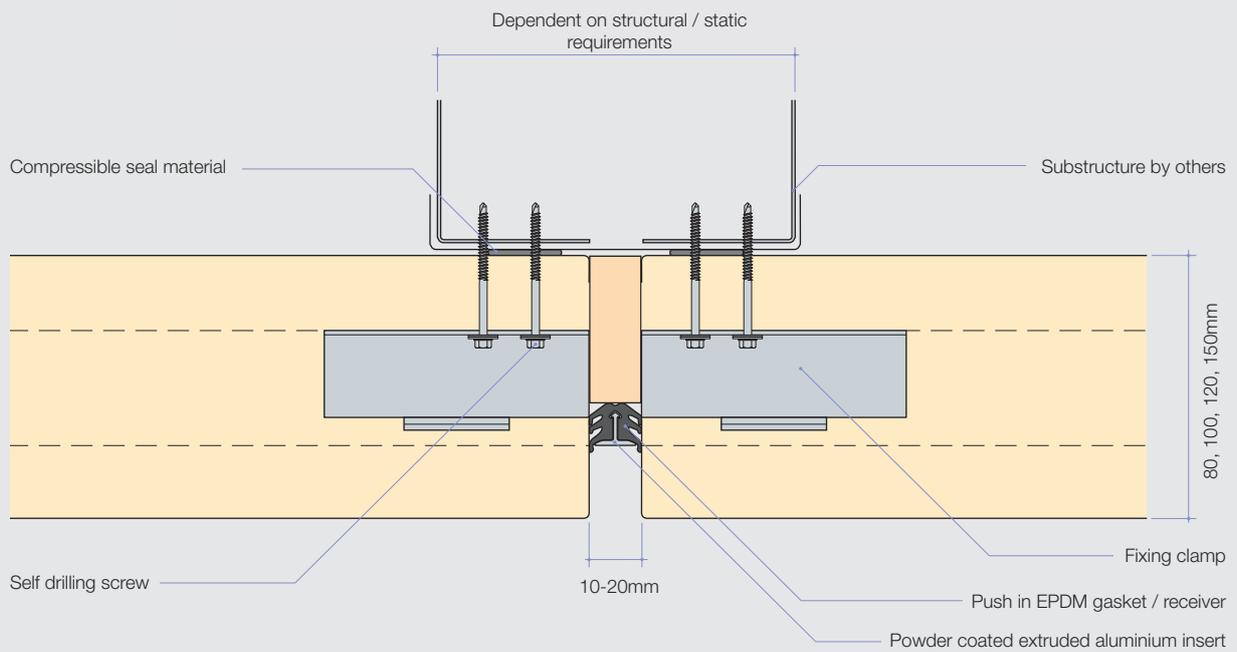
Designwall Inspiration

End Lap Detail - C2
Horizontal Application



All technical information is subject to alterations. Errors and omissions excepted.

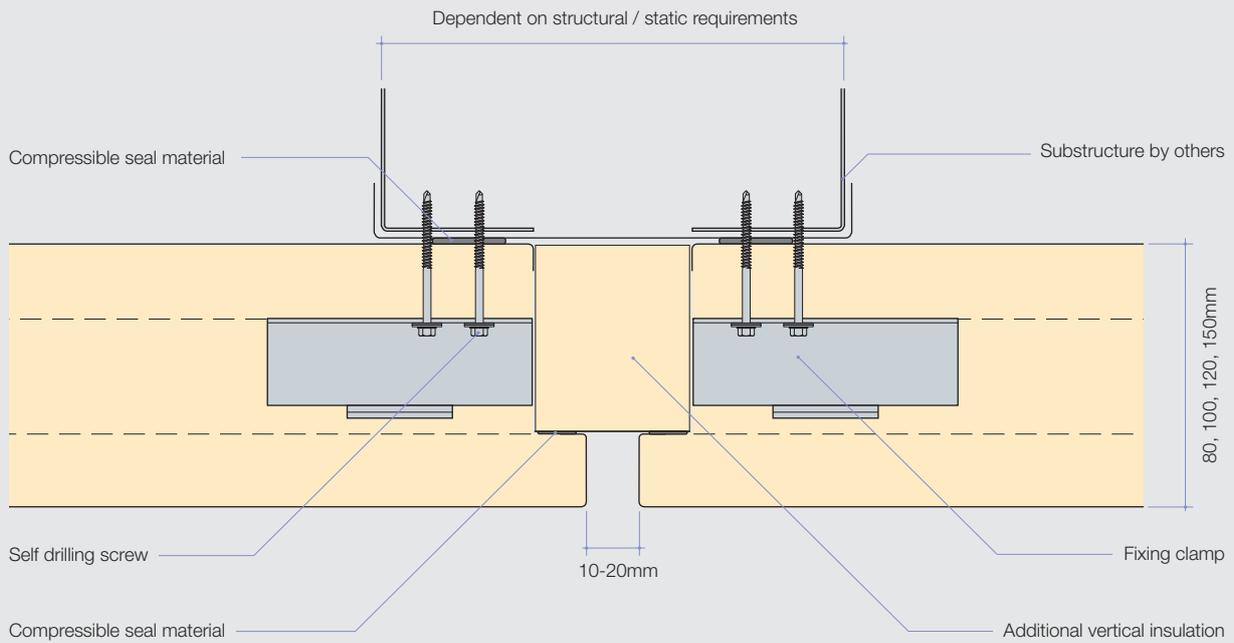
End Lap Detail - C2A
Horizontal Application



All technical information is subject to alterations. Errors and omissions excepted.

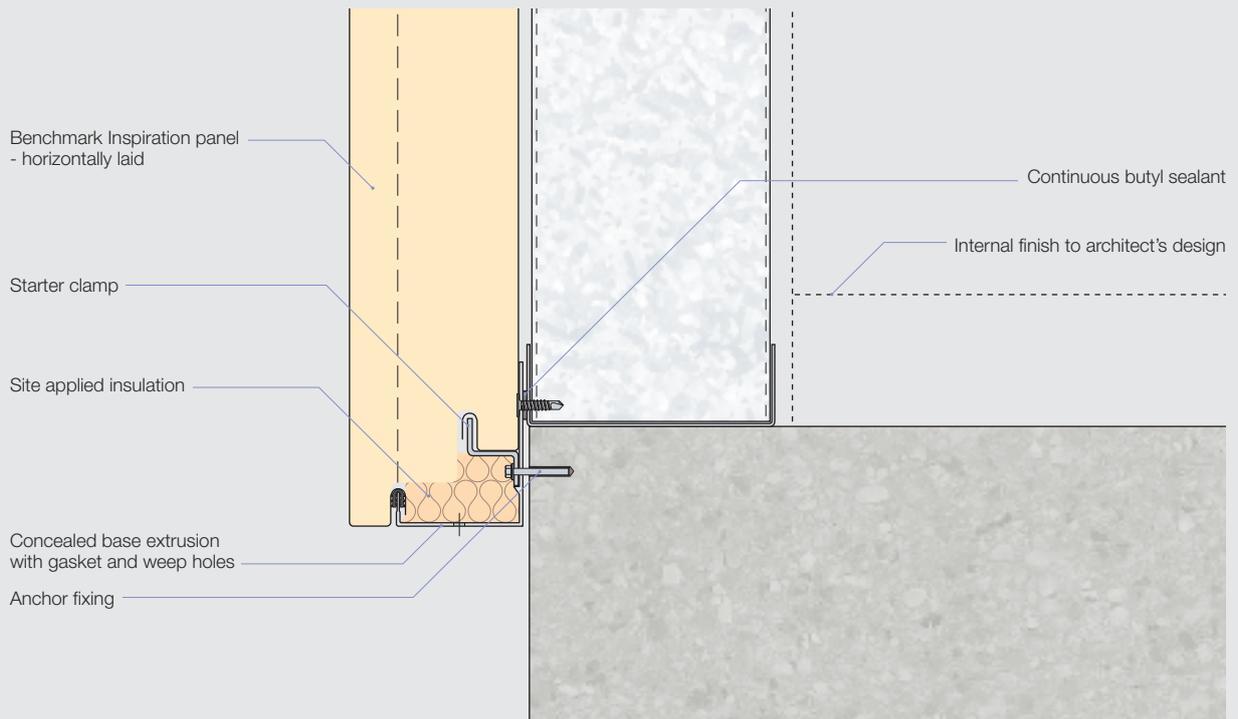
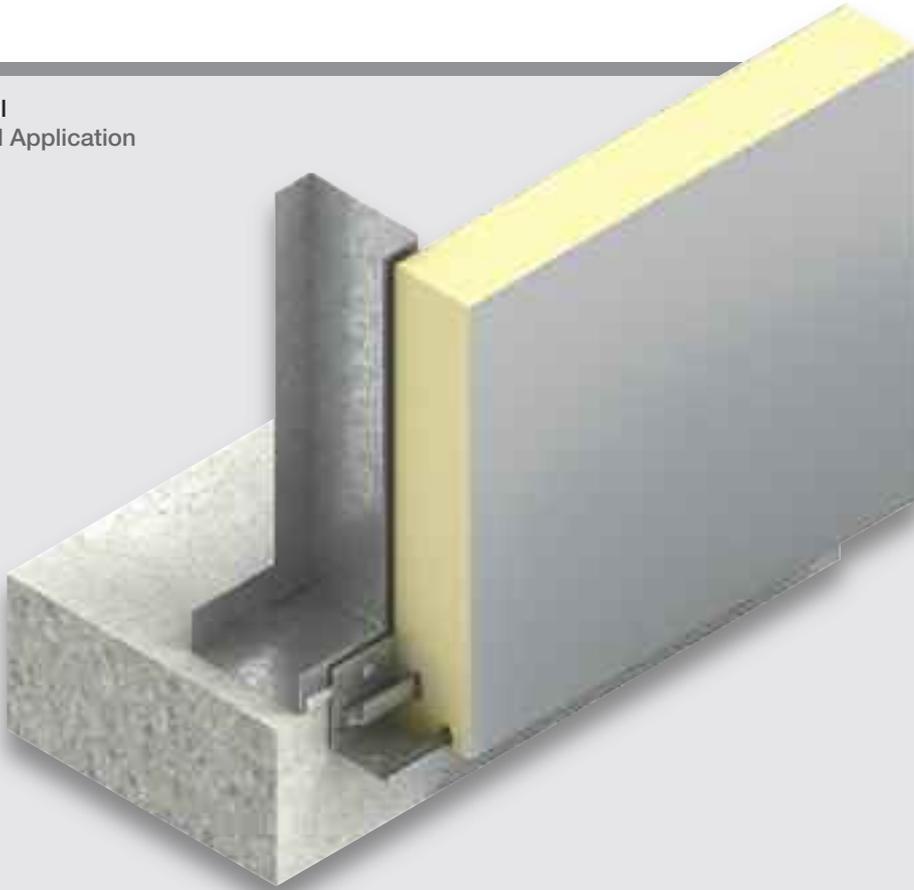
Designwall Inspiration

End Lap Detail - C4
Horizontal Application



All technical information is subject to alterations. Errors and omissions excepted.

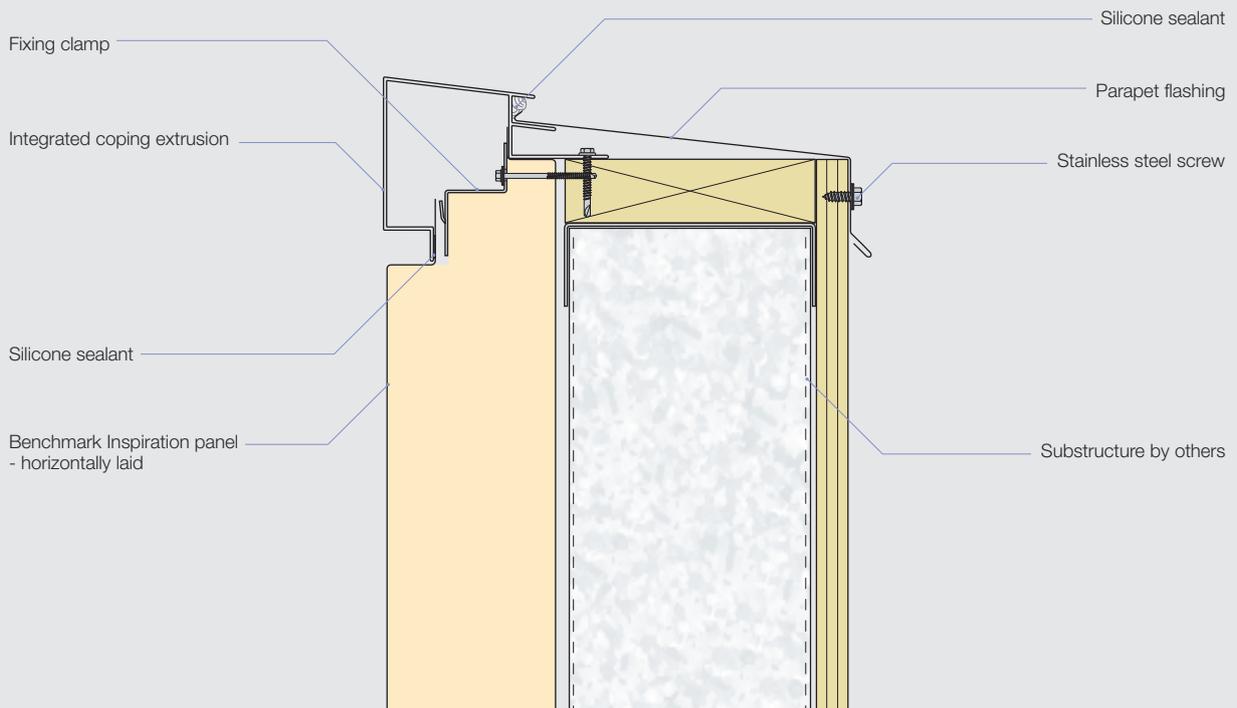
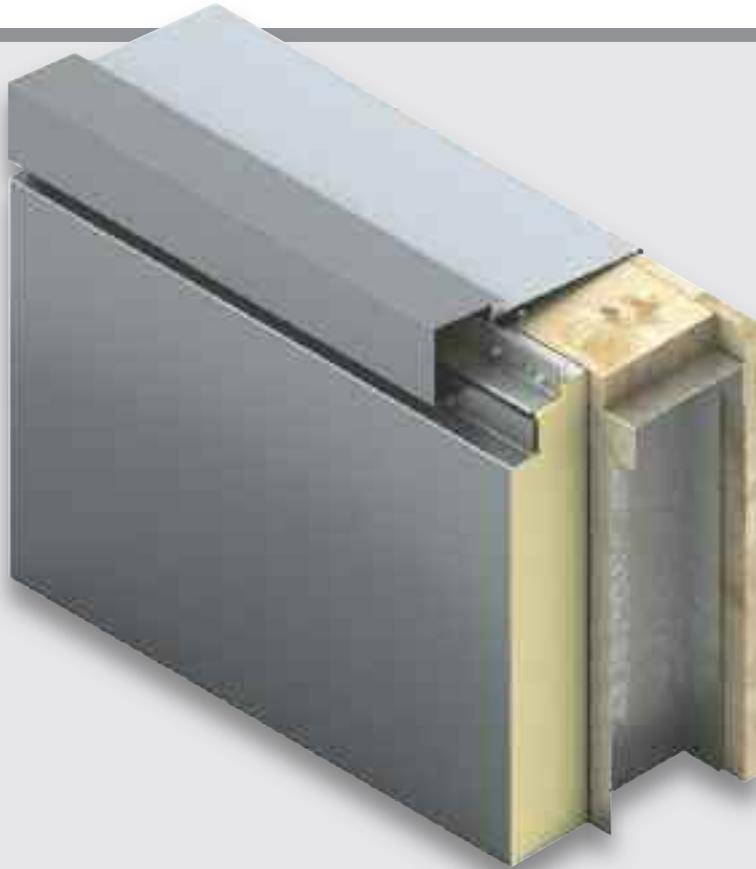
Drip Detail
Horizontal Application



All technical information is subject to alterations. Errors and omissions excepted.

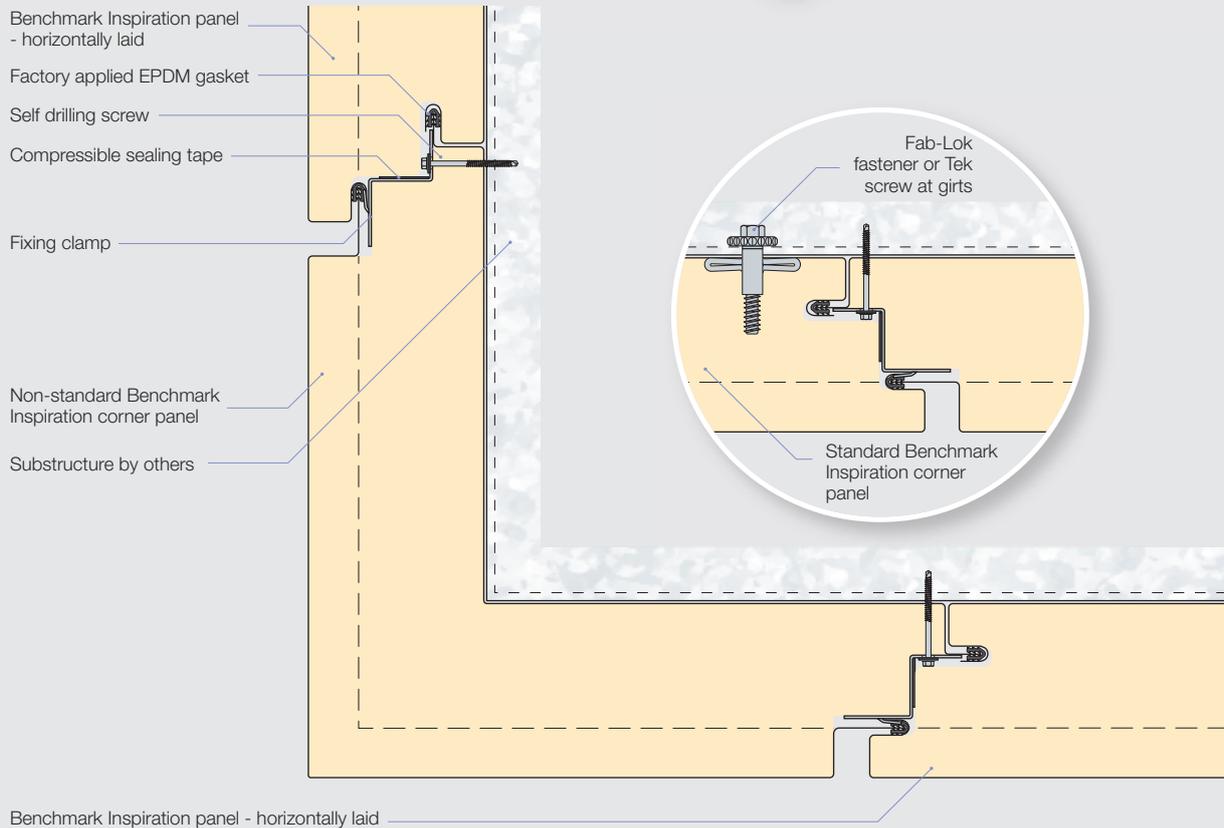
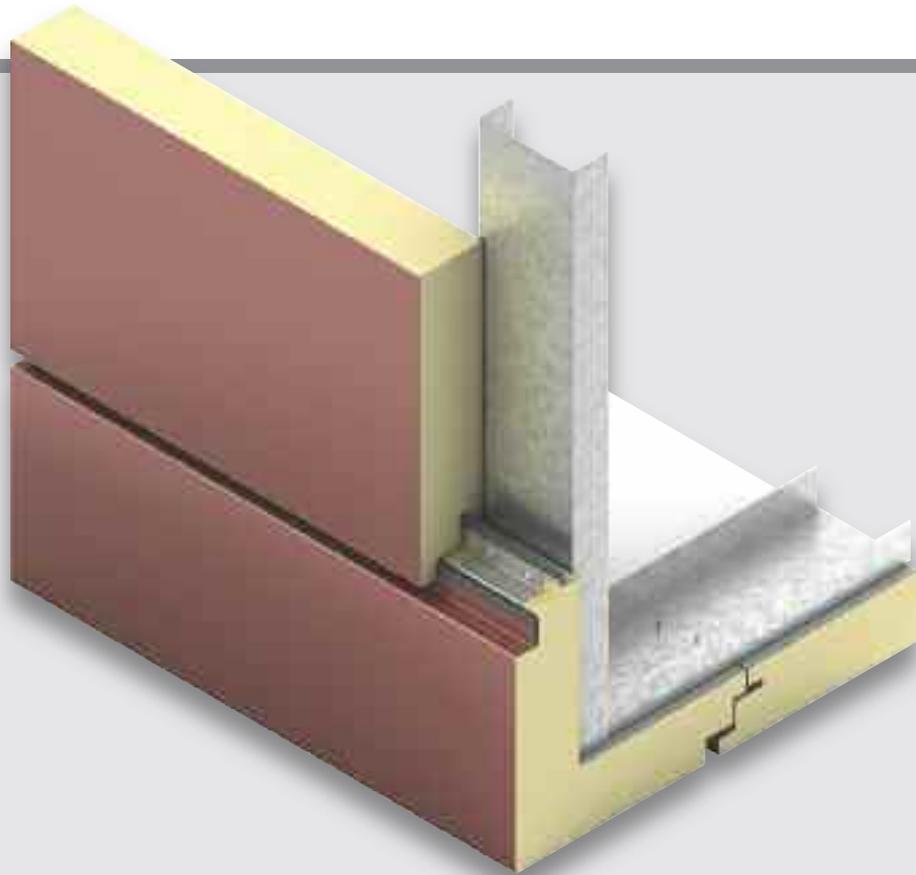
Designwall Inspiration

Parapet Detail
Horizontal Application



All technical information is subject to alterations. Errors and omissions excepted.

Wall / Ceiling Detail
Horizontal Application



All technical information is subject to alterations. Errors and omissions excepted.

Designwall Inspiration

External Corner Detail
Horizontal Application

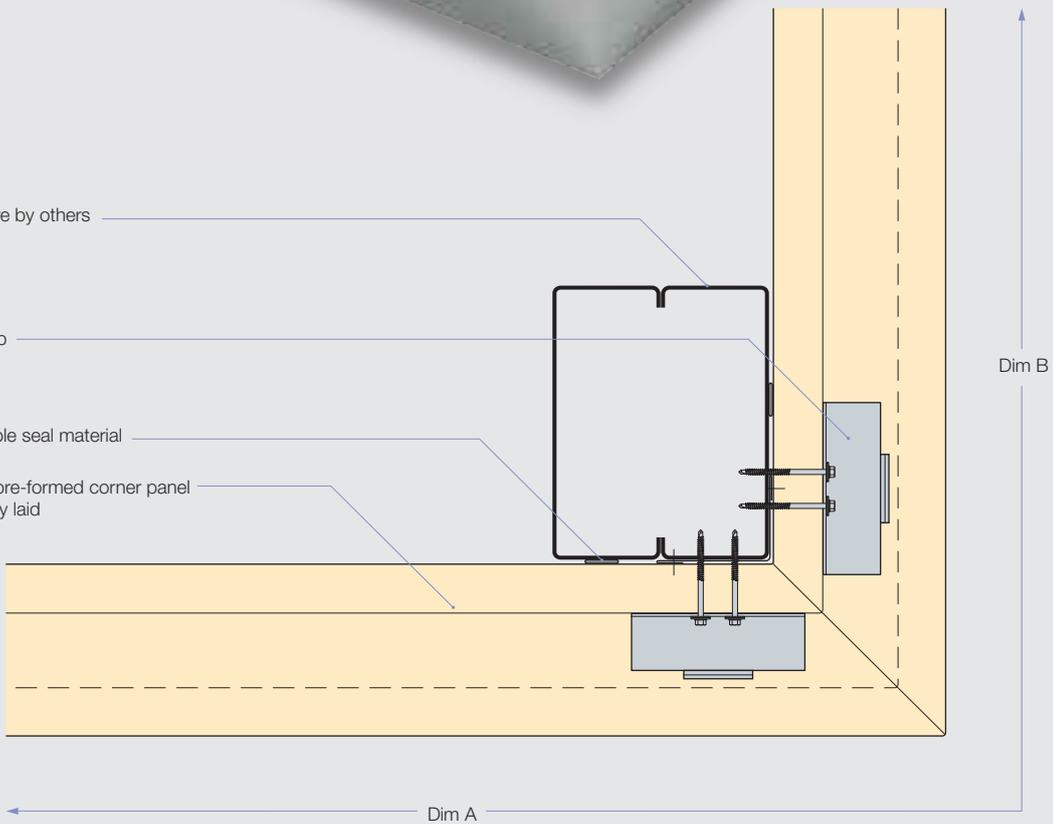


Substructure by others

Fixing clamp

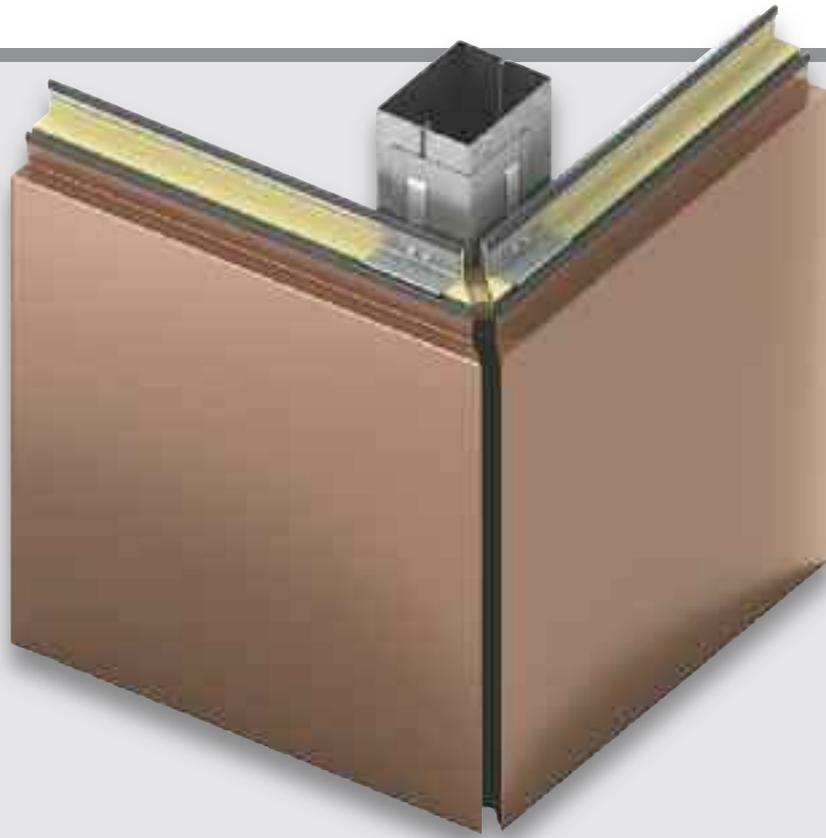
Compressible seal material

Inspiration pre-formed corner panel
- horizontally laid



All technical information is subject to alterations. Errors and omissions excepted.

**45° Trimless End
Corner Detail
Horizontal Application**



Factory made Benchmark Inspiration corner panel - horizontally laid

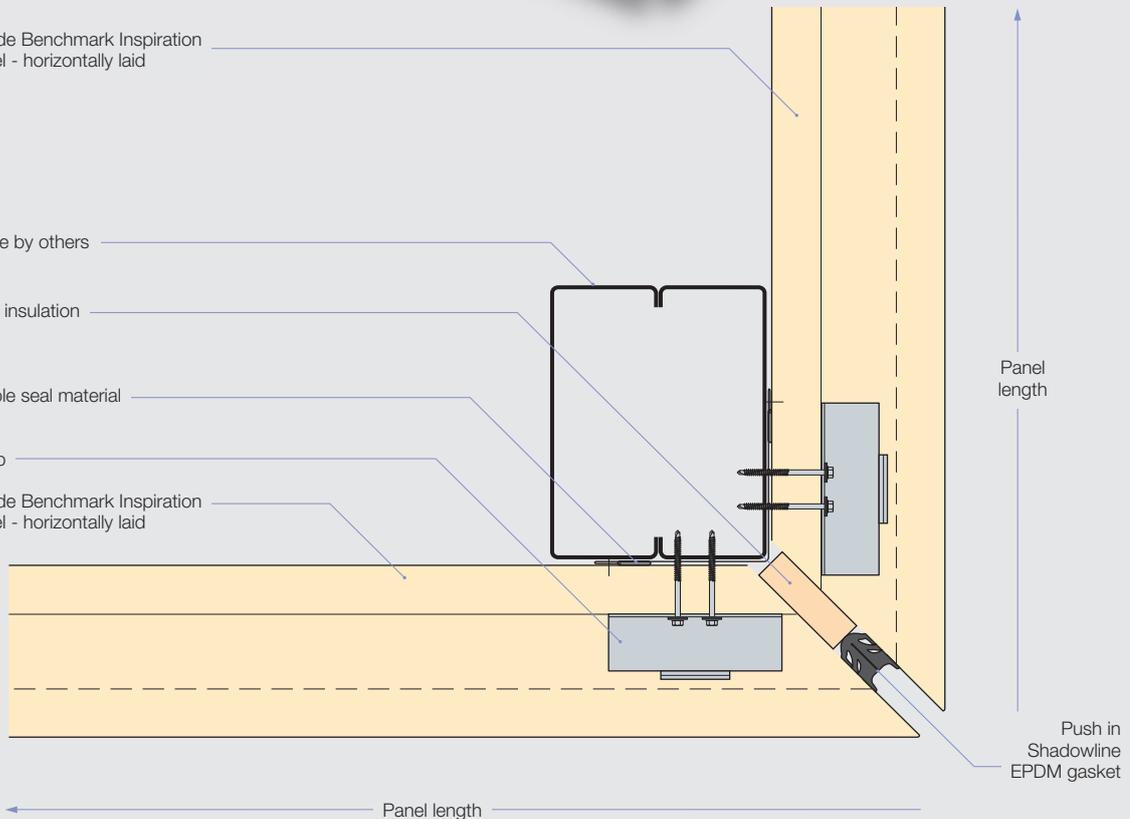
Substructure by others

Site applied insulation

Compressible seal material

Fixing clamp

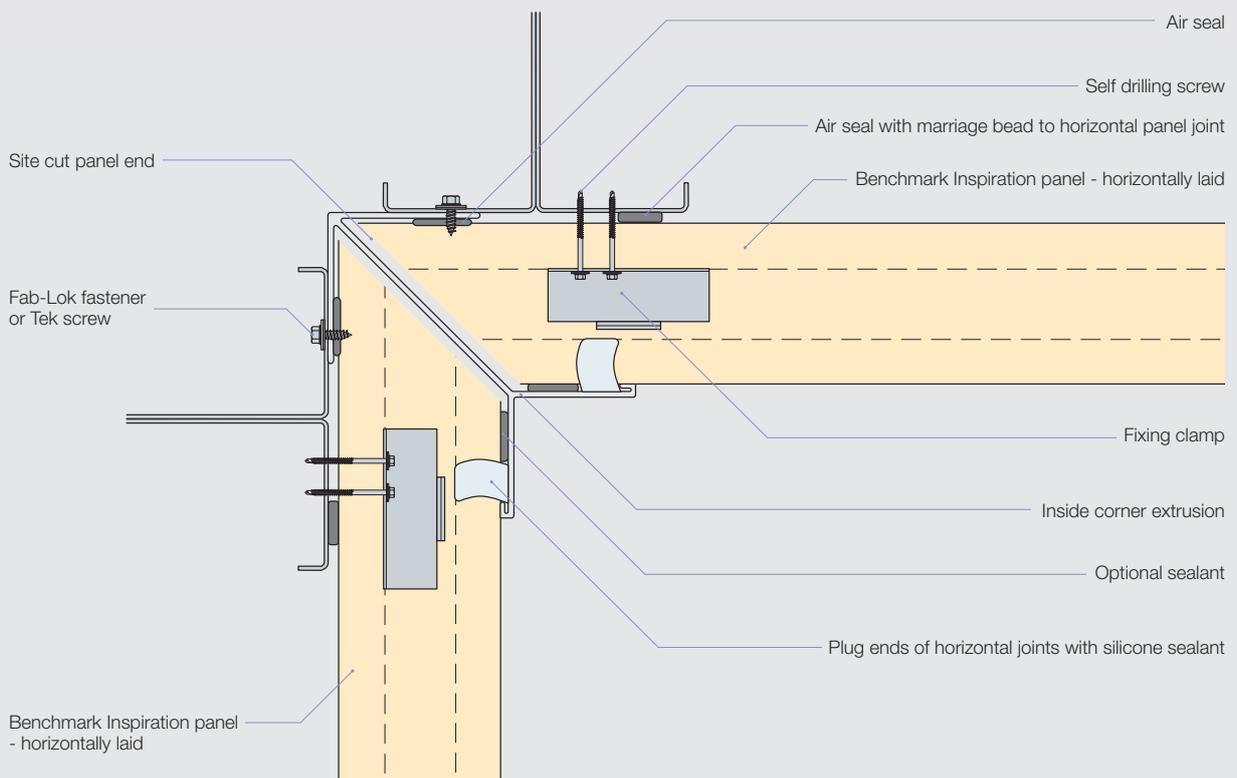
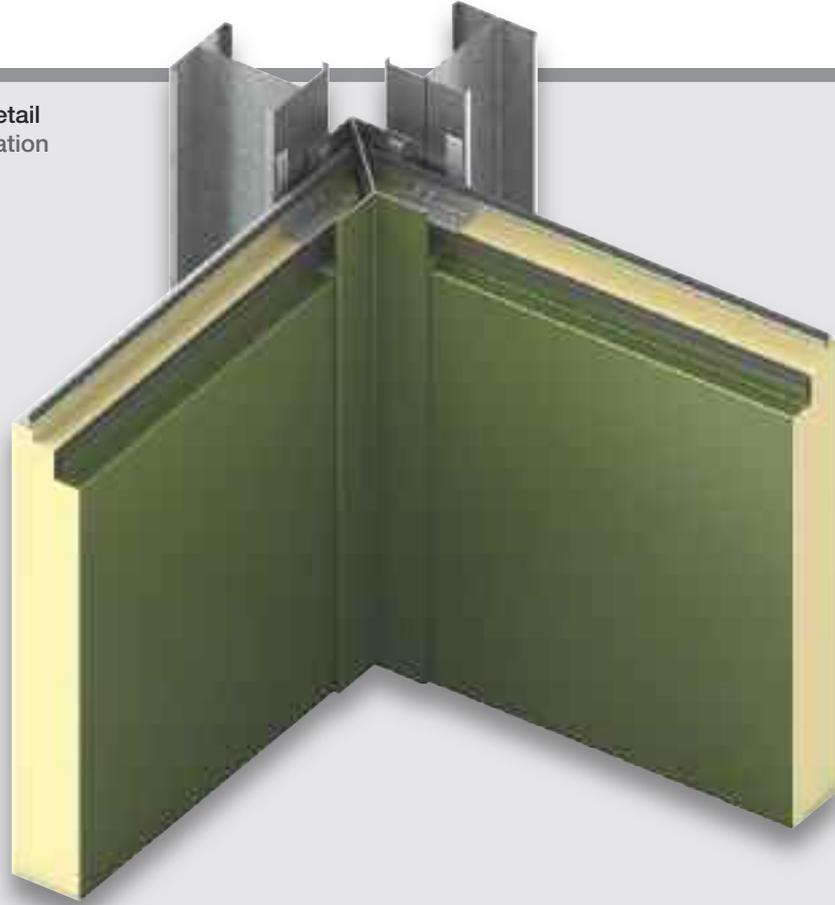
Factory made Benchmark Inspiration corner panel - horizontally laid



All technical information is subject to alterations. Errors and omissions excepted.

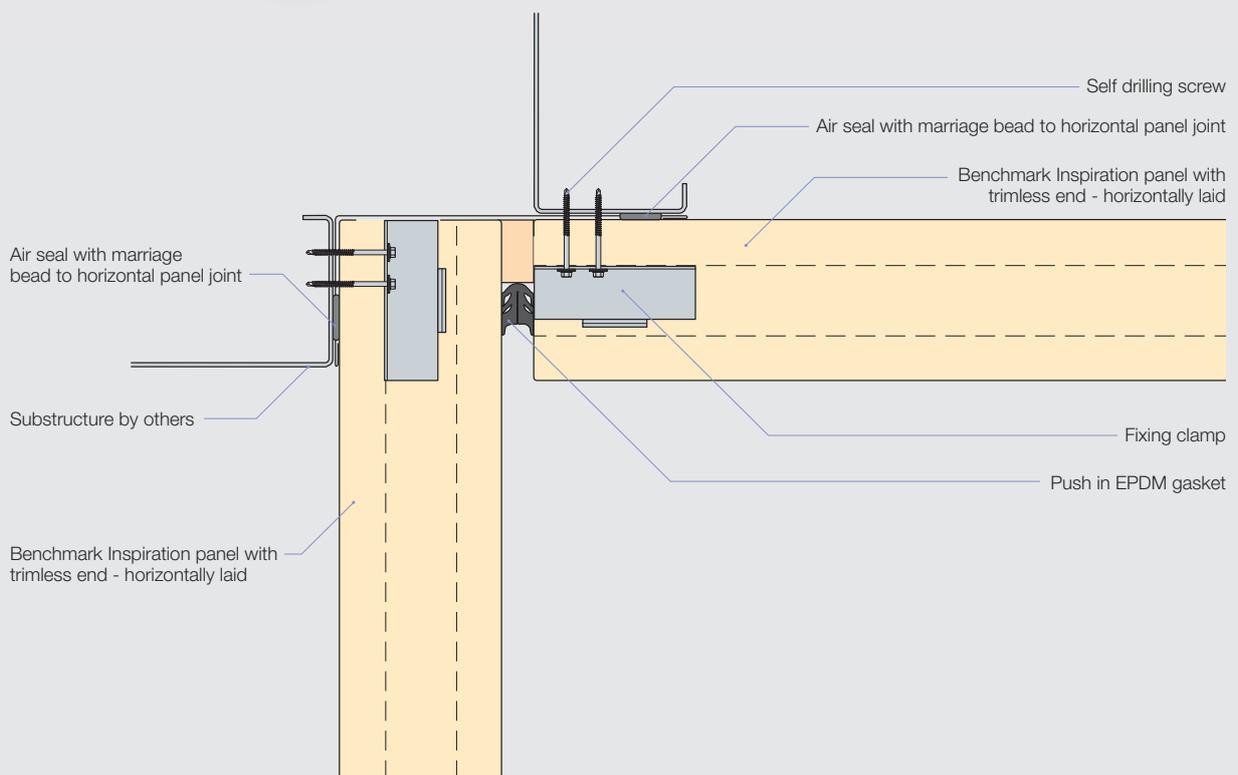
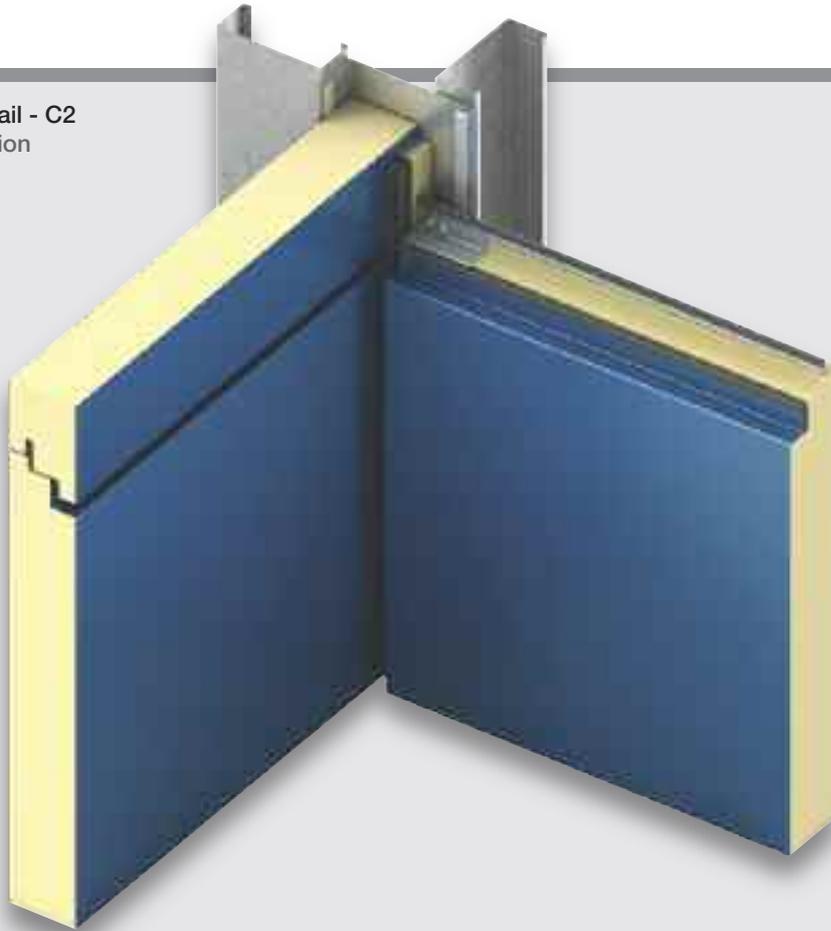
Designwall Inspiration

Internal Corner Detail
Horizontal Application



All technical information is subject to alterations. Errors and omissions excepted.

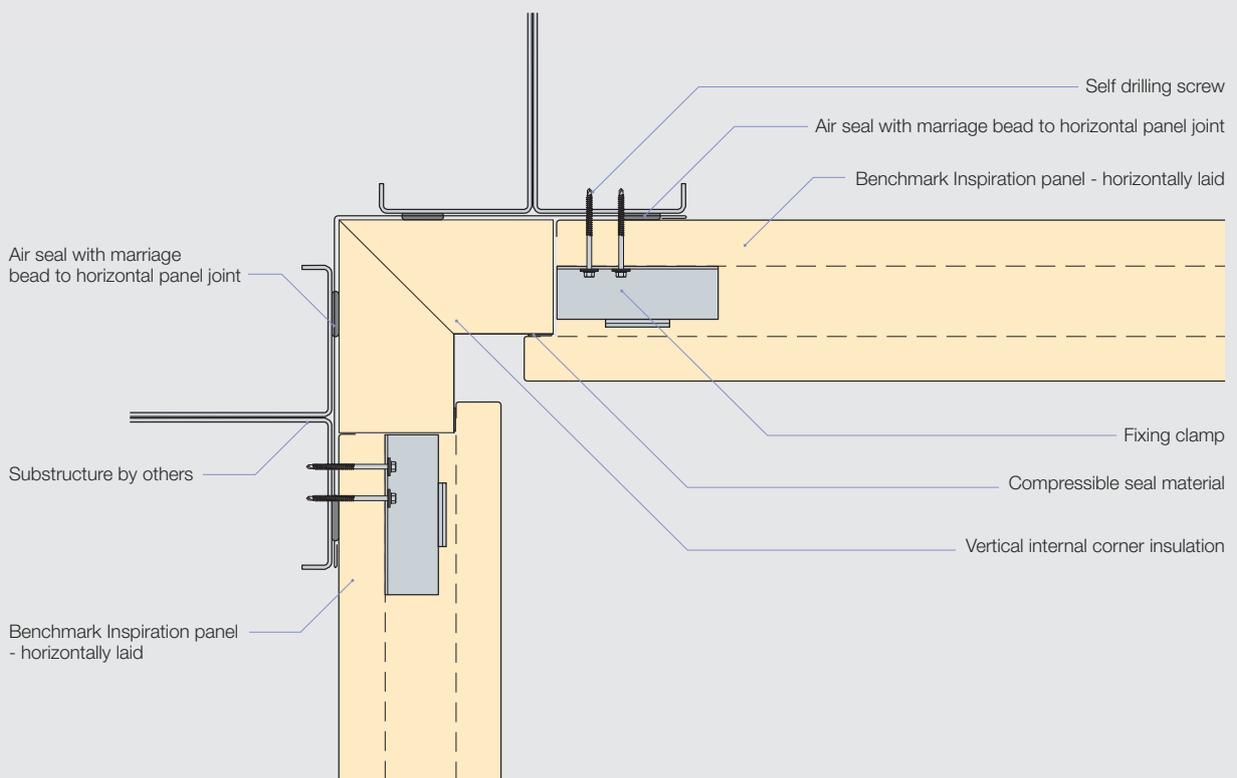
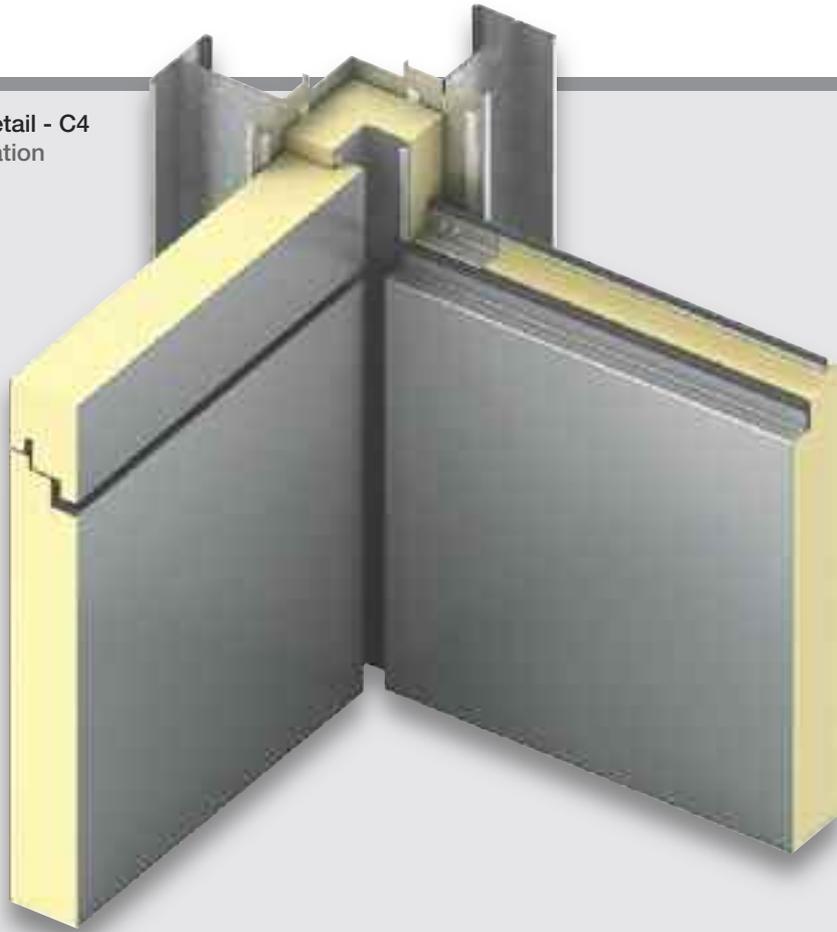
Internal Corner Detail - C2
Horizontal Application



All technical information is subject to alterations. Errors and omissions excepted.

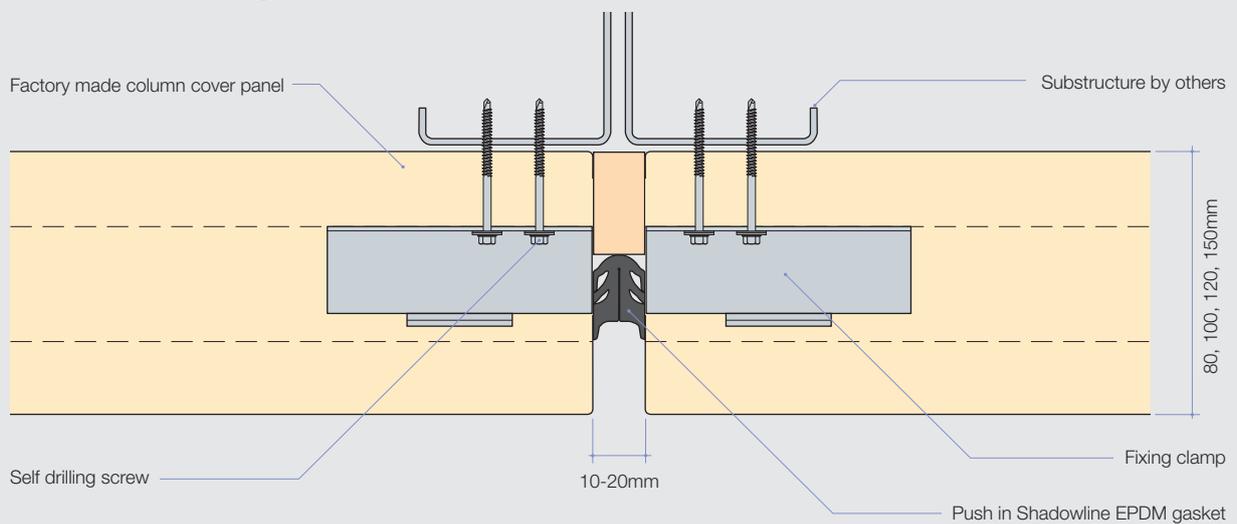
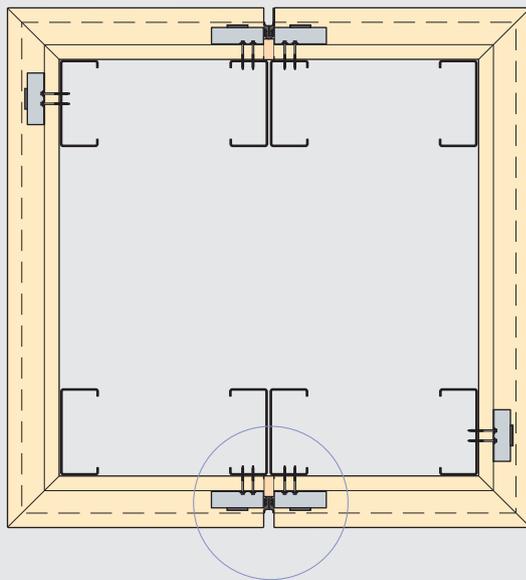
Designwall Inspiration

Internal Corner Detail - C4
Horizontal Application



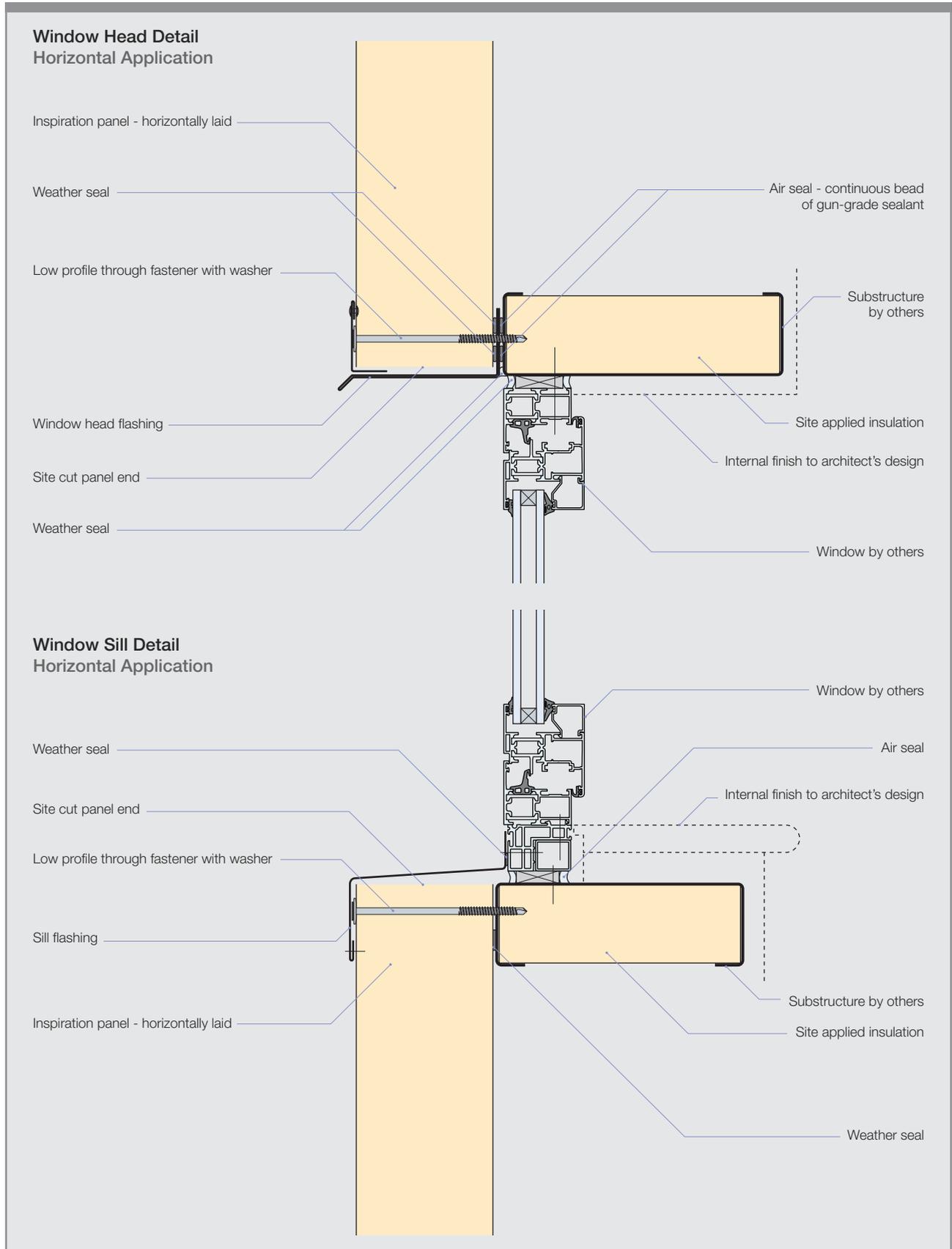
All technical information is subject to alterations. Errors and omissions excepted.

Column Cover Detail
Horizontal Application



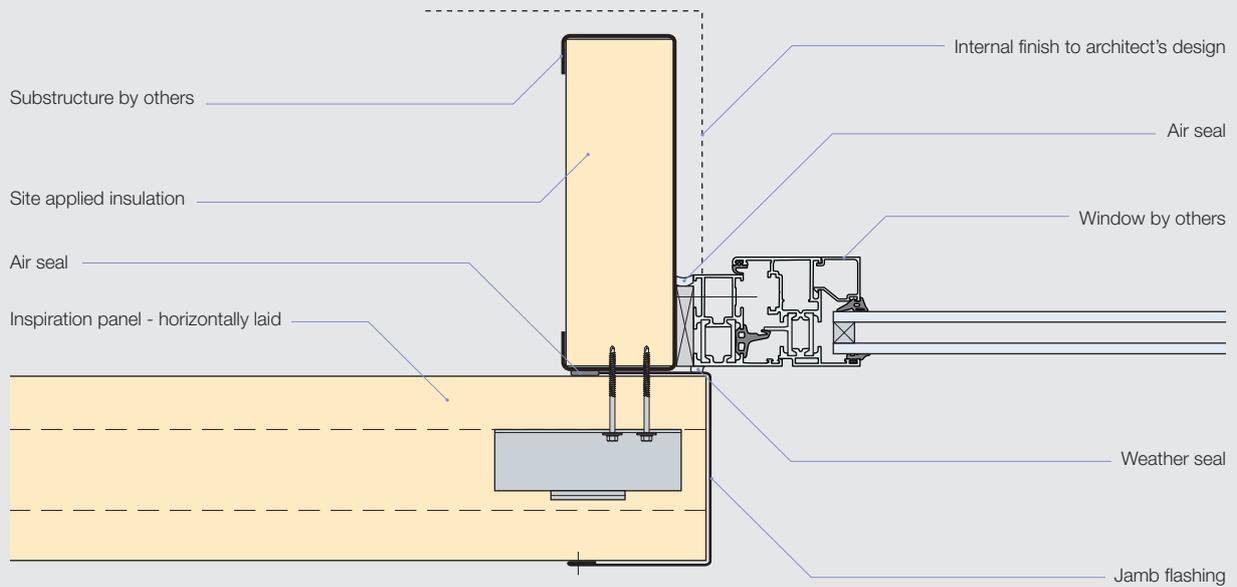
All technical information is subject to alterations. Errors and omissions excepted.

Designwall Inspiration



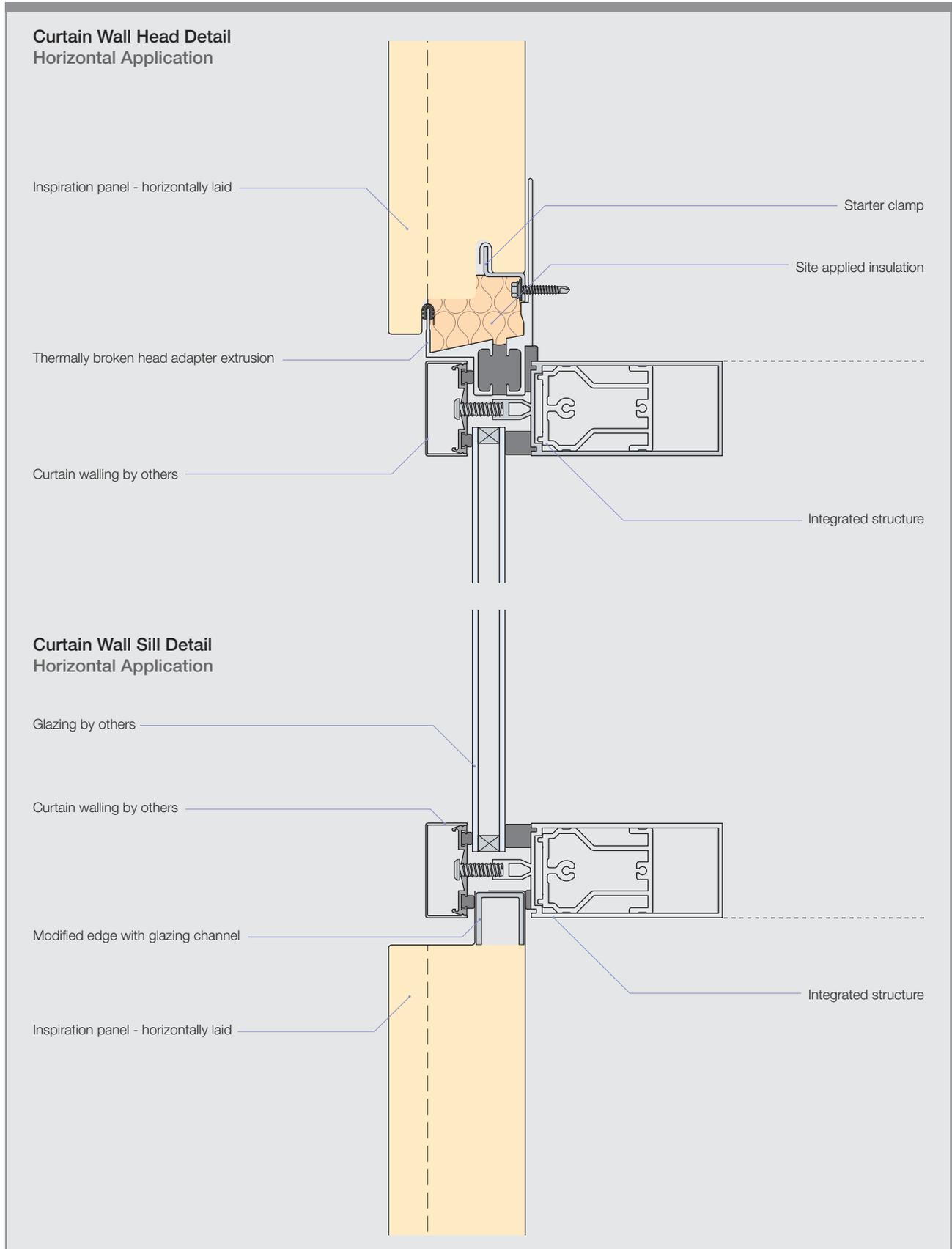
All technical information is subject to alterations. Errors and omissions excepted.

Window Jamb Detail
Horizontal Application



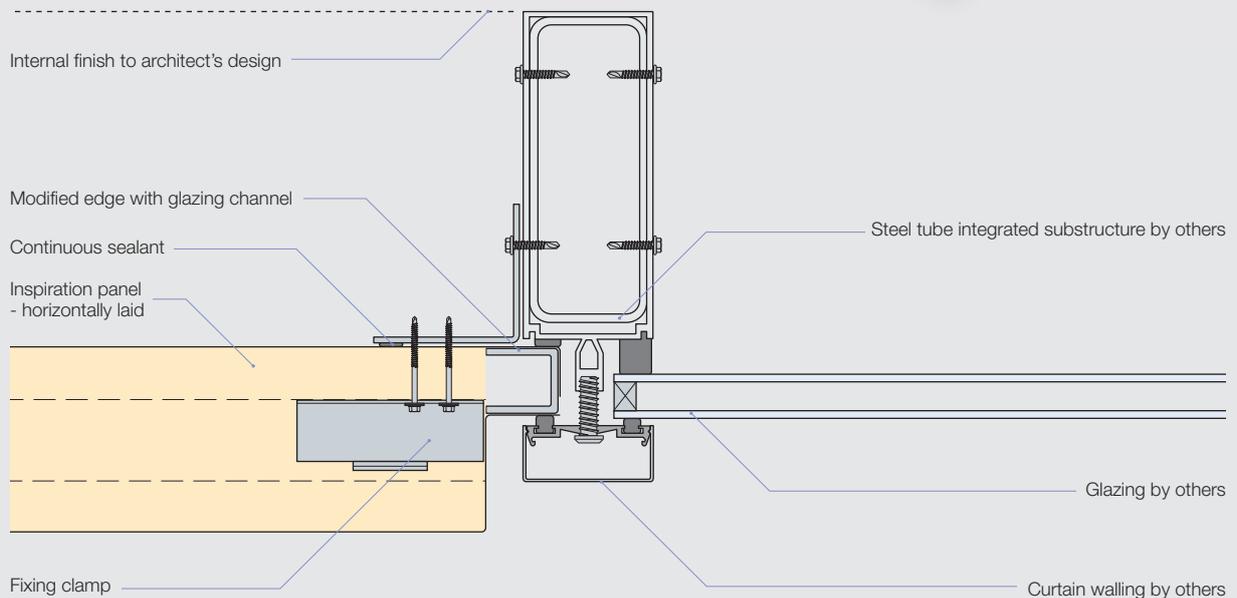
All technical information is subject to alterations. Errors and omissions excepted.

Designwall Inspiration



All technical information is subject to alterations. Errors and omissions excepted.

Curtain Wall Jamb Detail
Horizontal Application



All technical information is subject to alterations. Errors and omissions excepted.

Designwall Evolution

Evolution is the latest development in insulated panel technology from Benchmark. As part of the Designwall Series, this stylish, sleek, flat panel has a unique range of design features that allow maximum design flexibility in the creation of a truly bespoke system.

These new features offer the ability to create an illusion of varying panel widths, allowing you to alter the joint reveal and providing a wide range of vertical joint options. The Evolution range provides the aesthetics and architectural detailing required today, but without the complexity of built-up systems.

Product Specification

Thickness

80 – 150mm

Widths

600, 900 and 1000mm

Lengths

2,000 – 6,000mm

Surfaces

Steel: Exterior flat surface / interior mini-box profile

Standard Metal Gauge

0.7 exterior / 0.5 interior

Core Material

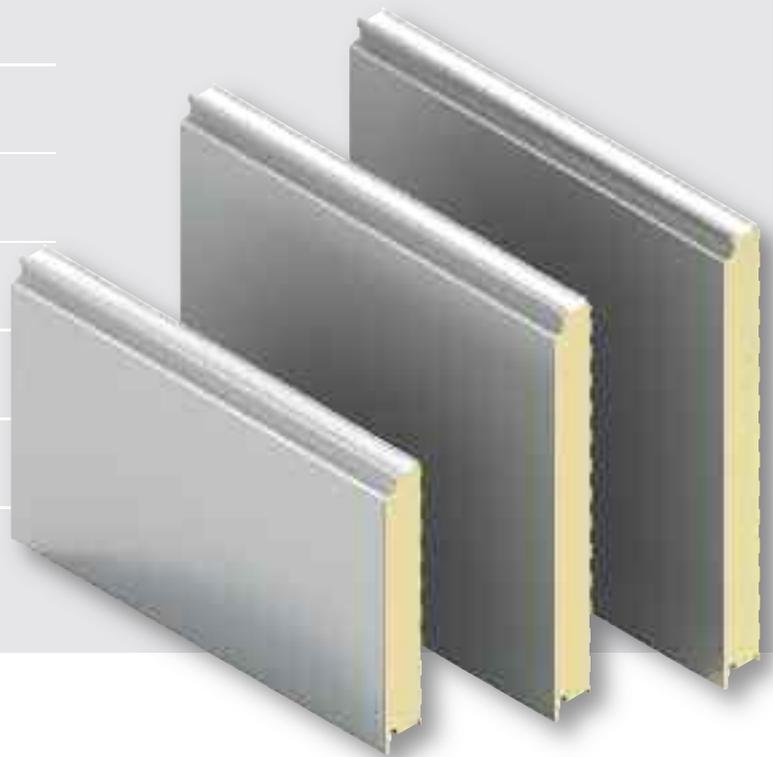
FireSafe IPN or ThermalSafe IPN

U-Value

0.15 – 0.29 or 0.14 – 0.26

Manufacturing Process

Foamed-in-place



Designwall Evolution Joint Options



Aluminium Frame



Inline Black



Inline Silver



Q2



Q4



Q2A

“Designwall Evolution is an ideal choice for low-rise building and eye-catching public buildings.”

Aten Infotech
HEUSDEN-ZOLDER, BELGIUM.

Designwall Evolution



Parapet
Details

Corner
Details

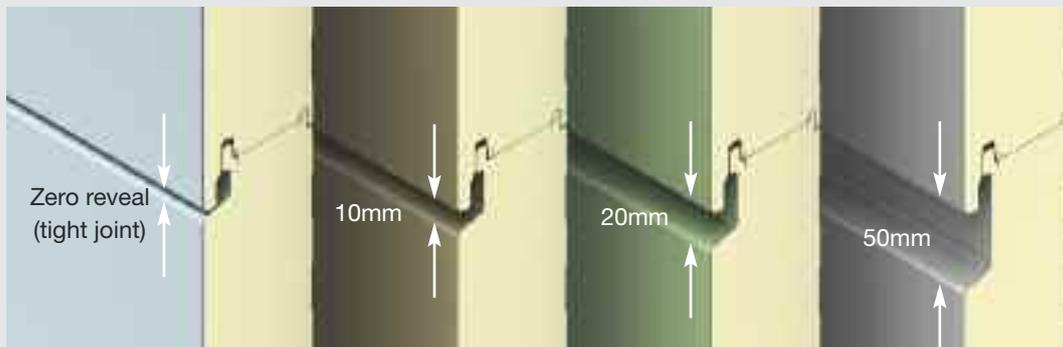
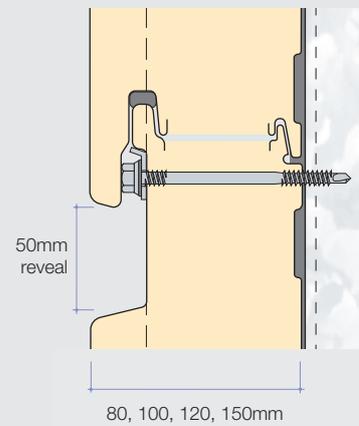
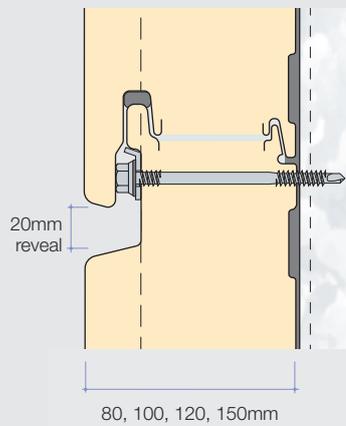
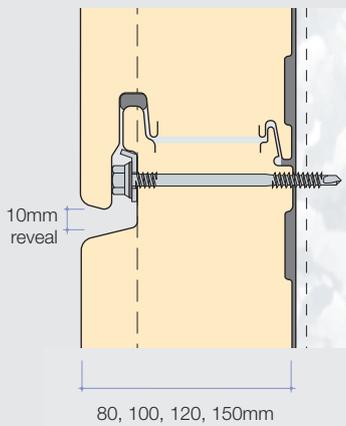
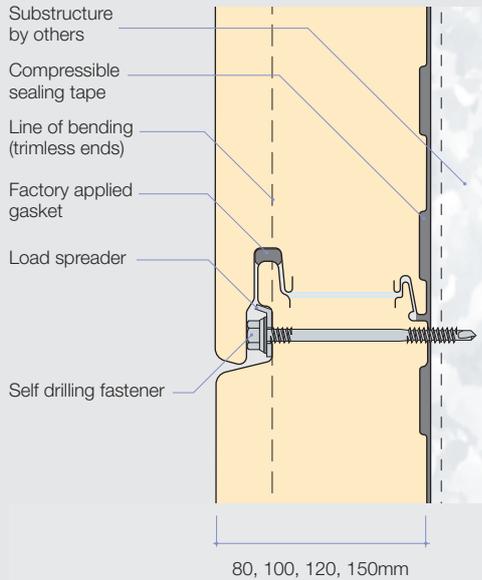
Base
Details



Joint
Details

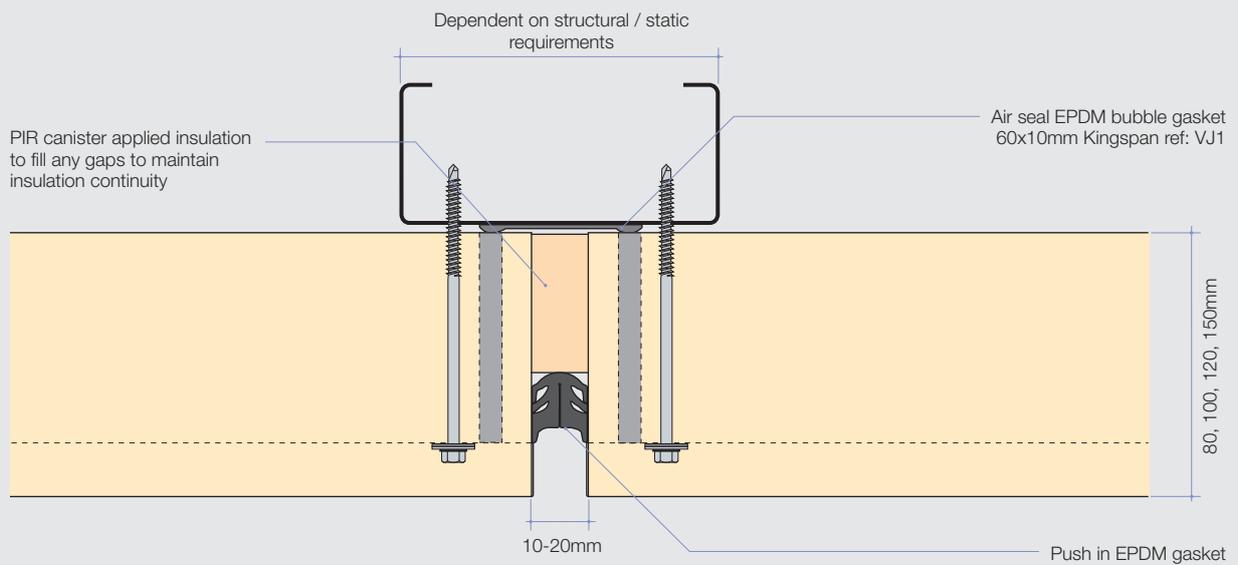
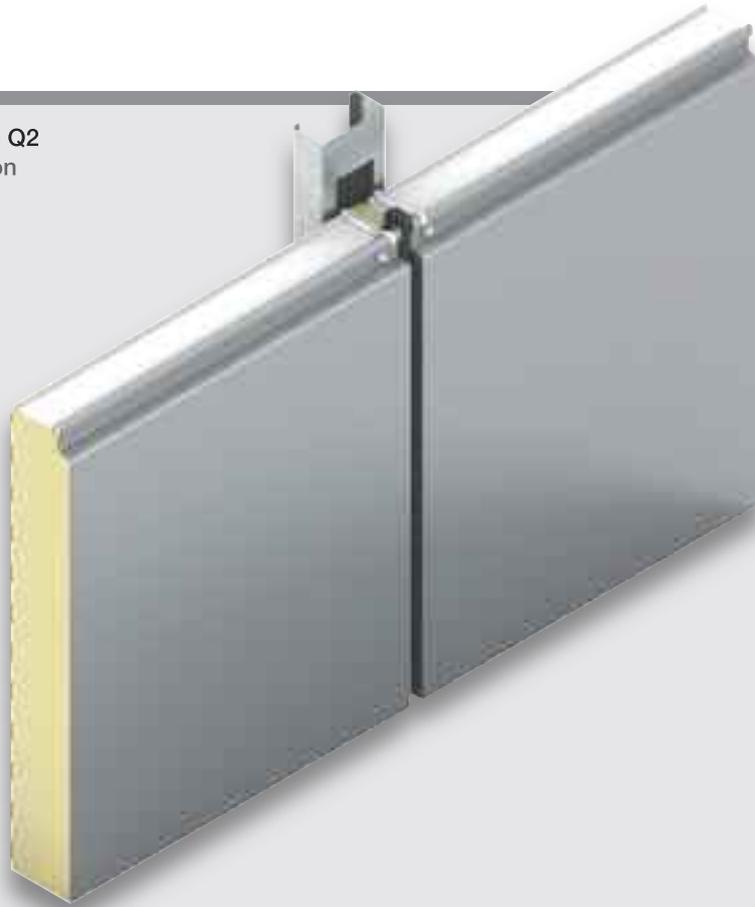
Window
Details

Side Joint Reveal Details Horizontal Application



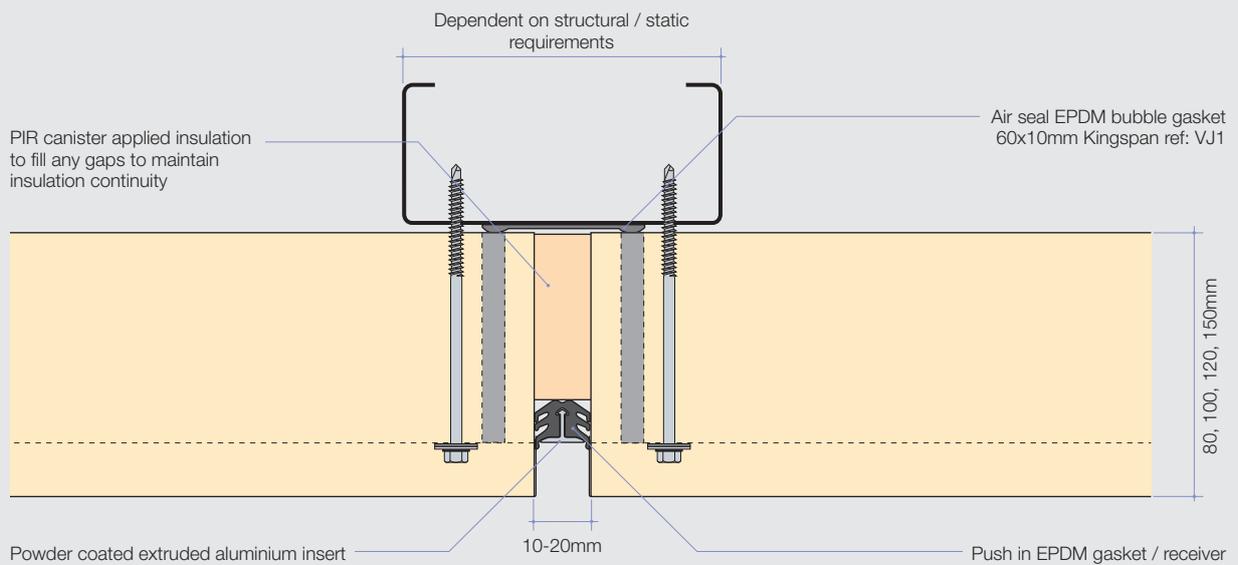
Designwall Evolution

Vertical Joint Detail - Q2
Horizontal Application



All technical information is subject to alterations. Errors and omissions excepted.

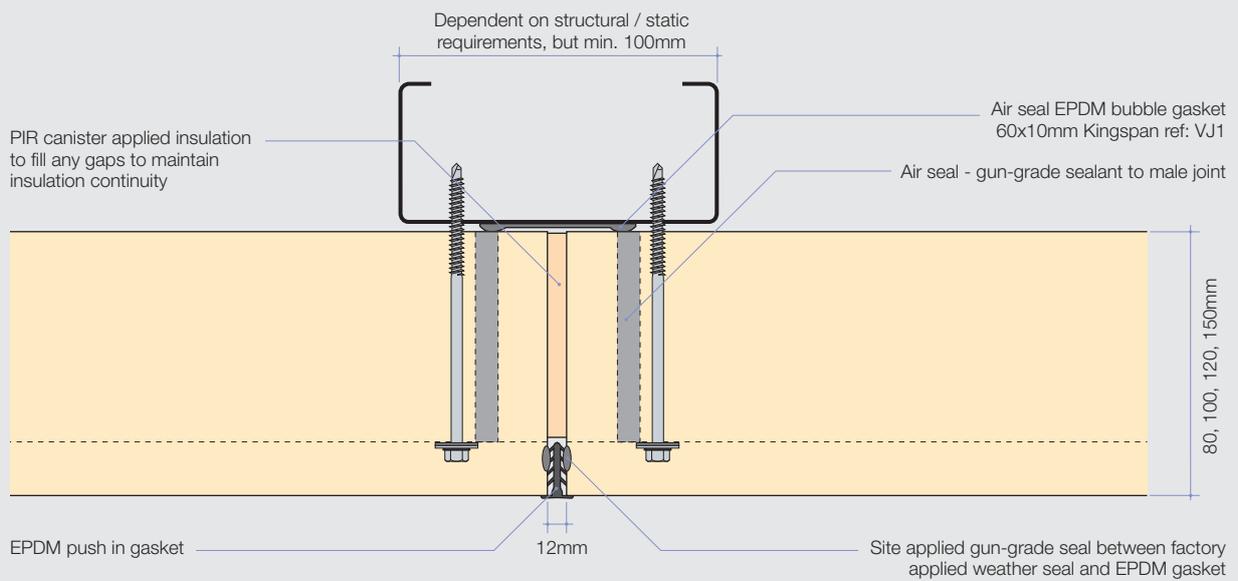
Vertical Joint Detail - Q2A
Horizontal Application



All technical information is subject to alterations. Errors and omissions excepted.

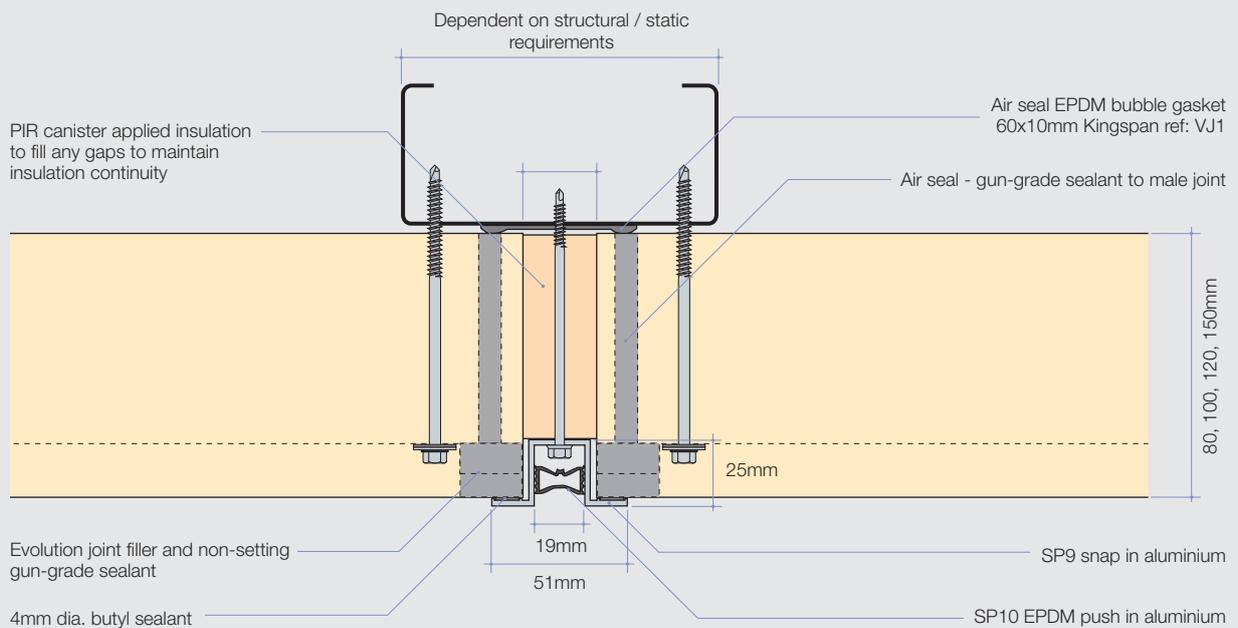
Designwall Evolution

Vertical Joint Detail - Q4
Horizontal Application



All technical information is subject to alterations. Errors and omissions excepted.

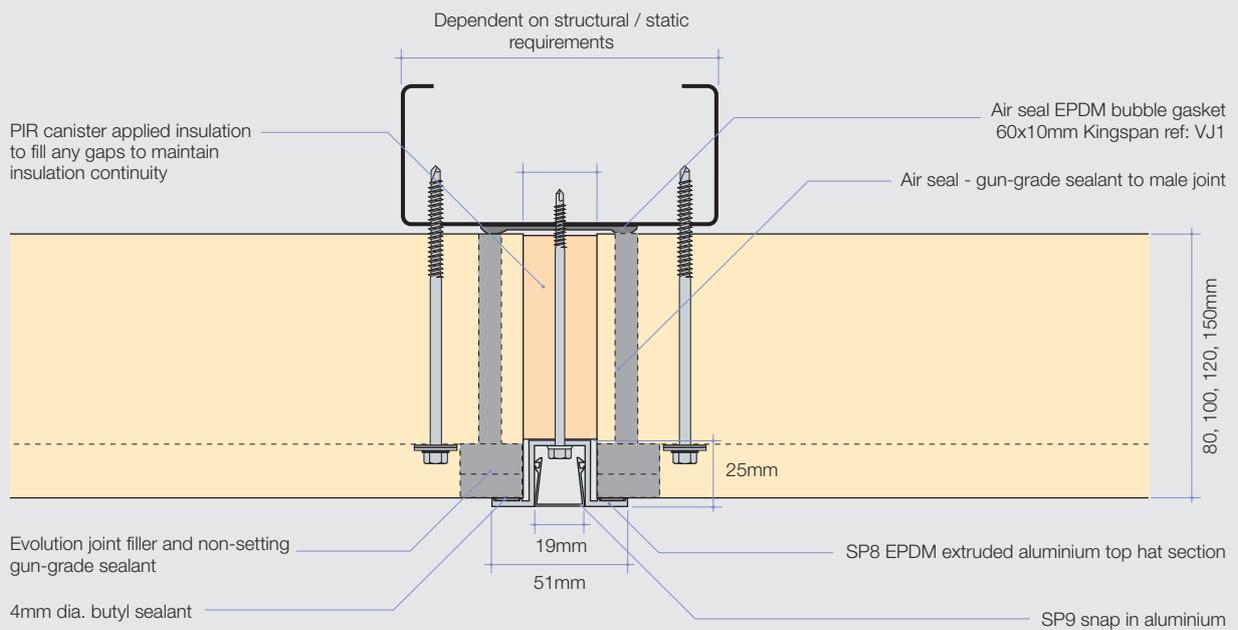
Vertical Joint Detail - Inline Black
Horizontal Application



All technical information is subject to alterations. Errors and omissions excepted.

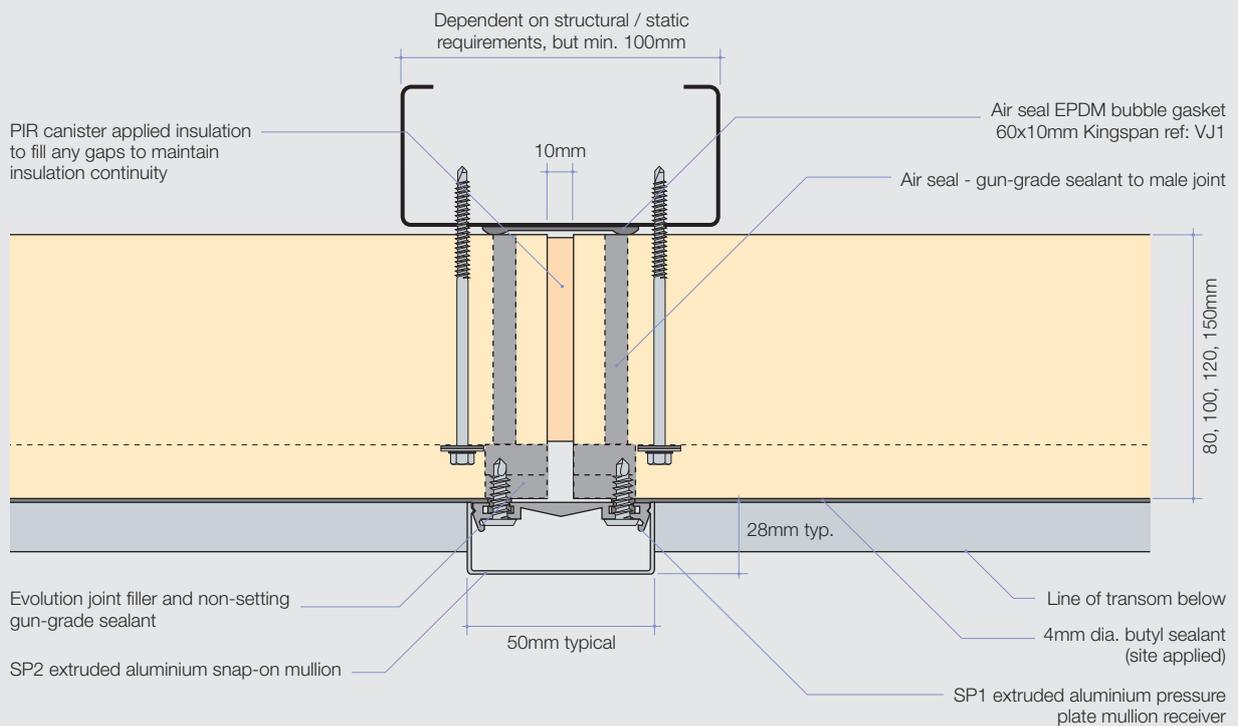
Designwall Evolution

Vertical Joint Detail - Inline Silver
Horizontal Application



All technical information is subject to alterations. Errors and omissions excepted.

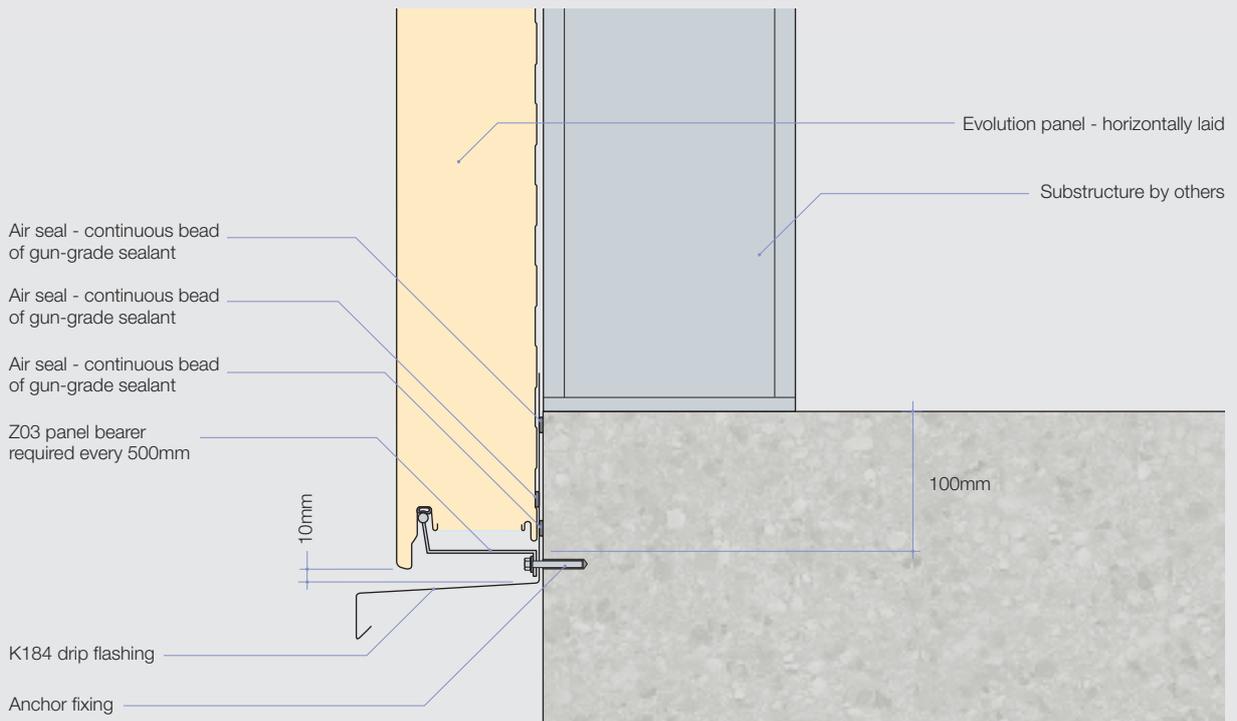
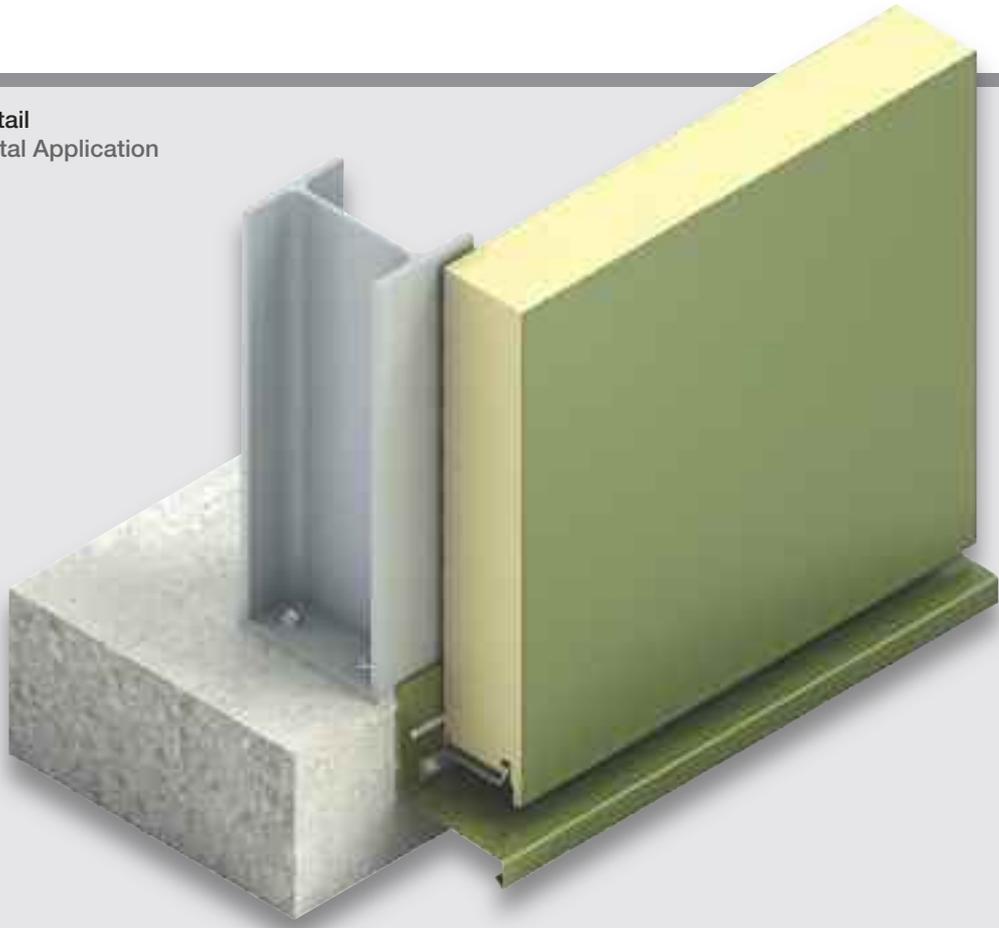
**Vertical Joint Detail - Aluminium Frame
Horizontal Application**



All technical information is subject to alterations. Errors and omissions excepted.

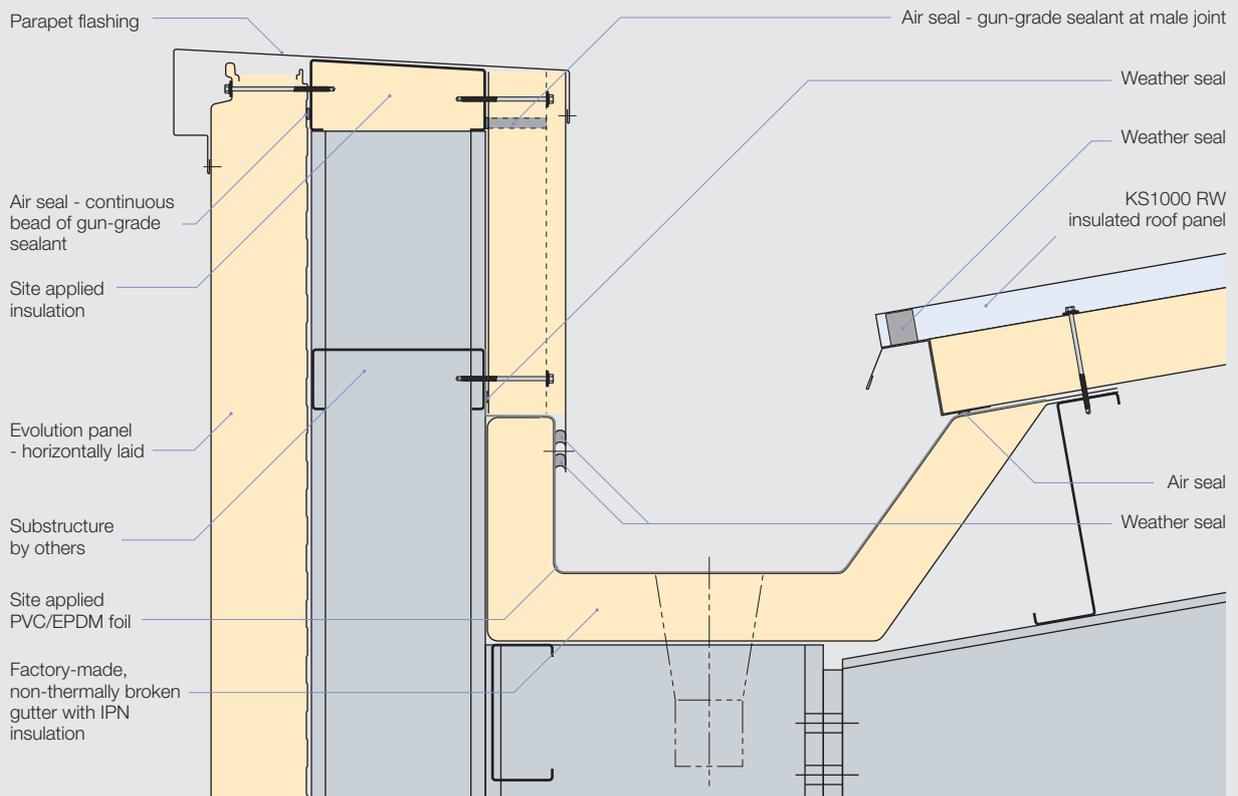
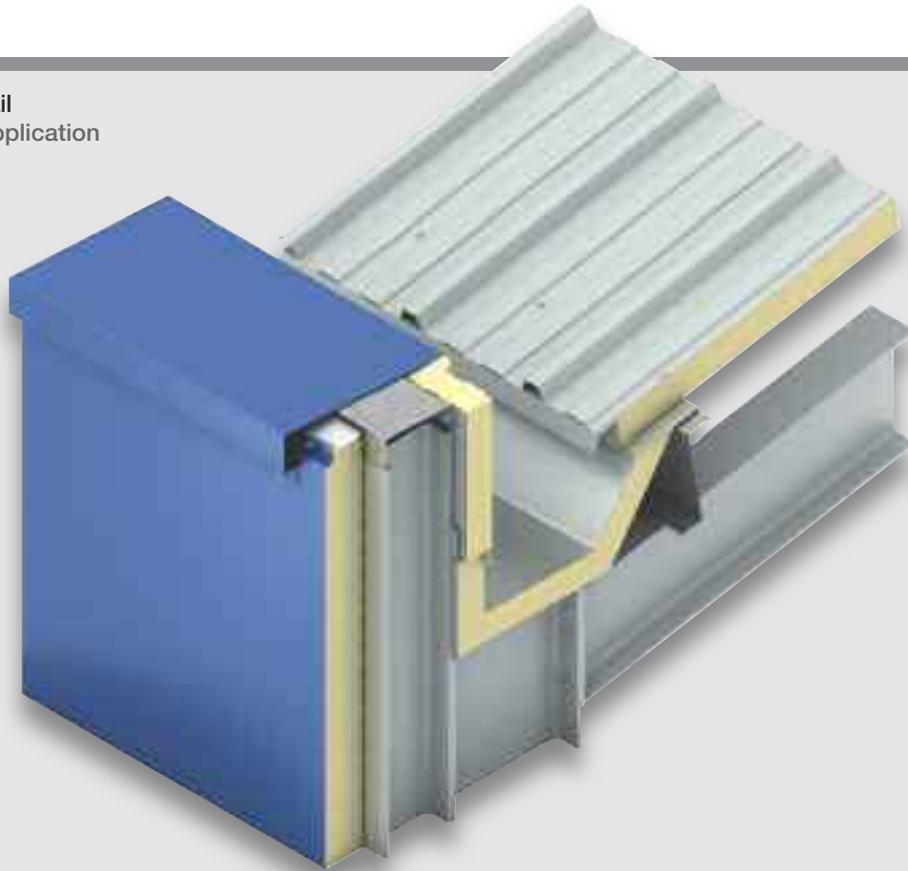
Designwall Evolution

Drip Detail
Horizontal Application



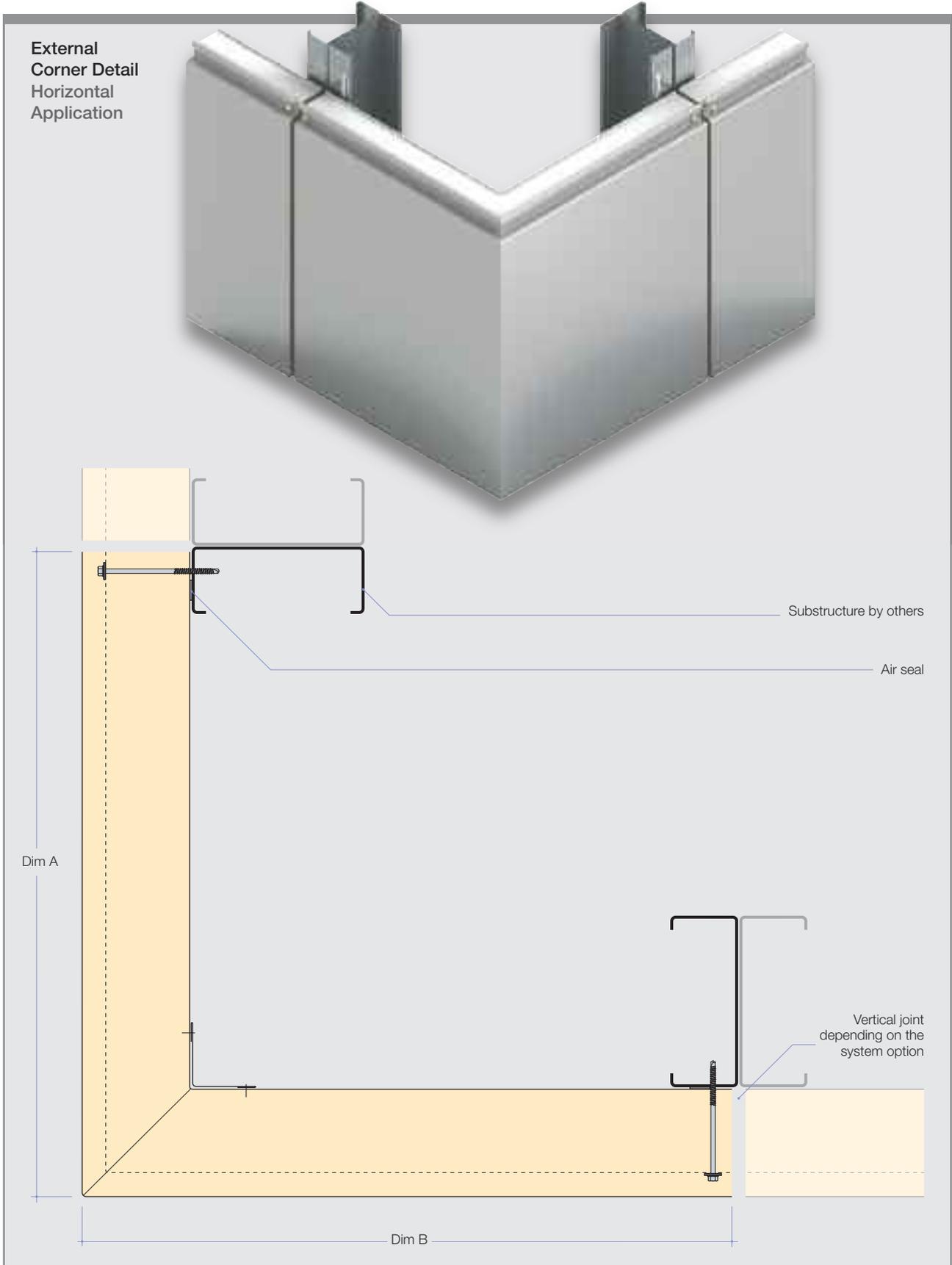
All technical information is subject to alterations. Errors and omissions excepted.

Parapet Detail
Horizontal Application



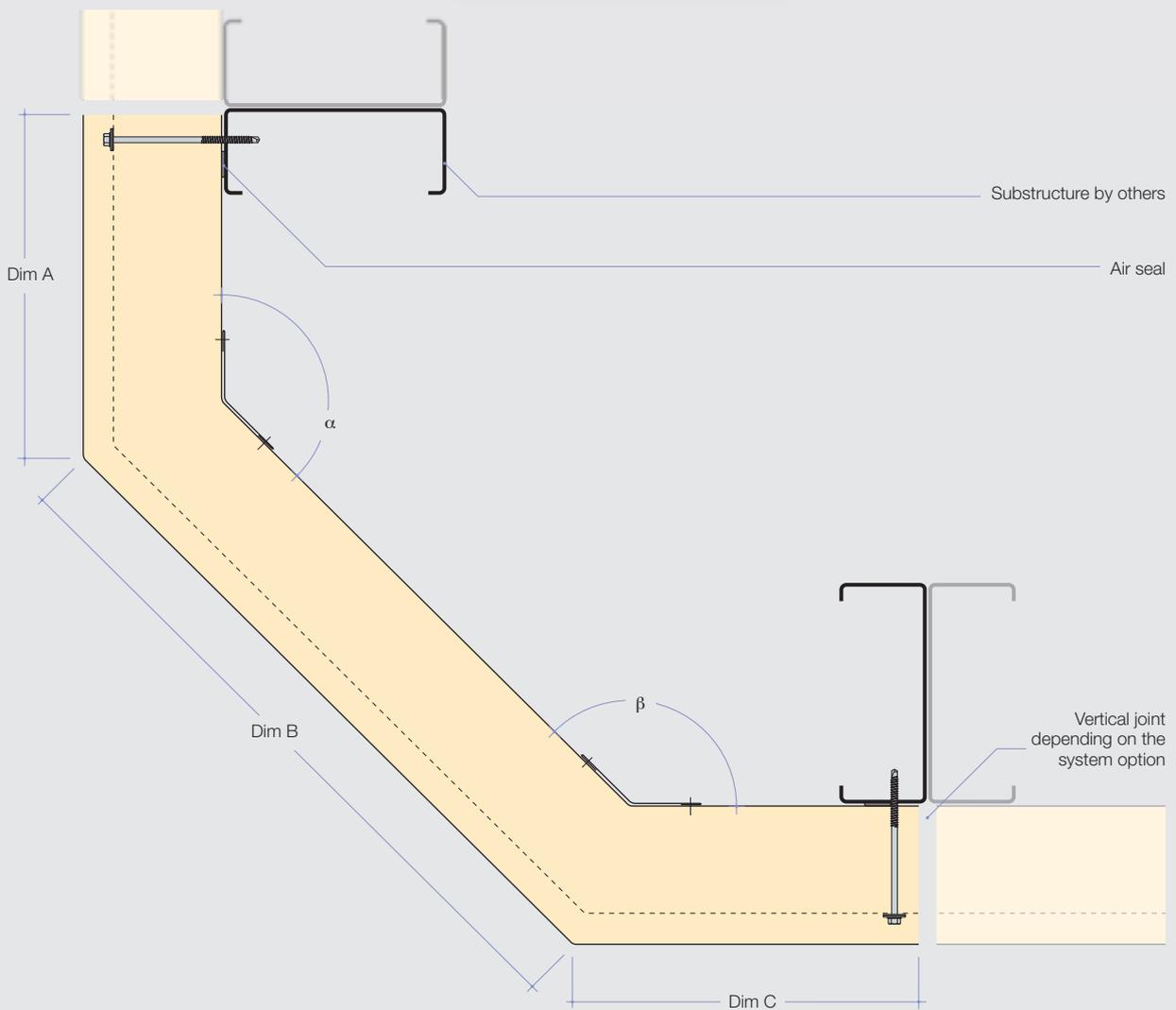
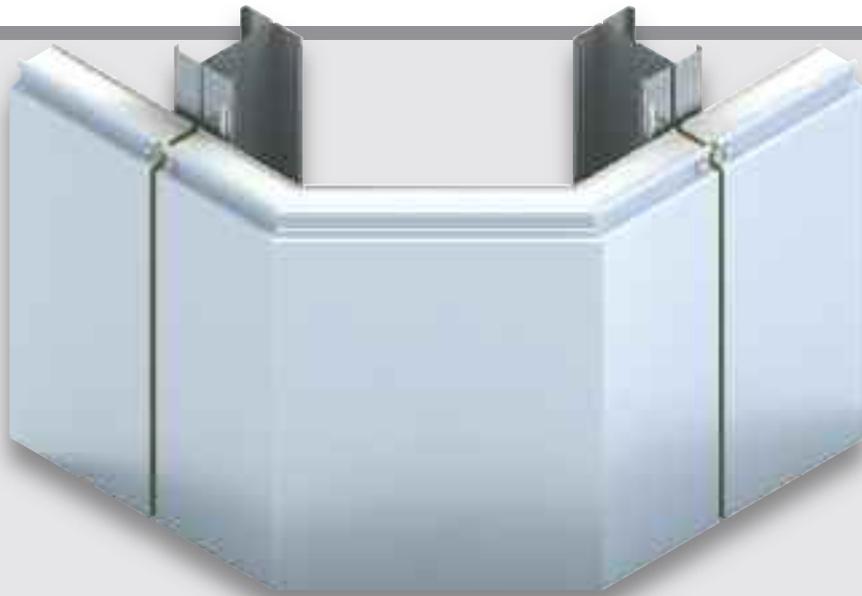
All technical information is subject to alterations. Errors and omissions excepted.

Designwall Evolution



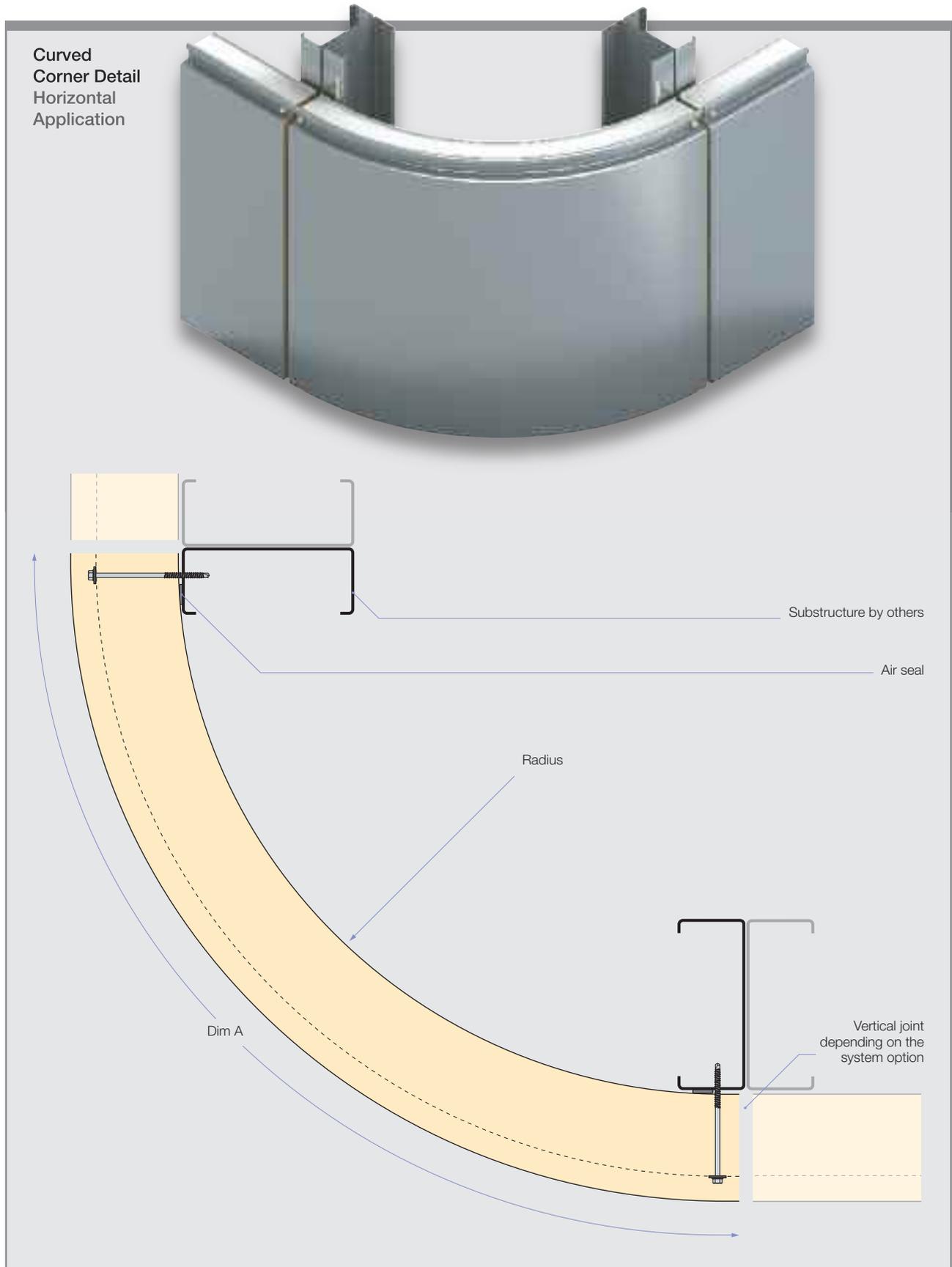
All technical information is subject to alterations. Errors and omissions excepted.

**Chamfered
Corner Detail
Horizontal
Application**



All technical information is subject to alterations. Errors and omissions excepted.

Designwall Evolution



All technical information is subject to alterations. Errors and omissions excepted.

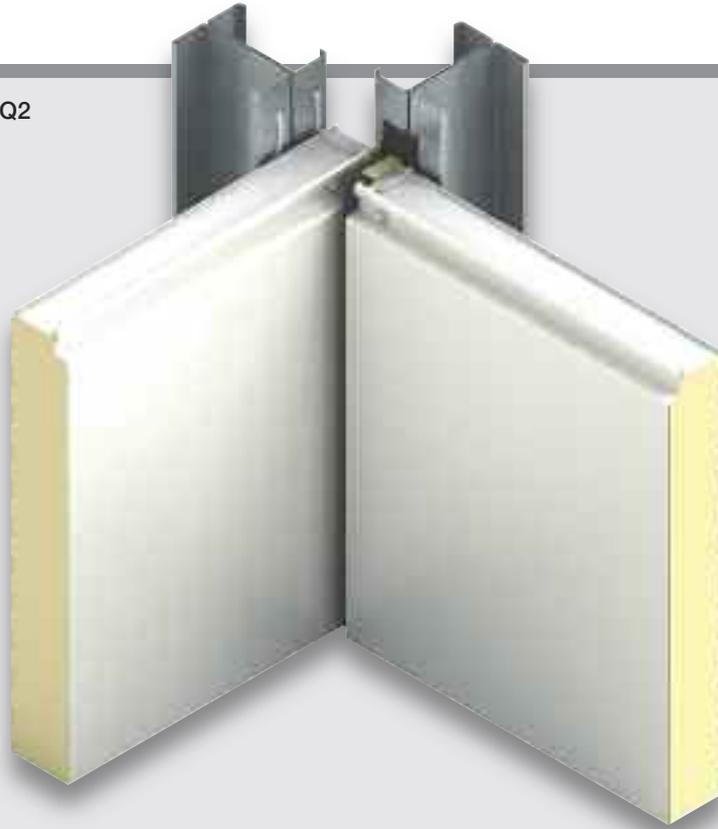


PRODUCT RANGE

Castle College Training Centre
NOTTINGHAM SCIENCE PARK, NOTTINGHAM, UK.

Designwall Evolution

Internal Corner Detail - Q2
Horizontal Application



Air seal - gun-grade sealant to male joint

Site applied insulation

Air seal EPDM bubble gasket 60x10mm
Kingspan ref: VJ1

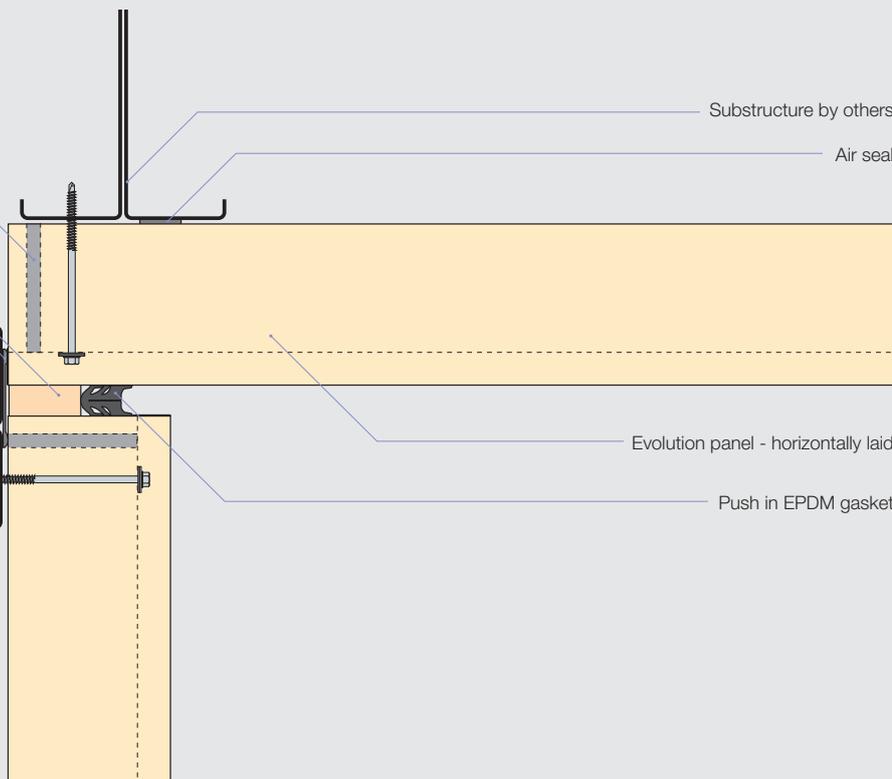
Substructure by others

Substructure by others

Air seal

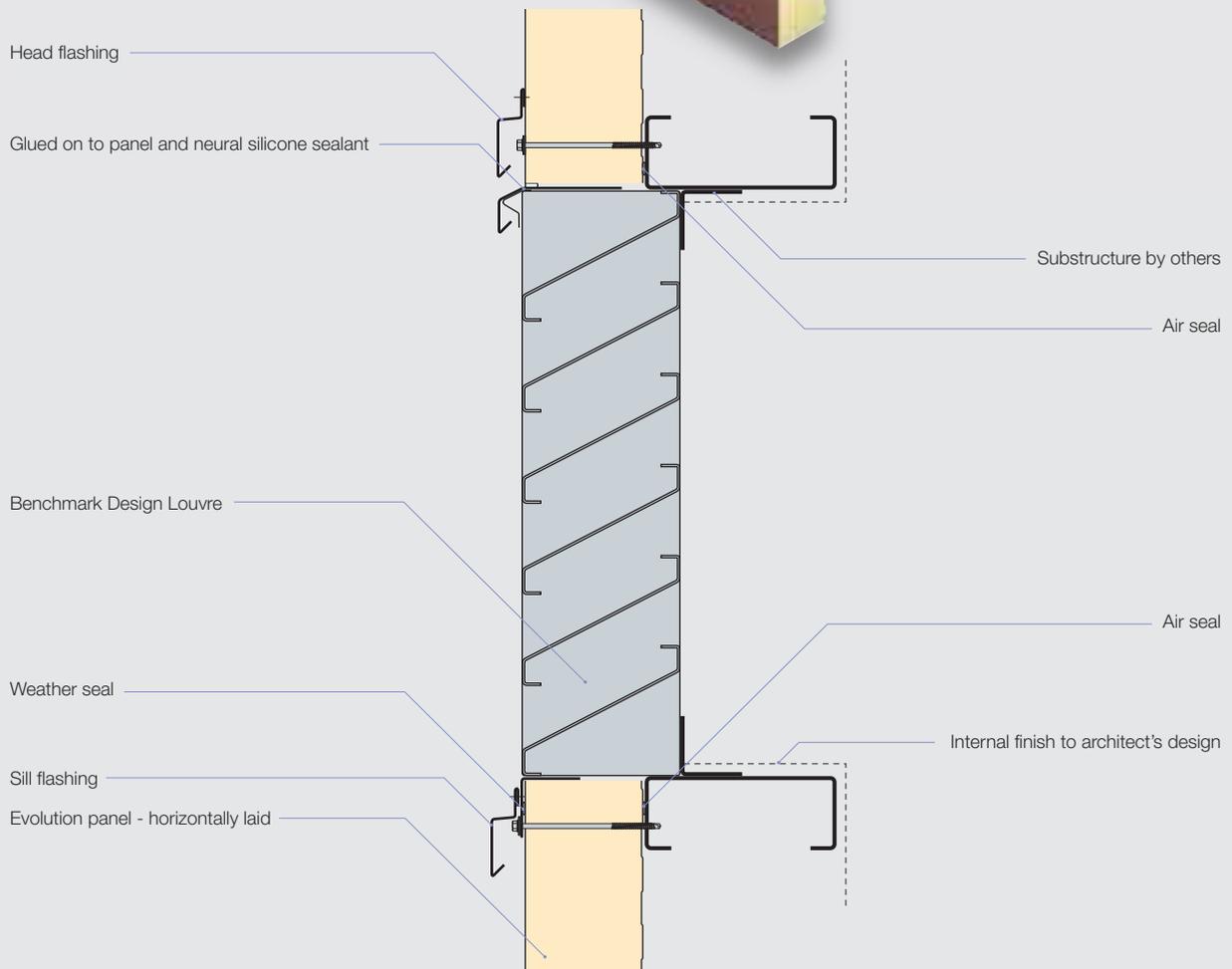
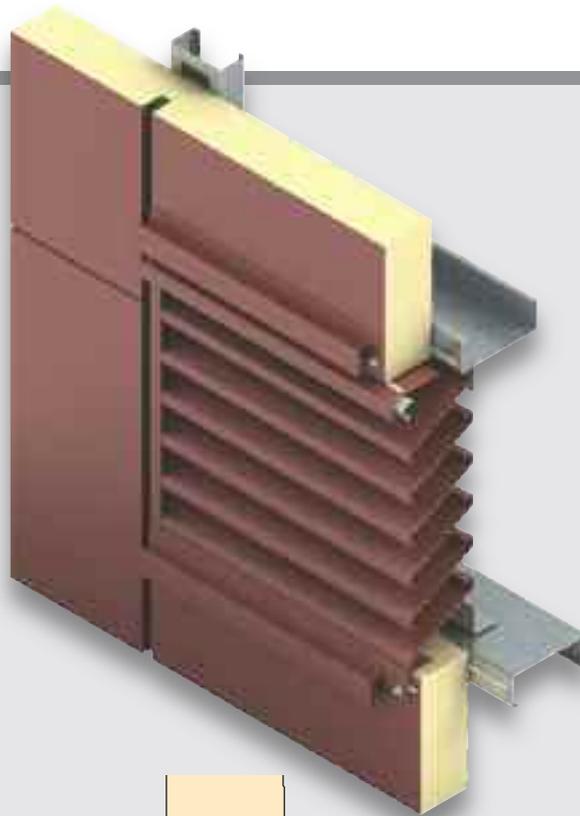
Evolution panel - horizontally laid

Push in EPDM gasket



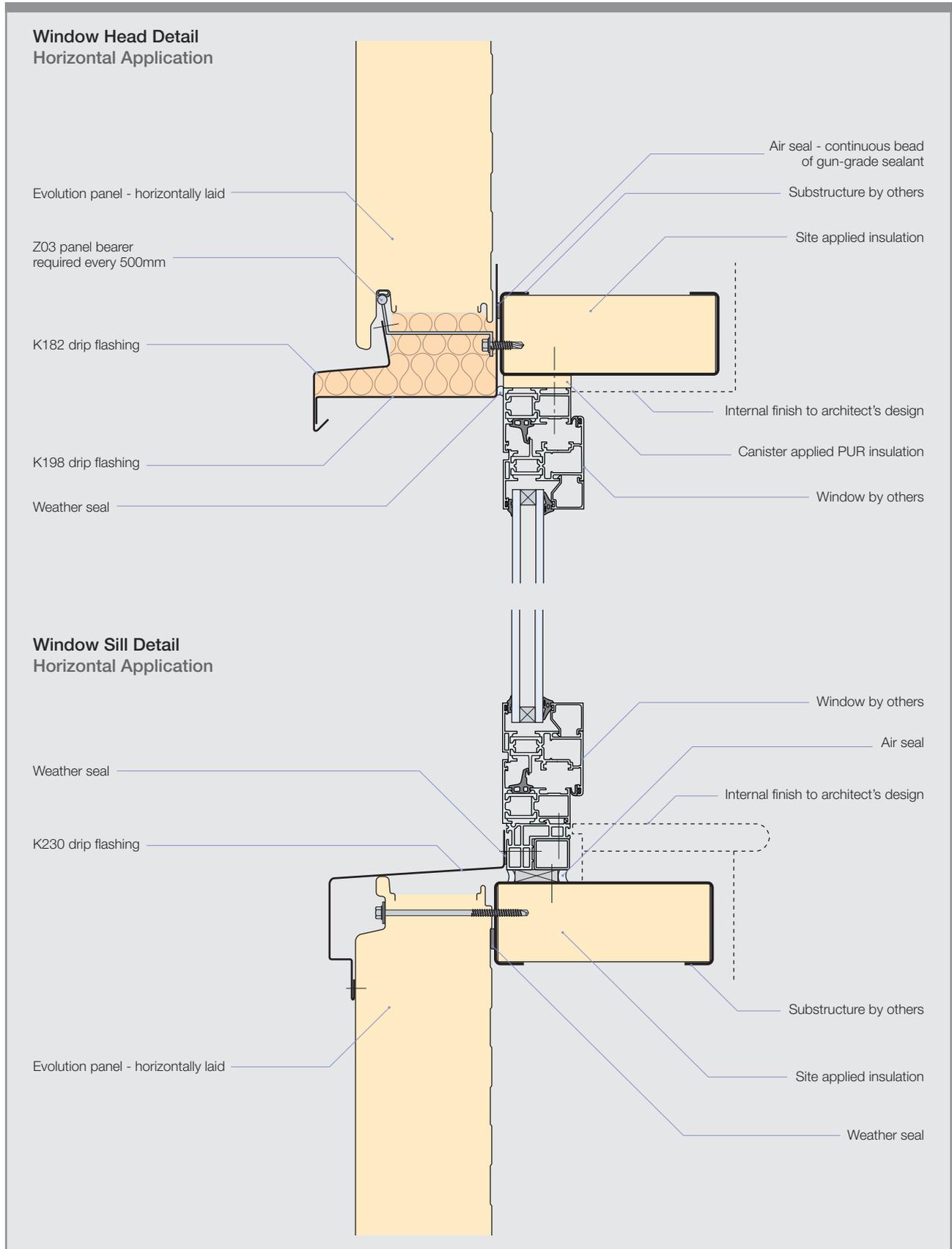
All technical information is subject to alterations. Errors and omissions excepted.

Louvre Detail
Horizontal Application



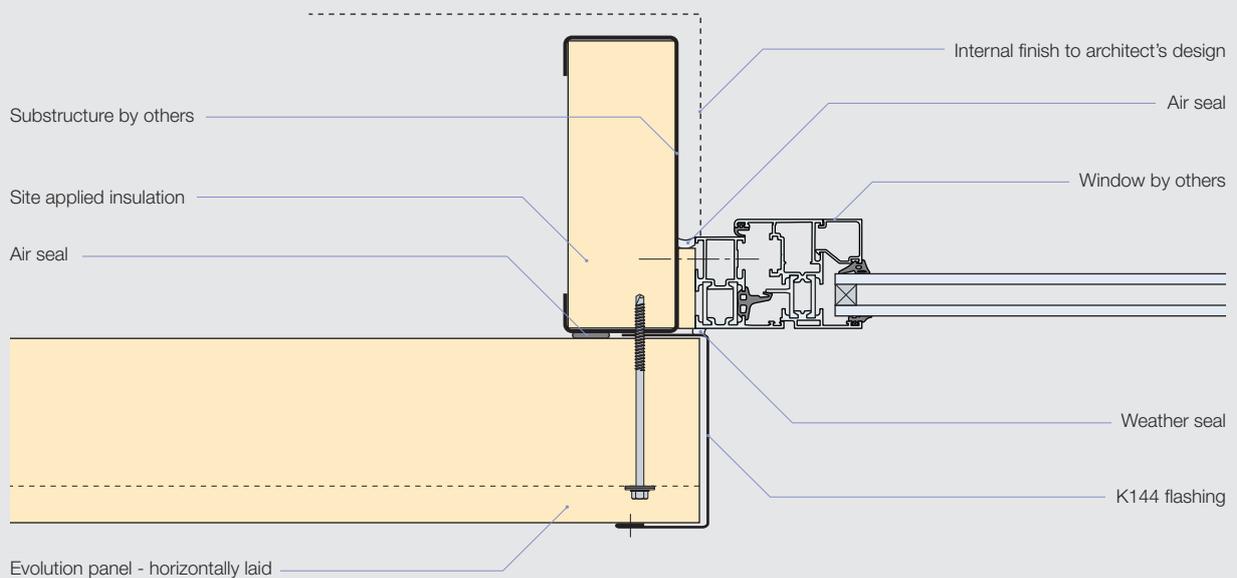
All technical information is subject to alterations. Errors and omissions excepted.

Designwall Evolution



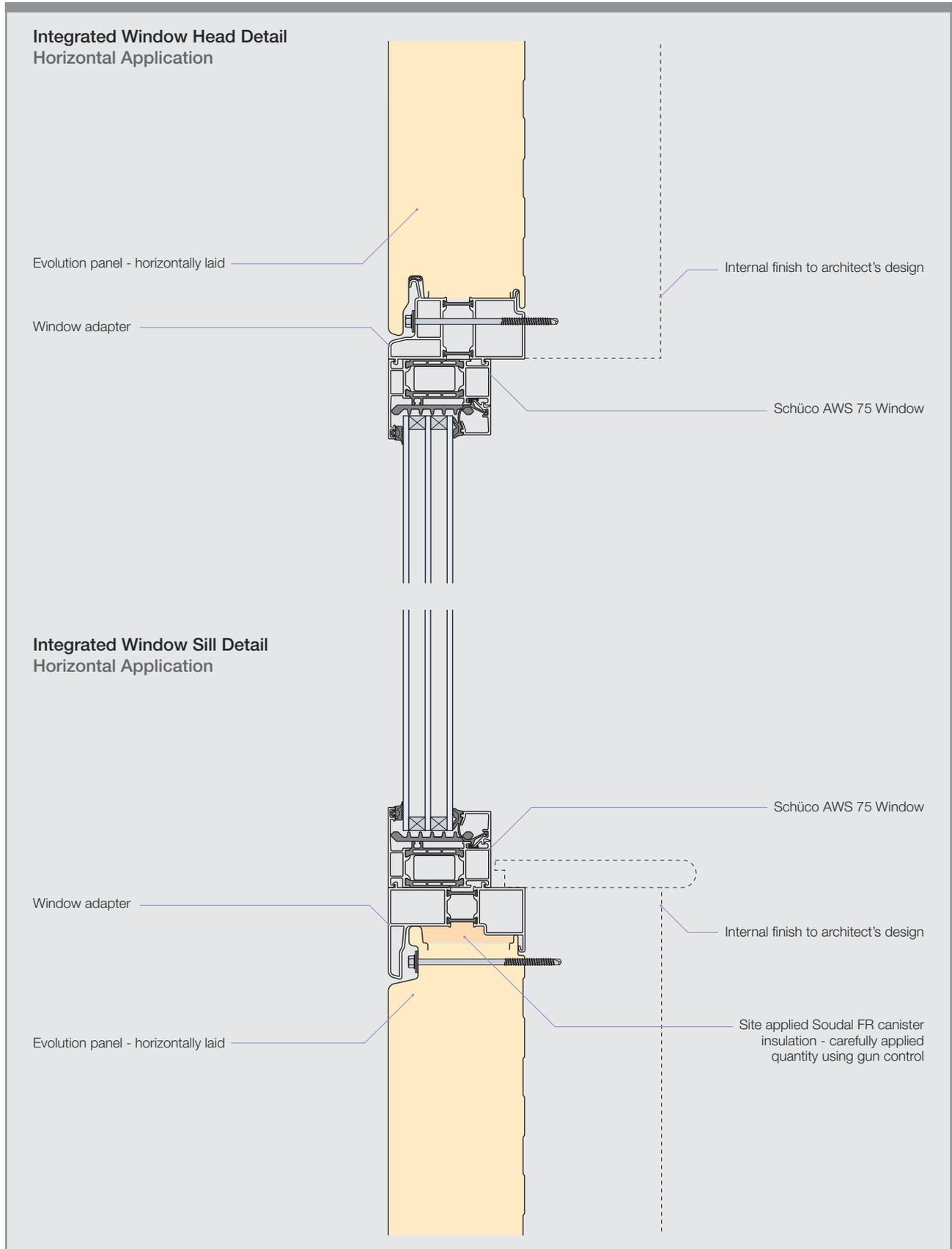
All technical information is subject to alterations. Errors and omissions excepted.

Window Jamb Detail
Horizontal Application



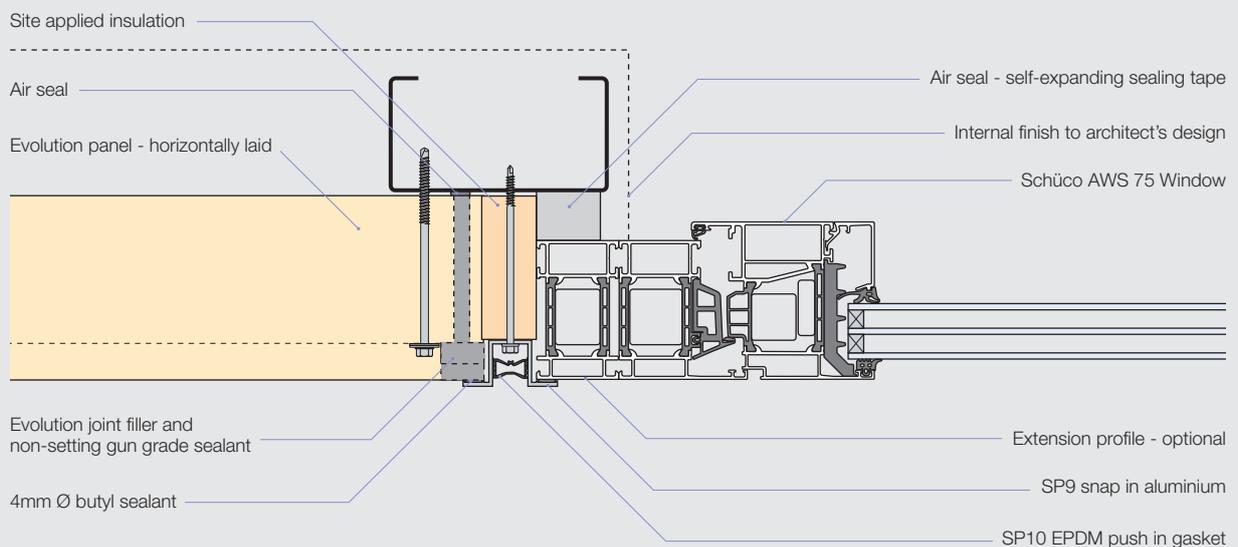
All technical information is subject to alterations. Errors and omissions excepted.

Designwall Evolution



All technical information is subject to alterations. Errors and omissions excepted.

**Integrated Window Jamb Detail
Horizontal Application**



All technical information is subject to alterations. Errors and omissions excepted.

Engineered Façade Systems

The Karrier System as a part of the engineered facade systems, is a unique insulated panel that has been specifically designed and tested to support Benchmark's range of façades.

Depending on the Benchmark façade finish chosen, the Karrier panels are laid vertically or horizontally. The system provides excellent weather resistance, thermal, acoustic, fire and structural performance.

The Benchmark Karrier panel is a metal faced insulated panel that makes the building watertight, removing the façade from the critical path and enabling internal fit-out to start earlier.

A wide range of façade finishes are available, including:

- **Tile** featuring K20 Ceramic Tiles from Agrob Buchtal.
- **HPL** featuring Trespa® high pressure laminates.
- **ACM** featuring Alucobond aluminium composite material.

Alternative façade finish options are available on request. Please contact Kingspan Benchmark for further information.

Karrier Panel Specification

Thickness

80 – 150mm

Standard Metal Gauge

0.6 exterior / 0.4 interior

Width

1000mm

Core Material

FireSafe IPN or ThermalSafe IPN

Lengths

2,000 – 14,500mm

U-Value

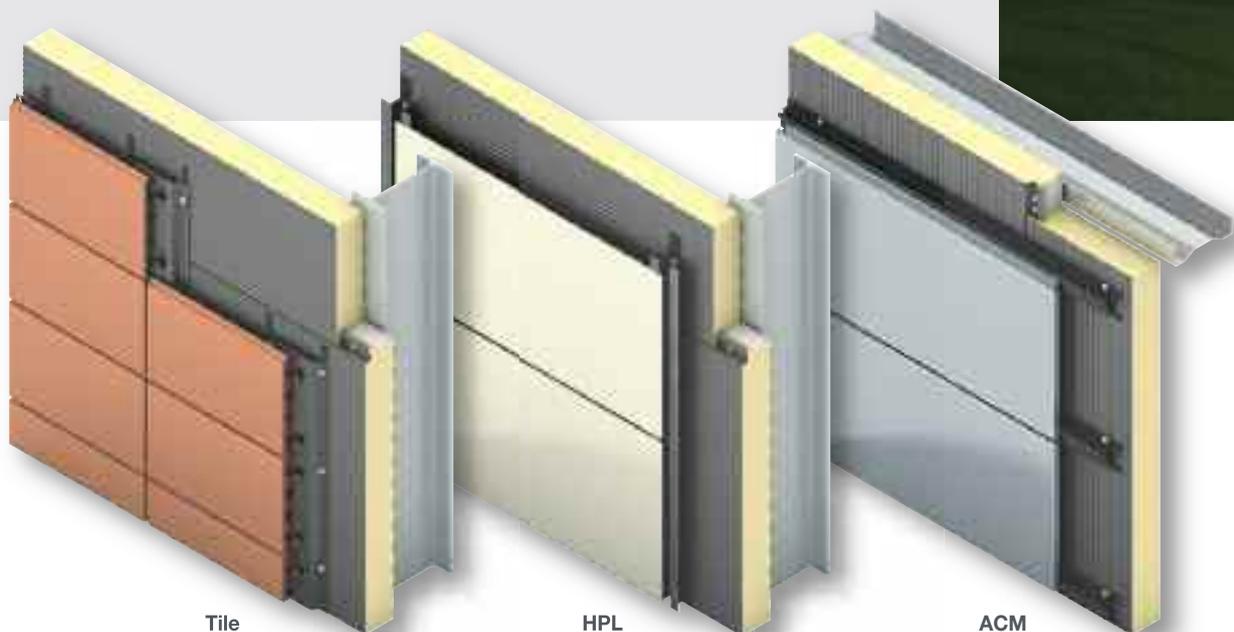
0.15 – 0.29 or 0.14 – 0.26

Surfaces

Steel: Exterior micro-rib profile / interior mini-box profile

Manufacturing Process

Foamed-in-place



Tile

HPL

ACM





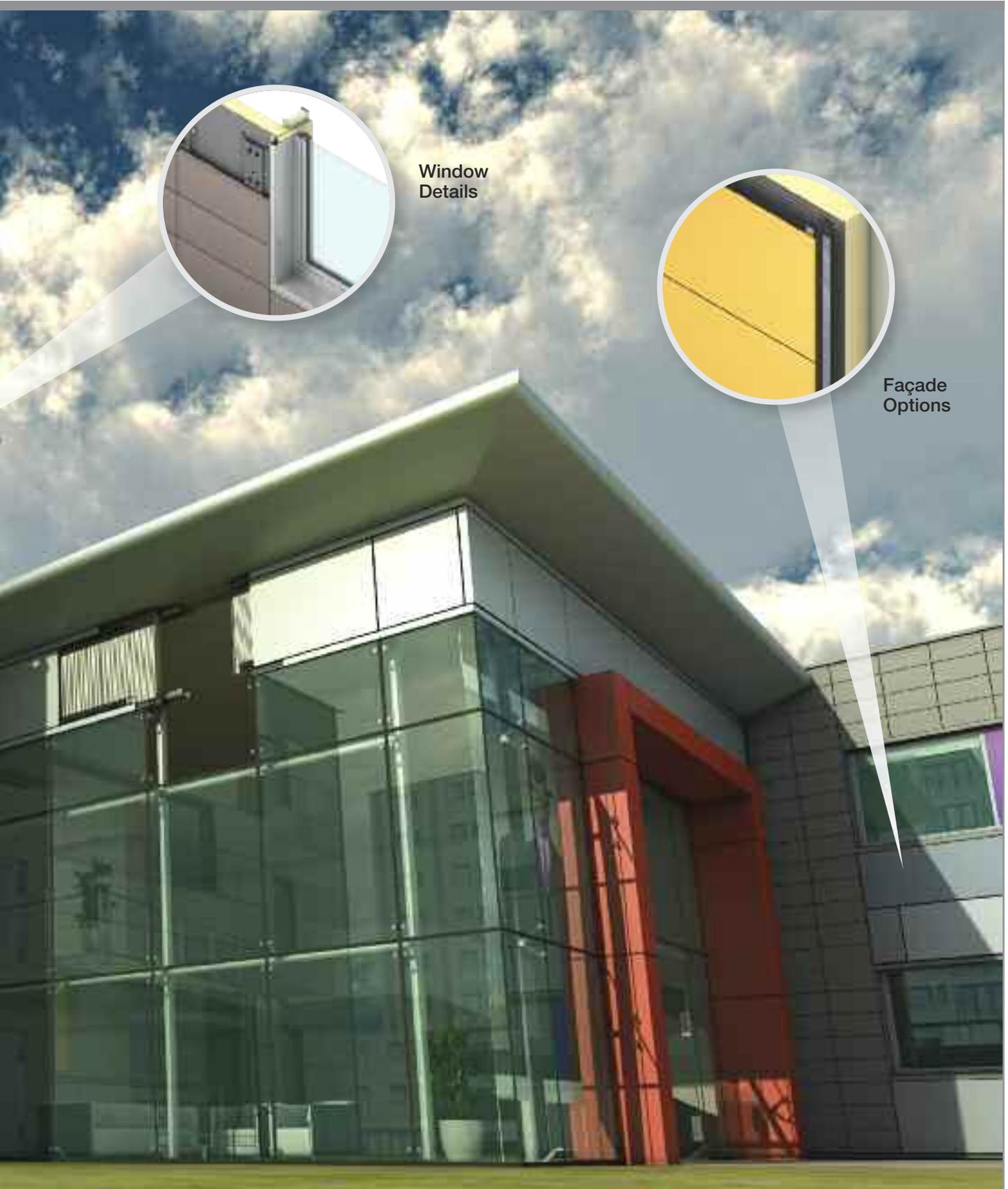
Engineered Façade Systems



Parapet
Details

Corner
Details

Base
Details



Window
Details

Façade
Options

Tile System

Tile System Overview

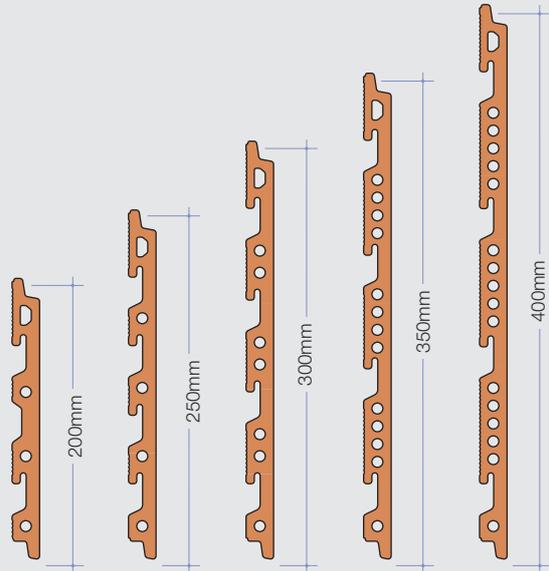
The K20 Ceramic Tile is an extruded ceramic panel available in a wide range of colours and glazes. K20 tiles are secured to the façade using vertical, omega profile rails. The omega rails are attached to the face of the Karrier Panel using special fasteners.

Ceramic Tile Modules

K20 tiles are available in five 'face' sizes:

- 200mm;
- 250mm;
- 300mm;
- 350mm; and
- 400mm.

Tiles are available in lengths of 400mm to 1,200mm, in 1mm increments. Tile modules are also detailed as 'grid' size. The grid size is the actual physical size of the tile including the flanges for the horizontal joint. Grid size = tile face size + 5mm.



Omega Rail Types

Depending on the area of the façade, there are specific omega rails for secure application of the K20 tiles. Note: Images shown here are top section of rail, not full length.



Aluminium Omega Rail

Black coated aluminium omega rail. Specific rail required for each tile face size, see opposite.



Aluminium Corner Omega Rail

Black coated aluminium omega rail. Used at the corner of an elevation to support tiles, either mitre cut or uncut, with a corner profile.



Aluminium Joint Profile

Black coated.

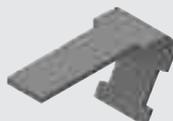


Aluminium Reveal Omega Rail

Black coated, used to support tiles around a window or door reveal.

Joint Spacer

Black coated, used to ensure correct spacing of the vertical joint if a Joint Profile is not used.

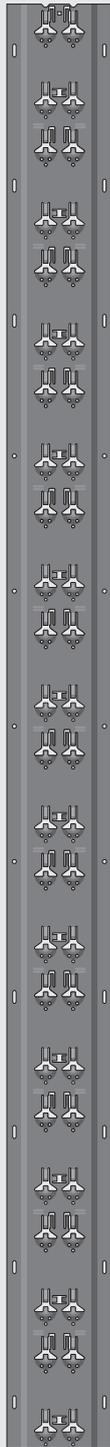


To accommodate the five different tile 'face' sizes, five separate rail lengths are required for the specific spacing of the hooks on the rear of the tiles.

200mm Tiles



250mm Tiles



300mm Tiles



350mm Tiles

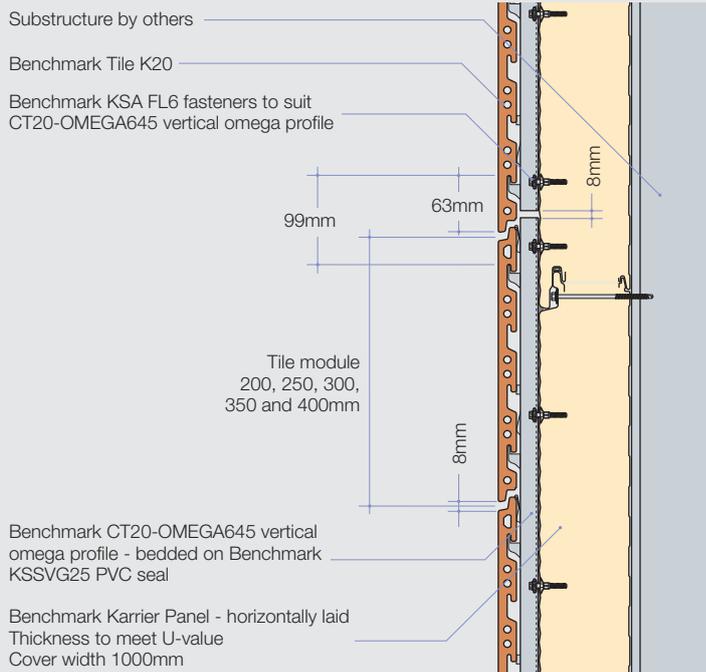
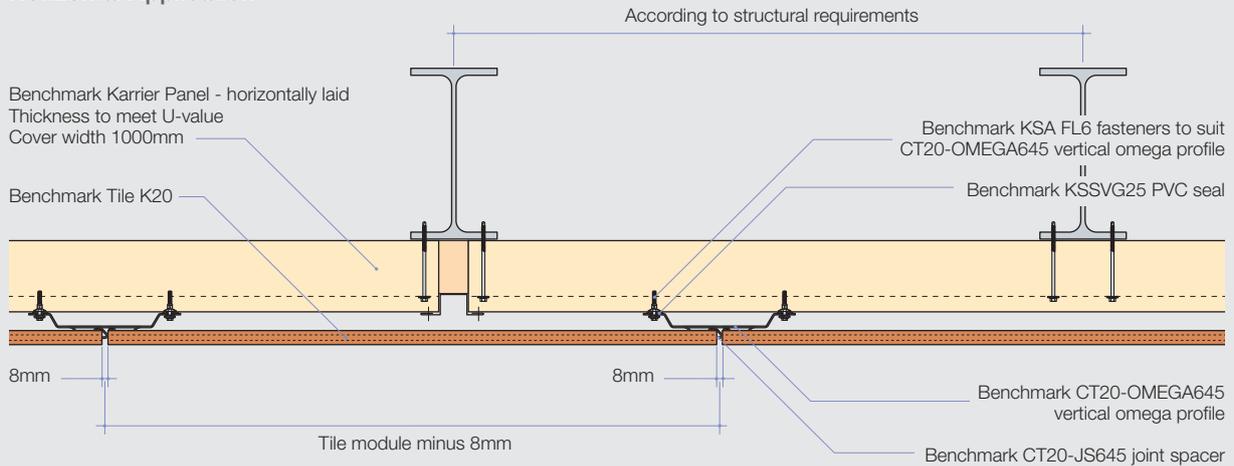


400mm Tiles

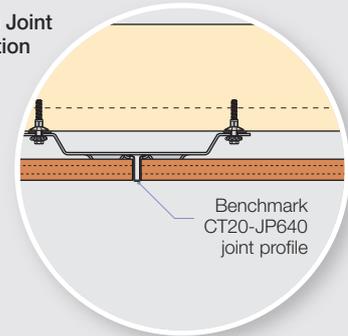


Tile System

System Layout Horizontal Application



Aluminium Joint Profile Option



Due to additional load from façade, panels must be fixed with a minimum of 2 No. fasteners per panel, per rail subject to wind loads.

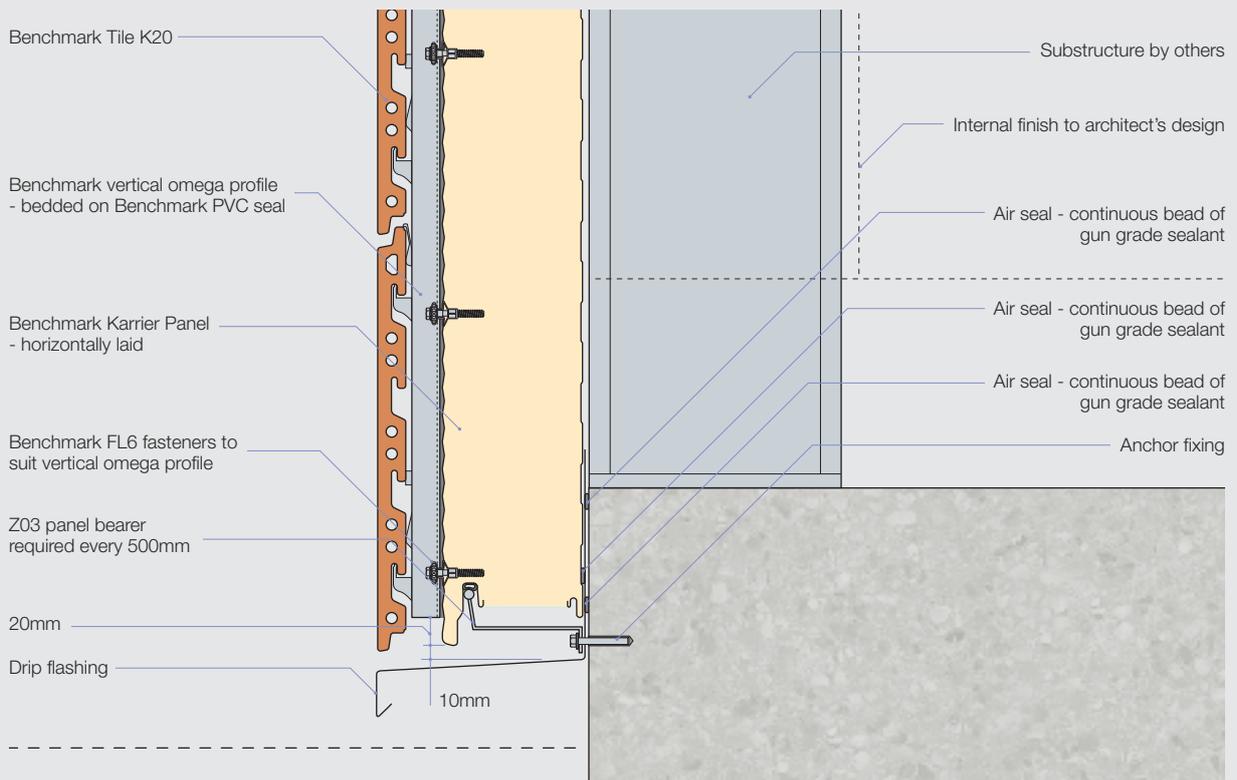
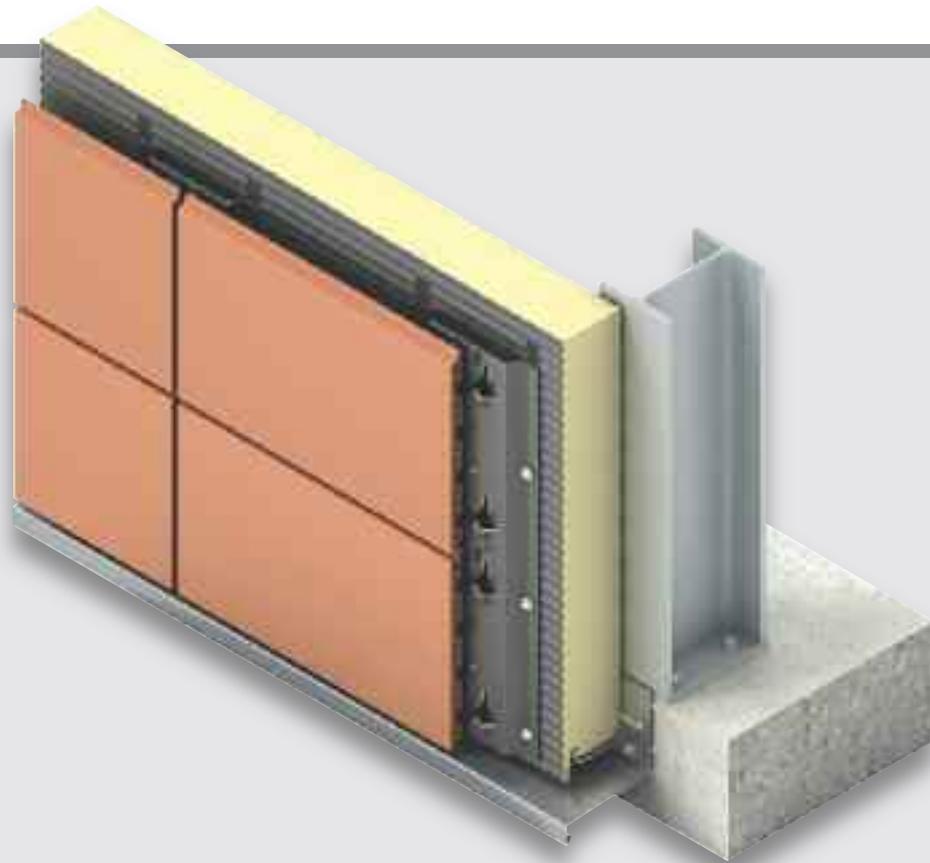
KSA FL6 fasteners to all holes and positioned centrally in all of the slots, in the CT20-OMEGA645 vertical omega profile.

Product Data

Karrier Panel Thickness (mm)		80	100	120	150
Substrate thickness (mm):	external			0.60	
	internal			0.40	
Panel Length (mm)			2,000 - 14,500		
Panel Width (mm)			1,000		
U-value (W/m ² K):	FireSafe IPN Core	0.294	0.233	0.192	0.153
	ThermalSafe IPN Core	0.265	0.210	0.173	0.138
System Weight ^[1] kg/m ²		38.30	39.10	39.90	41.10

^[1] Combined weight of insulated panel, rail and façade. For project specific weights, contact Kingspan Benchmark.

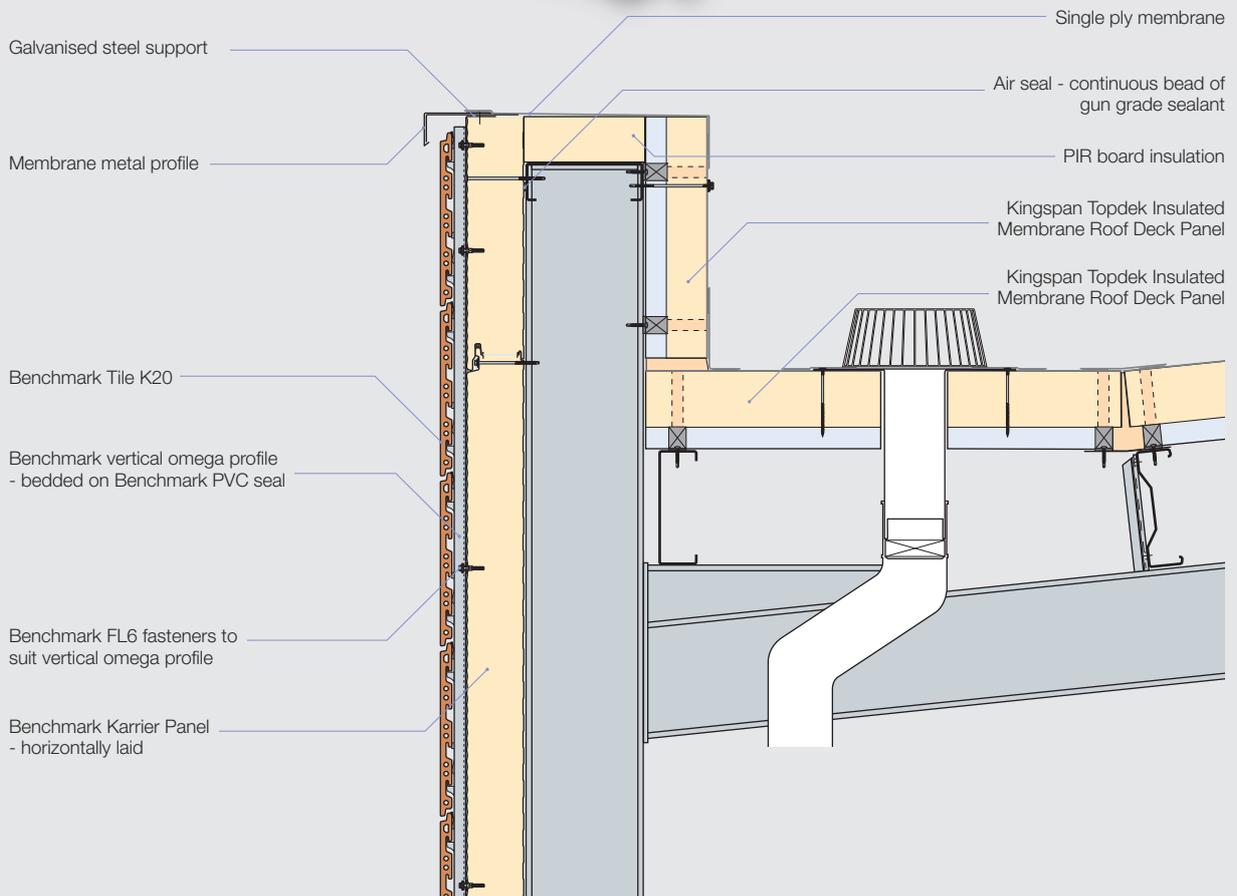
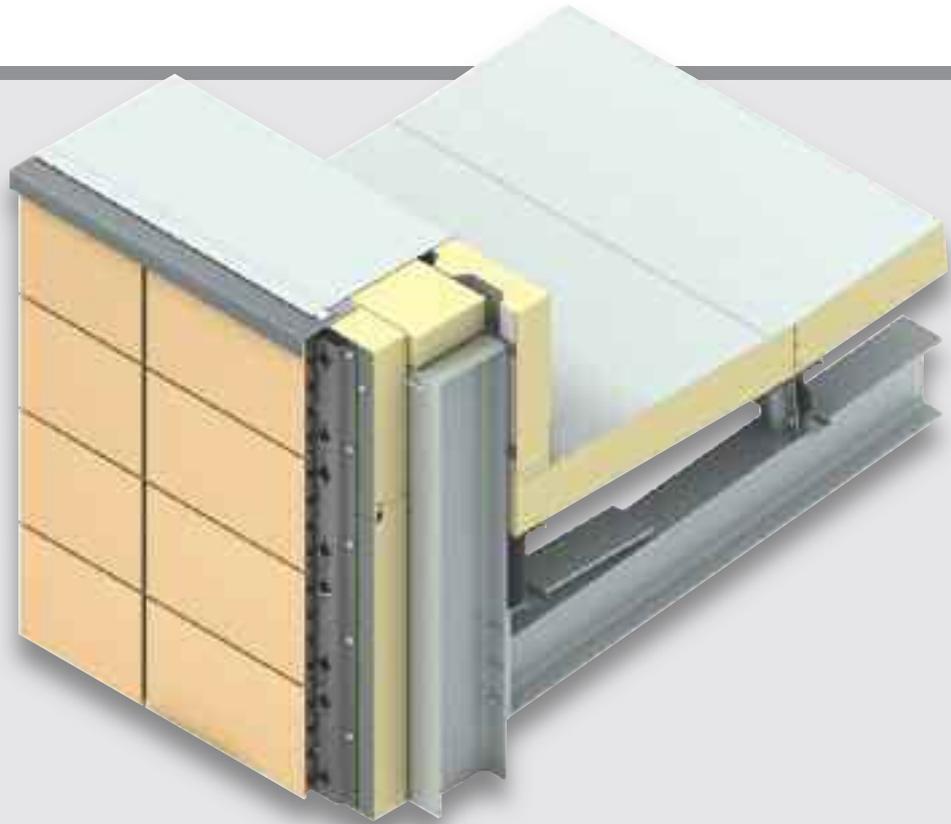
Drip Detail
Horizontal Application



All technical information is subject to alterations. Errors and omissions excepted.

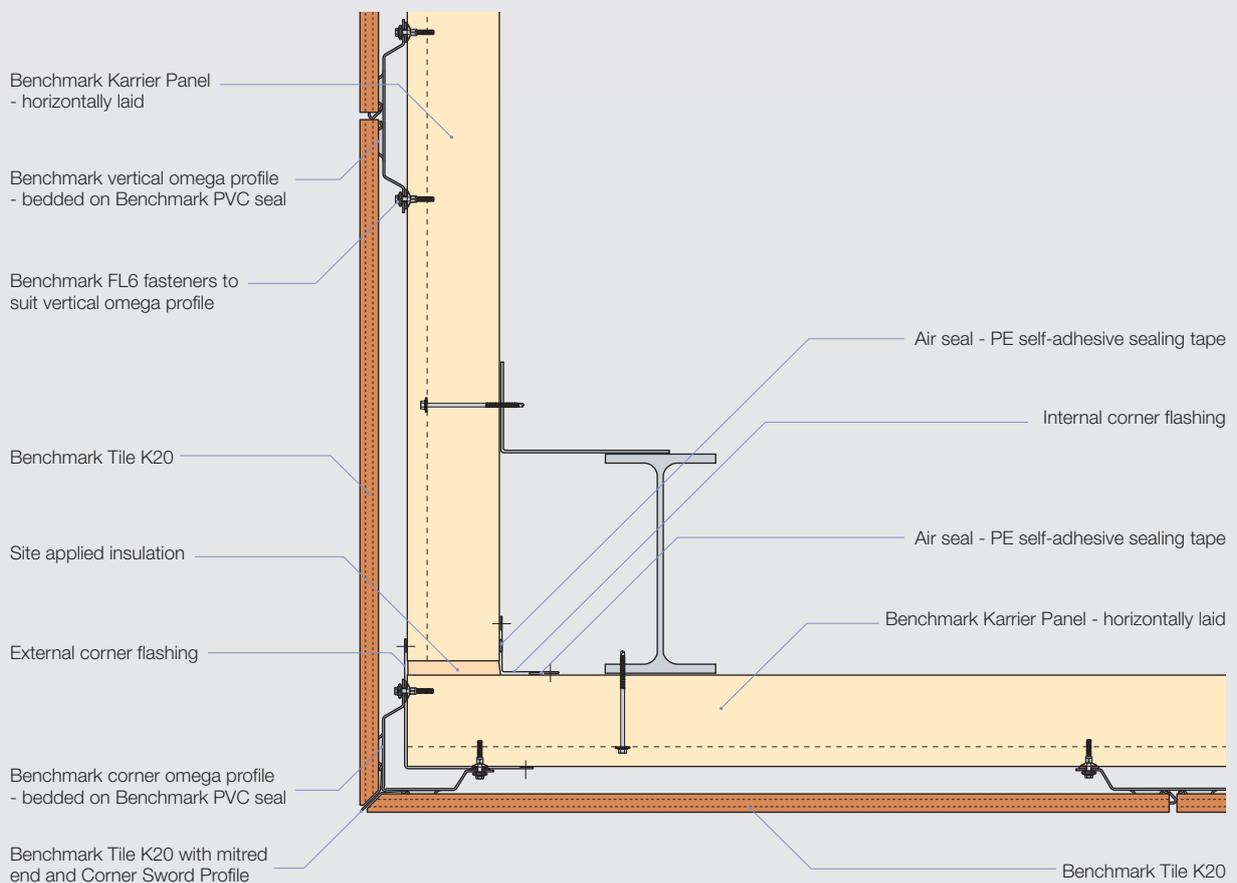
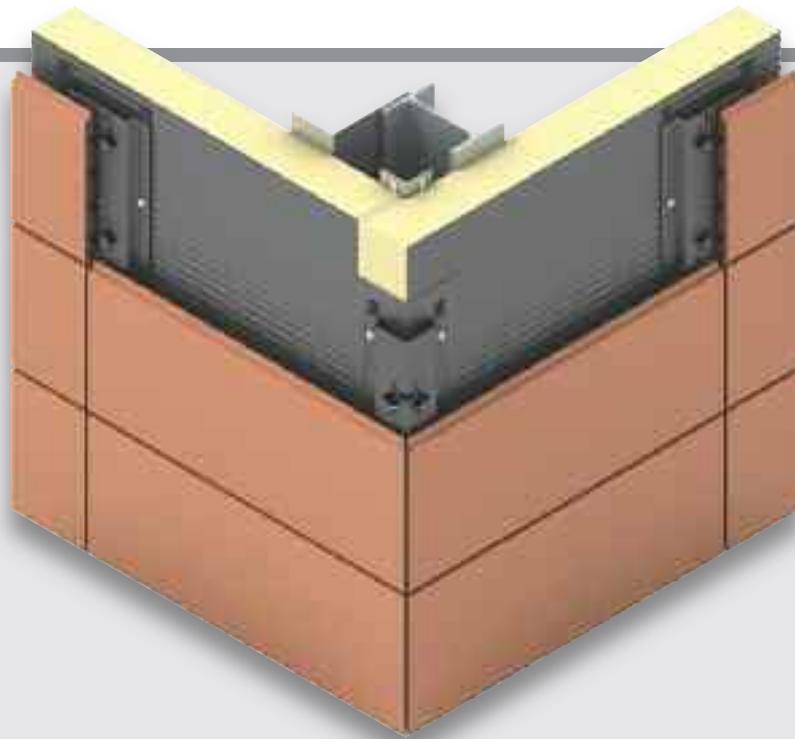
Tile System

Parapet Detail
Horizontal Application



All technical information is subject to alterations. Errors and omissions excepted.

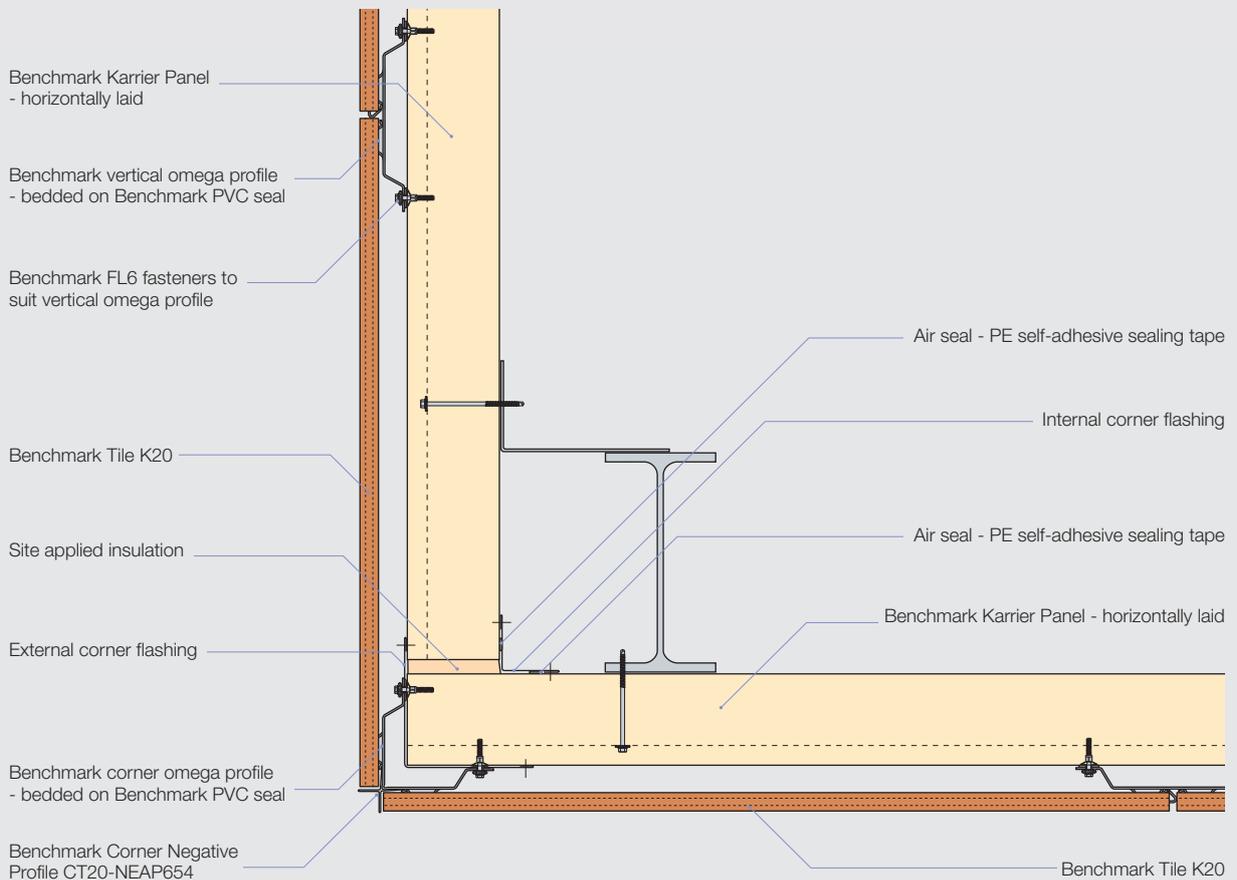
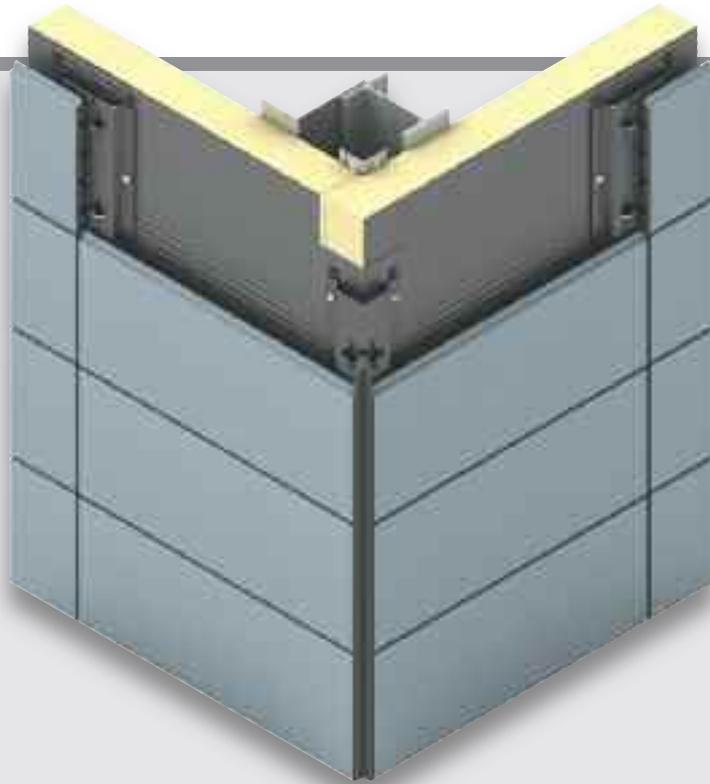
**Corner - Mitred Cut /
Sword Detail**
Horizontal Application



All technical information is subject to alterations. Errors and omissions excepted.

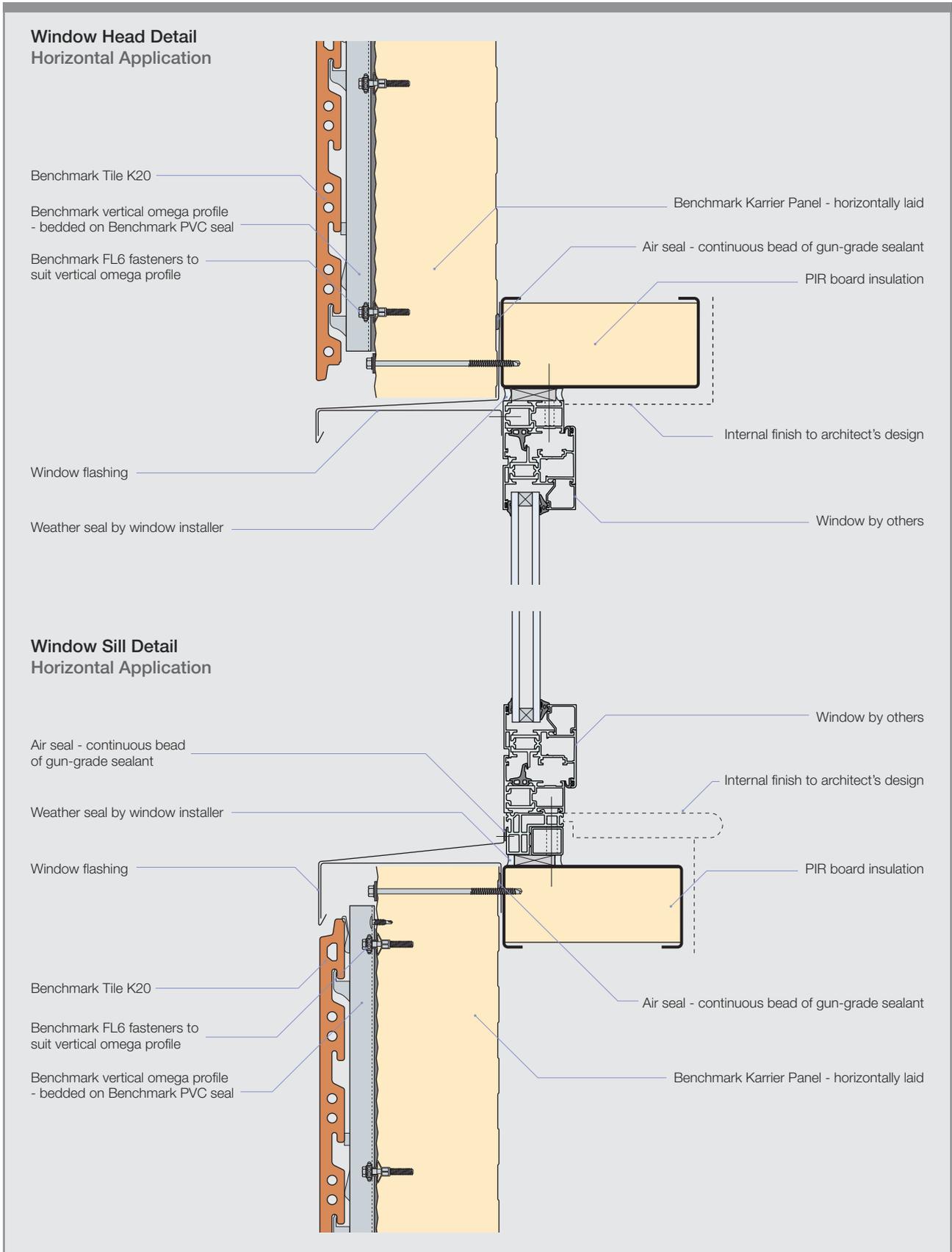
Tile System

Corner - Negative Detail
Horizontal Application



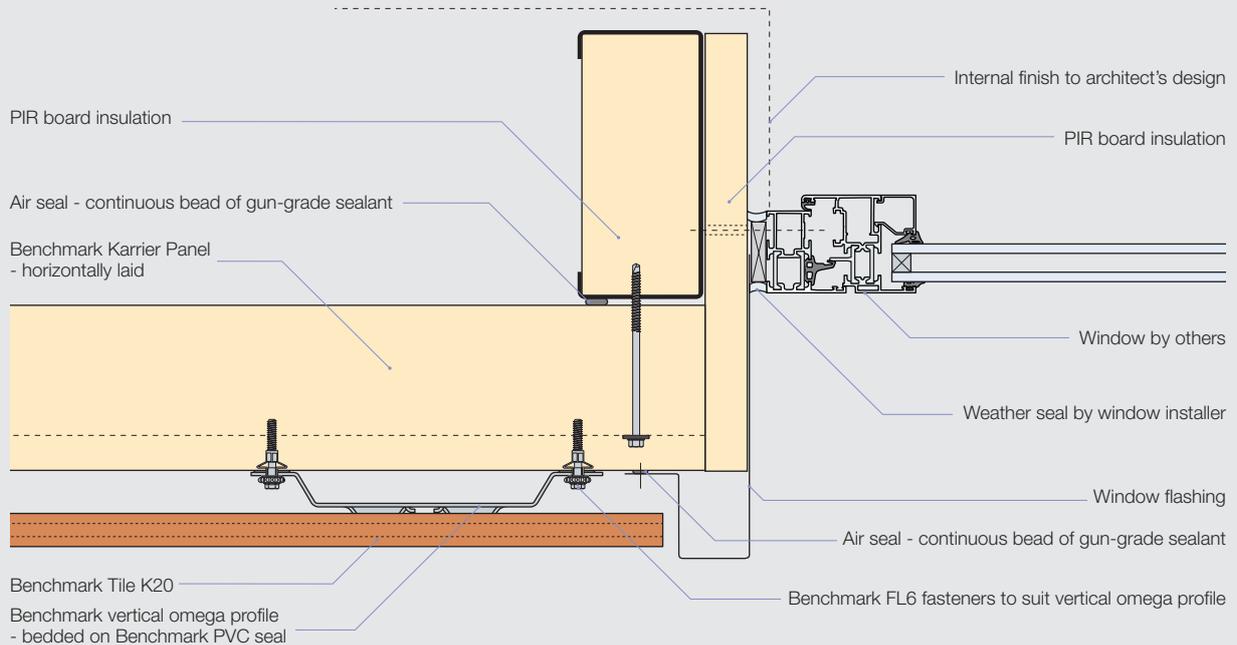
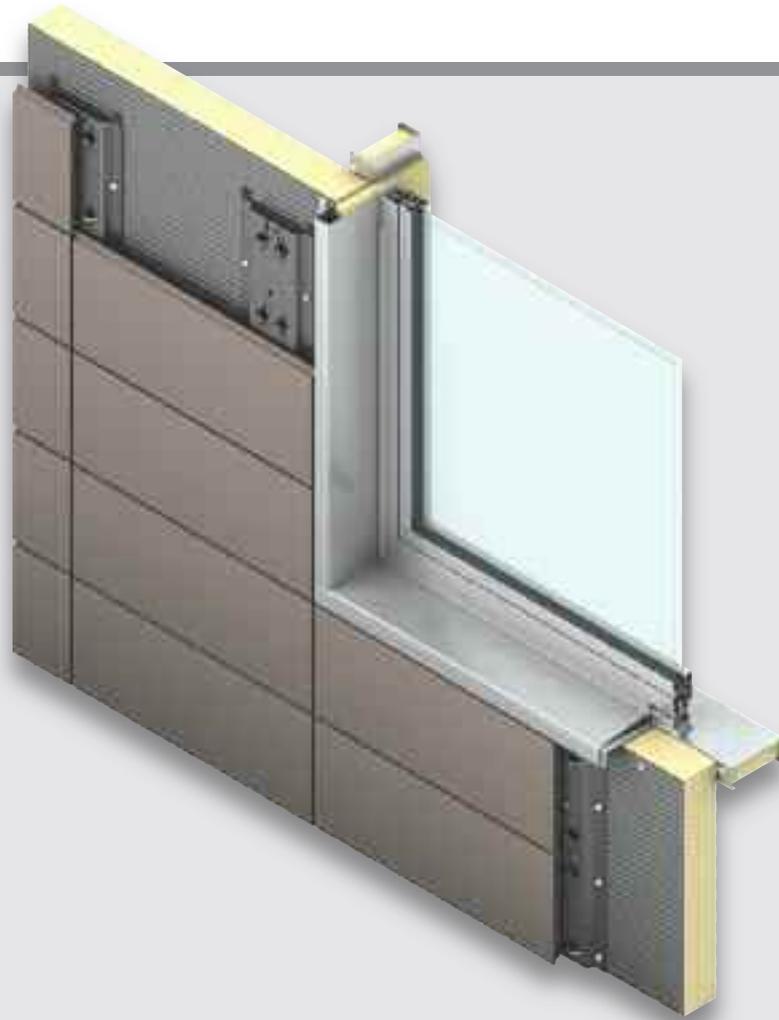
All technical information is subject to alterations. Errors and omissions excepted.

Tile System



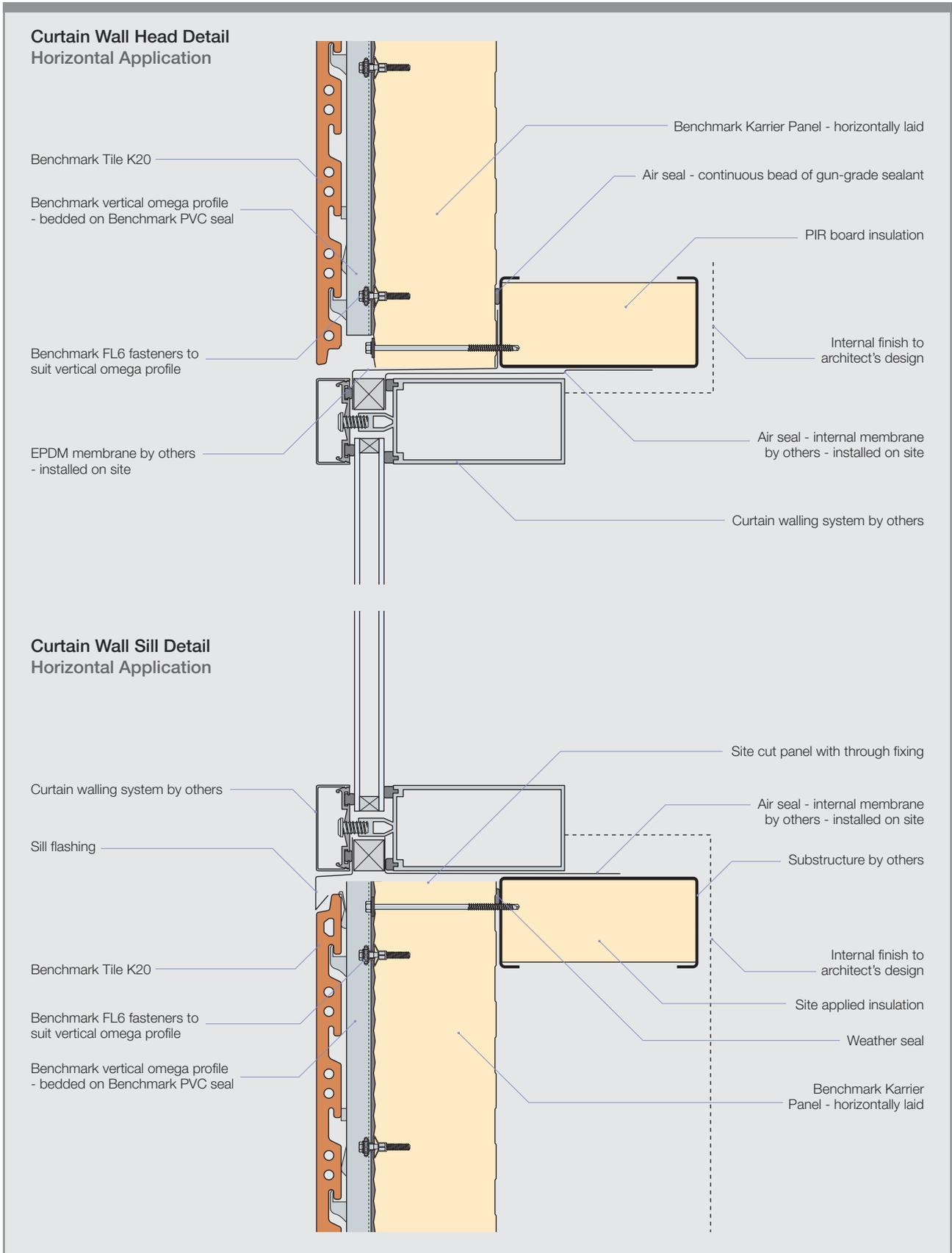
All technical information is subject to alterations. Errors and omissions excepted.

Window Jamb Detail
Horizontal Application



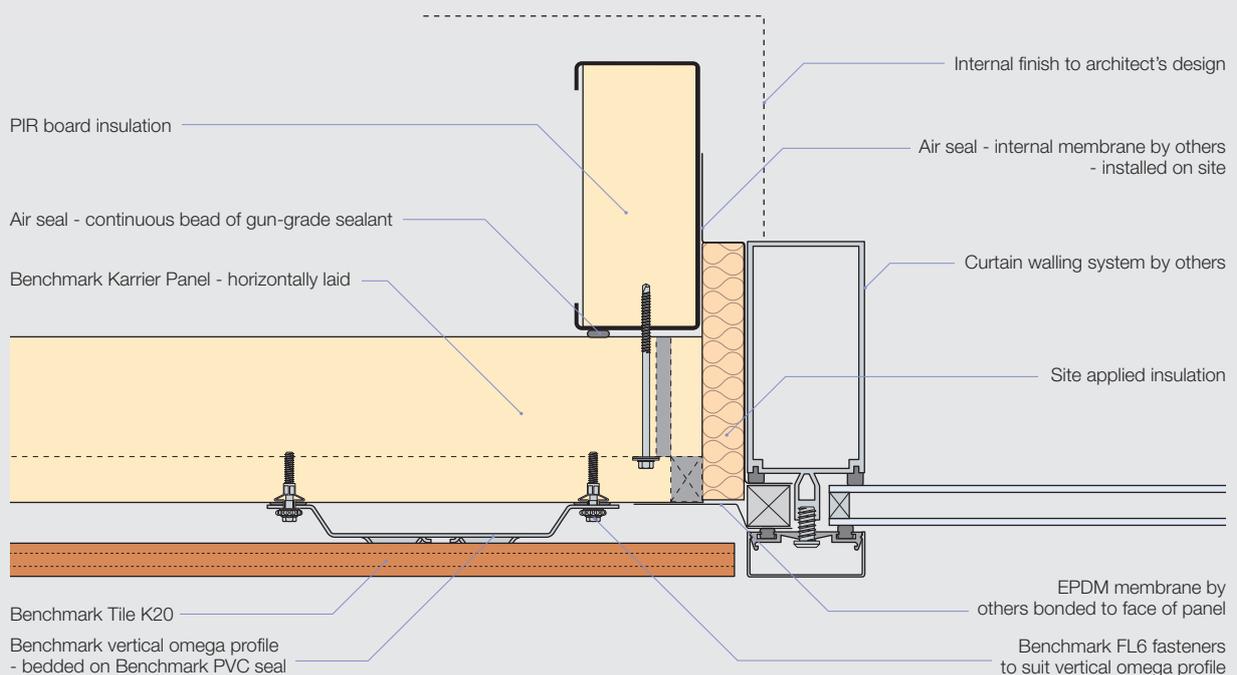
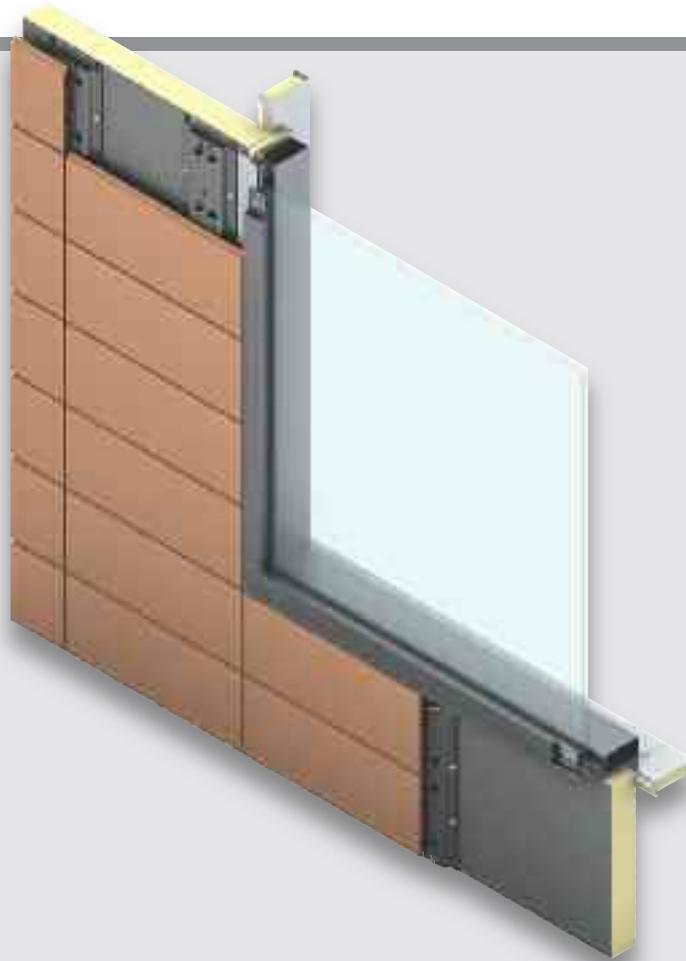
All technical information is subject to alterations. Errors and omissions excepted.

Tile System



All technical information is subject to alterations. Errors and omissions excepted.

**Curtain Wall Jamb Detail
Horizontal Application**



All technical information is subject to alterations. Errors and omissions excepted.

HPL System

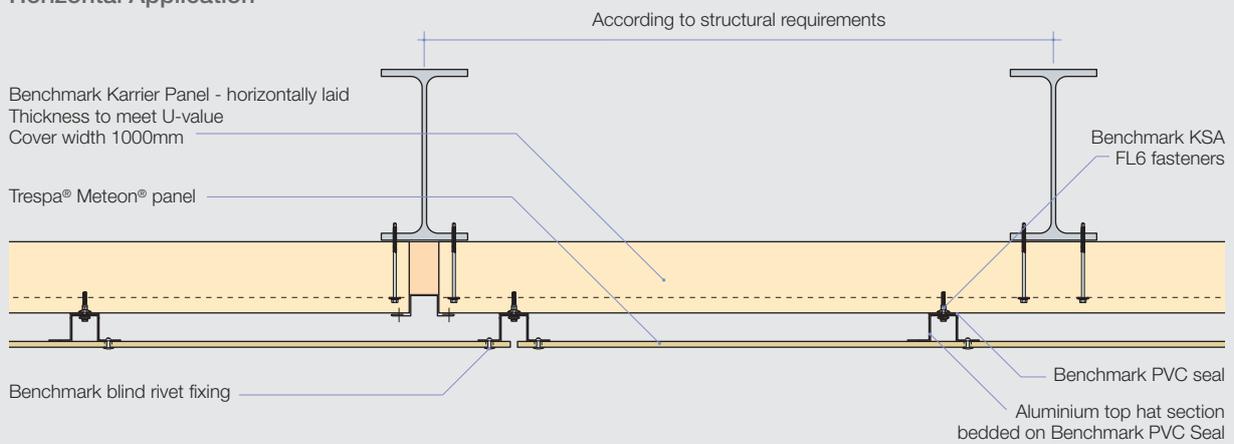
HPL System Overview

Trespa® Meteon® is a high pressure laminate (HPL) flat panel – a product of thermosetting resins reinforced with wood-based fibres, manufactured under high pressure at high temperatures.

Typical standard Meteon® panel sizes are 1,836mm x 2,526mm and 1,506mm x 3,026mm. The maximum panel size available is 1,836mm x 3,026mm.

Trespa® Meteon® panels are fixed with rivets to aluminium omega and zed profiles which are in turn attached to the Karrier Panel system.

System Layout Horizontal Application



Product Data

Karrier Panel Thickness (mm)		80	100	120	150
Substrate thickness (mm):	external			0.60	
	internal			0.40	
Panel Length (mm)			2,000 - 14,500		
Panel Width (mm)			1,000		
U-value (W/m ² K):	FireSafe IPN Core	0.294	0.233	0.192	0.153
	ThermalSafe IPN Core	0.265	0.210	0.173	0.138
System Weight ^[1] kg/m ²	8mm HPL	28.50	29.30	30.10	31.30
	10mm HPL	31.30	32.10	32.90	34.10
	13mm HPL	35.50	36.30	37.10	38.30

^[1] Combined weight of insulated panel, rail and façade. For project specific weights, contact Kingspan Benchmark.

Trespa® Meteor® panel

Benchmark KSA FL6 fasteners

Aluminium top hat section bedded on Benchmark PVC Seal

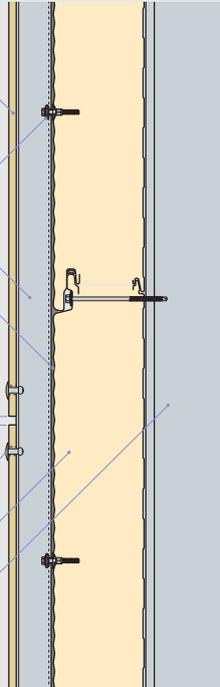
Benchmark PVC seal

10mm

Benchmark blind rivet fixing

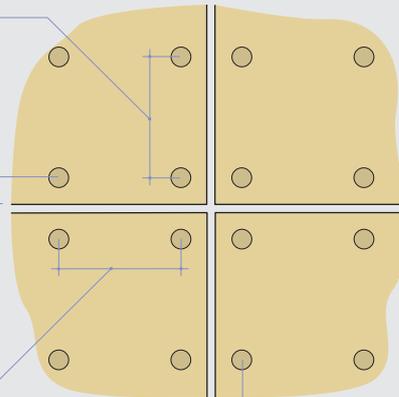
Benchmark Karrier Panel - horizontally laid
Thickness to meet U-value
Cover width 1000mm

Substructure by others



Max 600mm ctrs for 2 fixings in one direction
Max 750mm ctrs for 3 fixings in one direction
Note: for high wind-load buildings, ctrs may be reduced

Max 20mm,
min 10T*



Max 600mm ctrs for 2 fixings in one direction
Max 750mm ctrs for 3 fixings in one direction
Note: for high wind-load buildings, ctrs may be reduced

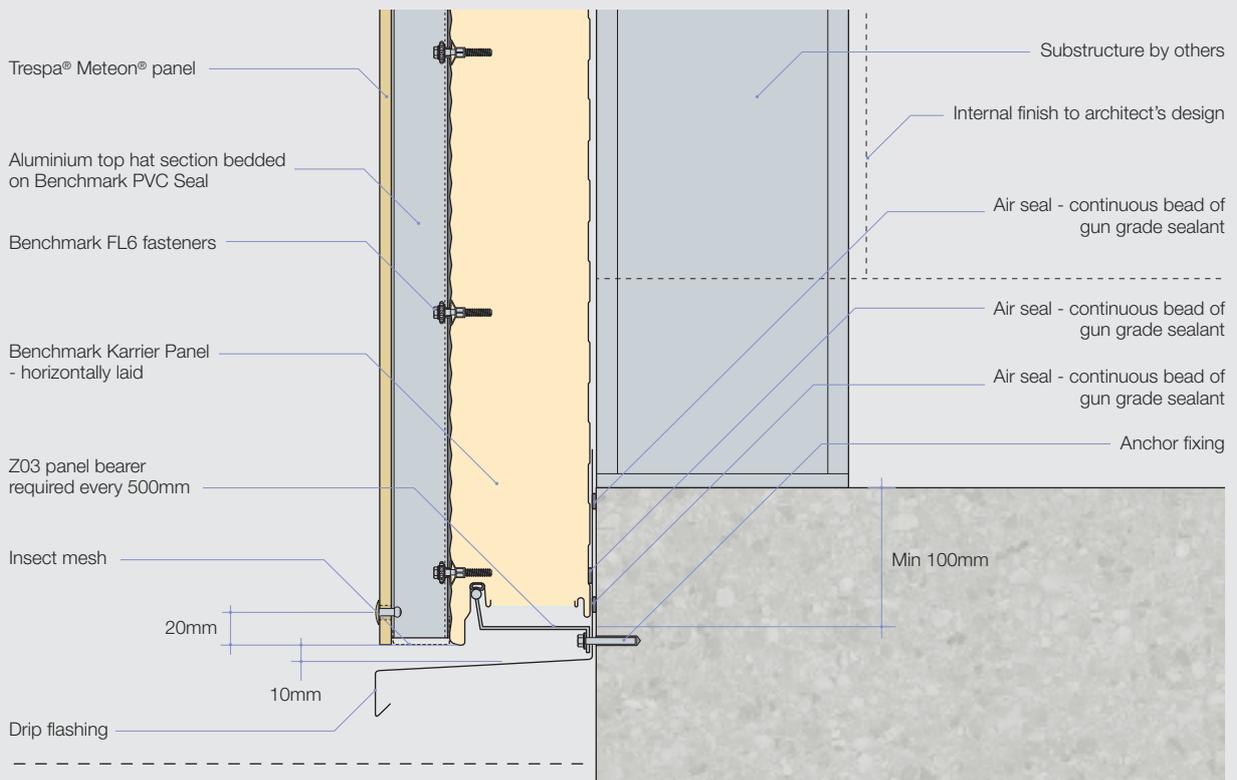
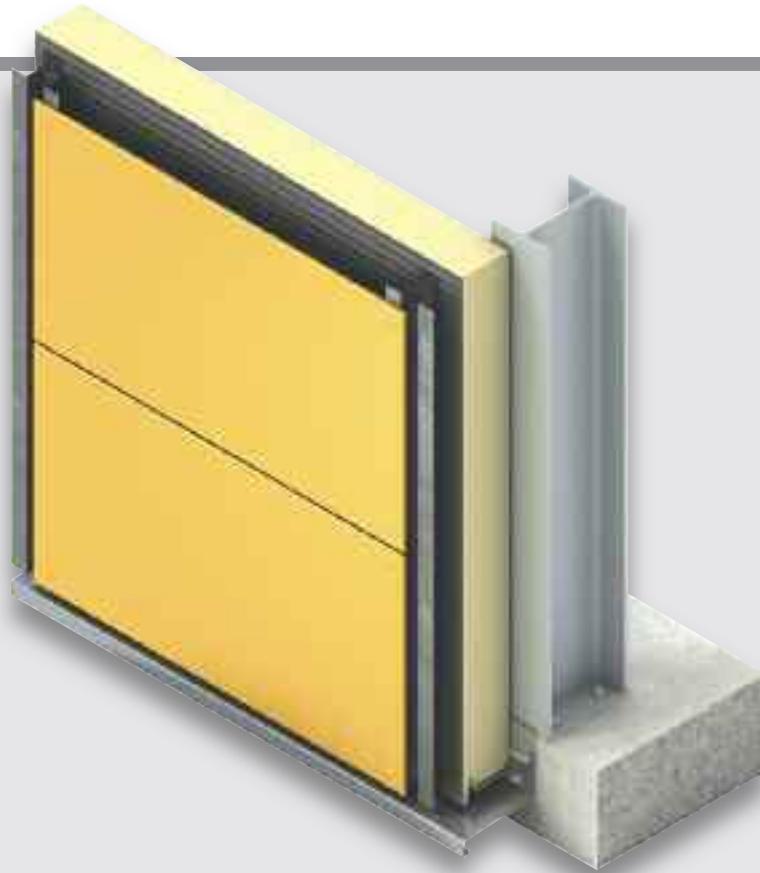
Max 20mm,
min 10T*

*T = thickness of Trespa® Meteor® panel.

All boards to be riveted through over-sized holes with a single fixed point hole at middle of board.

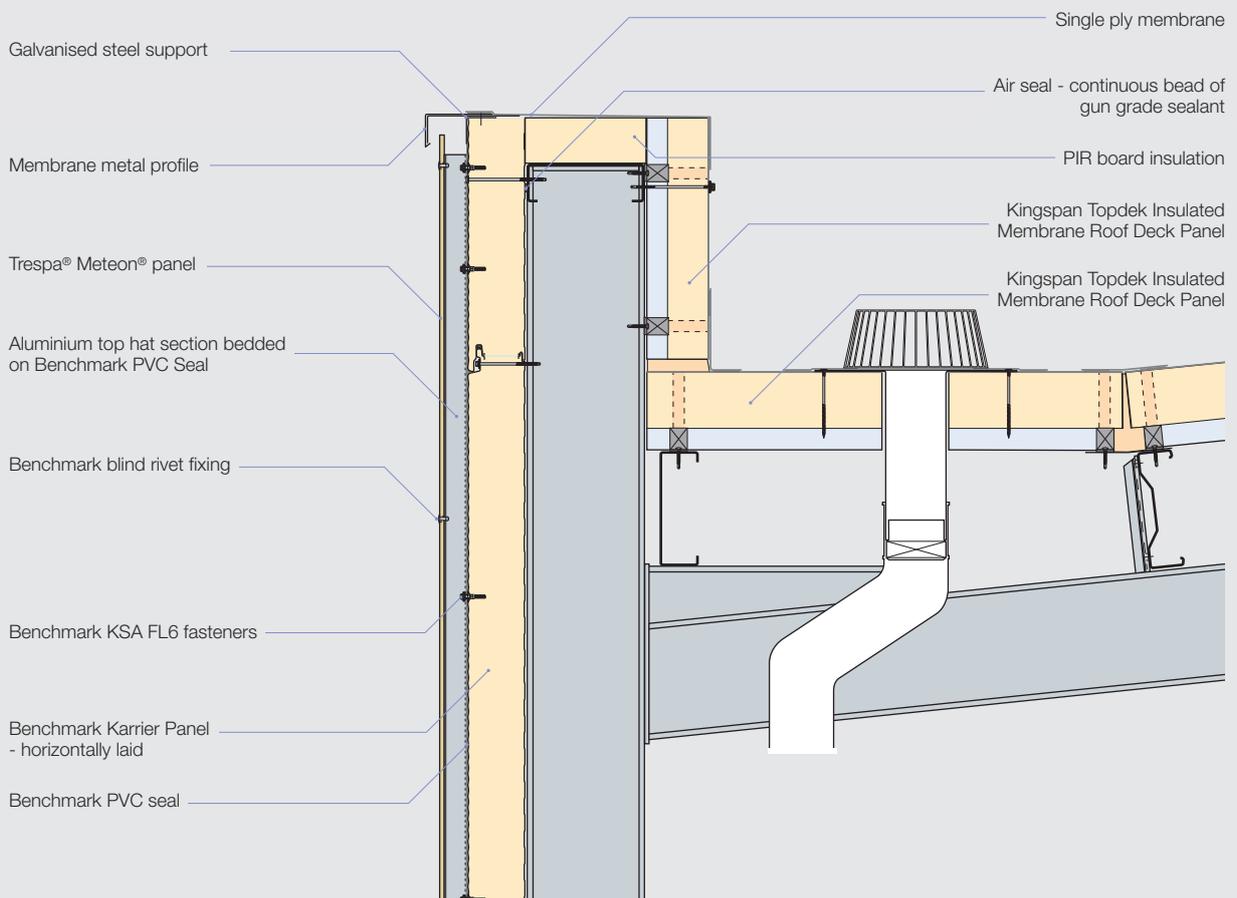
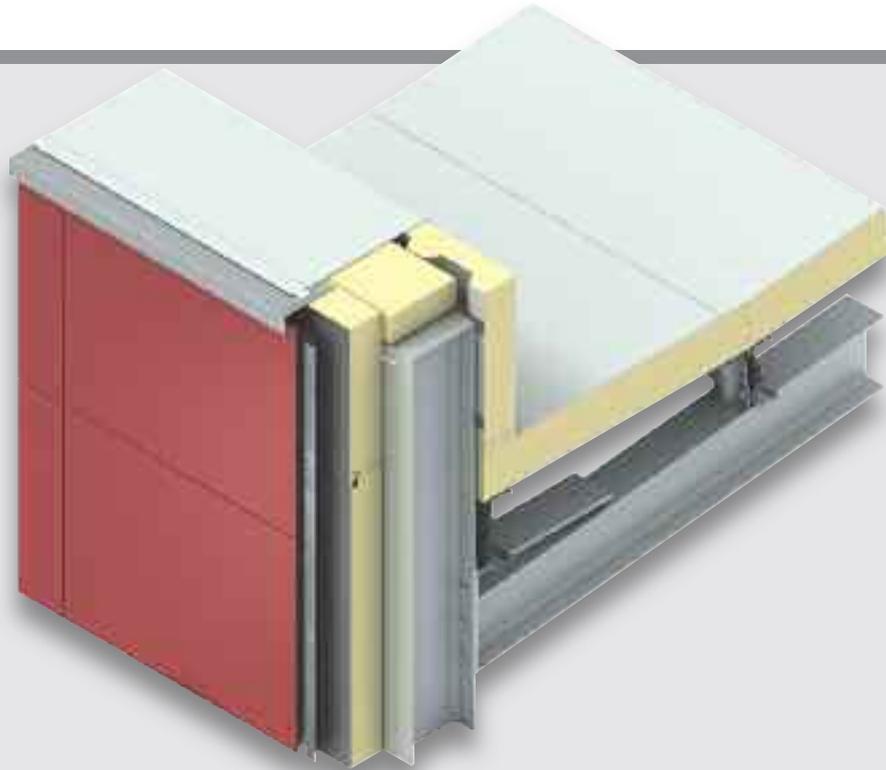
HPL System

Drip Detail
Horizontal Application



All technical information is subject to alterations. Errors and omissions excepted.

Parapet Detail
Horizontal Application



All technical information is subject to alterations. Errors and omissions excepted.

HPL System

Corner Detail
Horizontal Application



Aluminium top hat section bedded on Benchmark PVC Seal

Benchmark KSA FL6 fasteners

Benchmark PVC seal

HPL Panel Thickness (mm)	Dim X
8	80
10	100
13	130

Trespa® Meteor® panel

Air seal - PE self-adhesive sealing tape

Site applied insulation

Internal corner flashing

Benchmark Karrier Panel - horizontally laid

Benchmark blind rivet fixing

External corner flashing

10mm

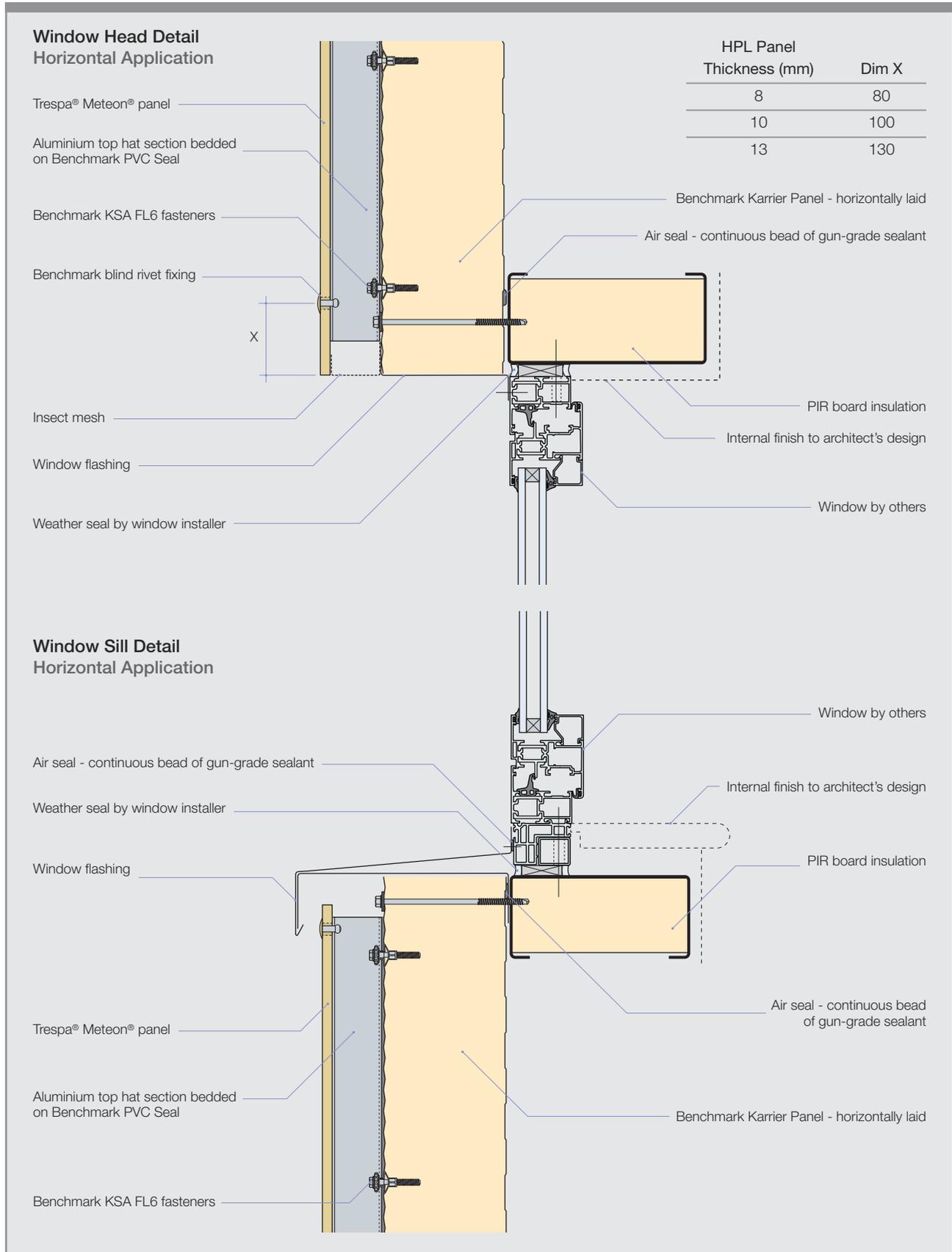
X

Air seal - PE self-adhesive sealing tape

All technical information is subject to alterations. Errors and omissions excepted.

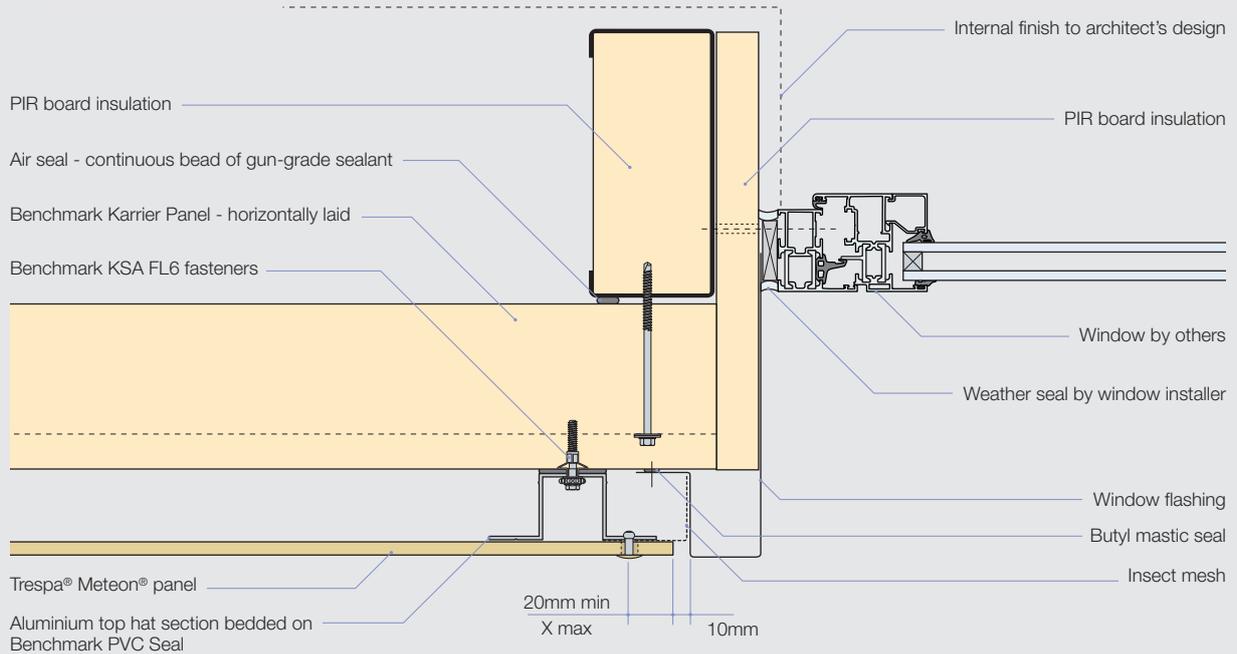
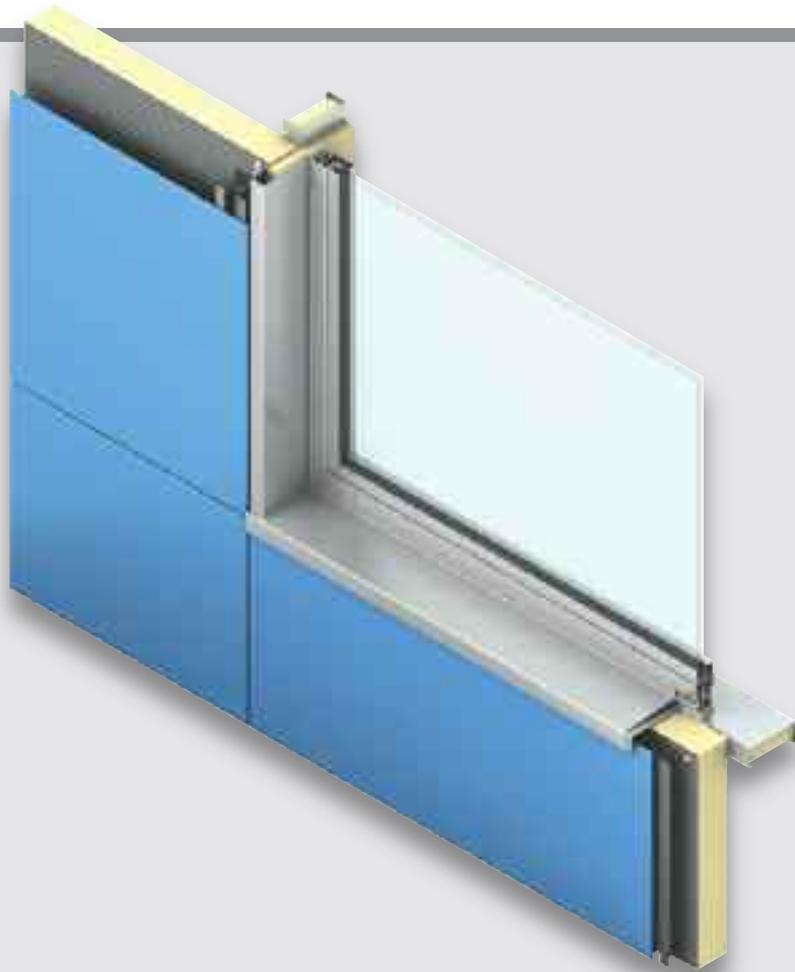


HPL System



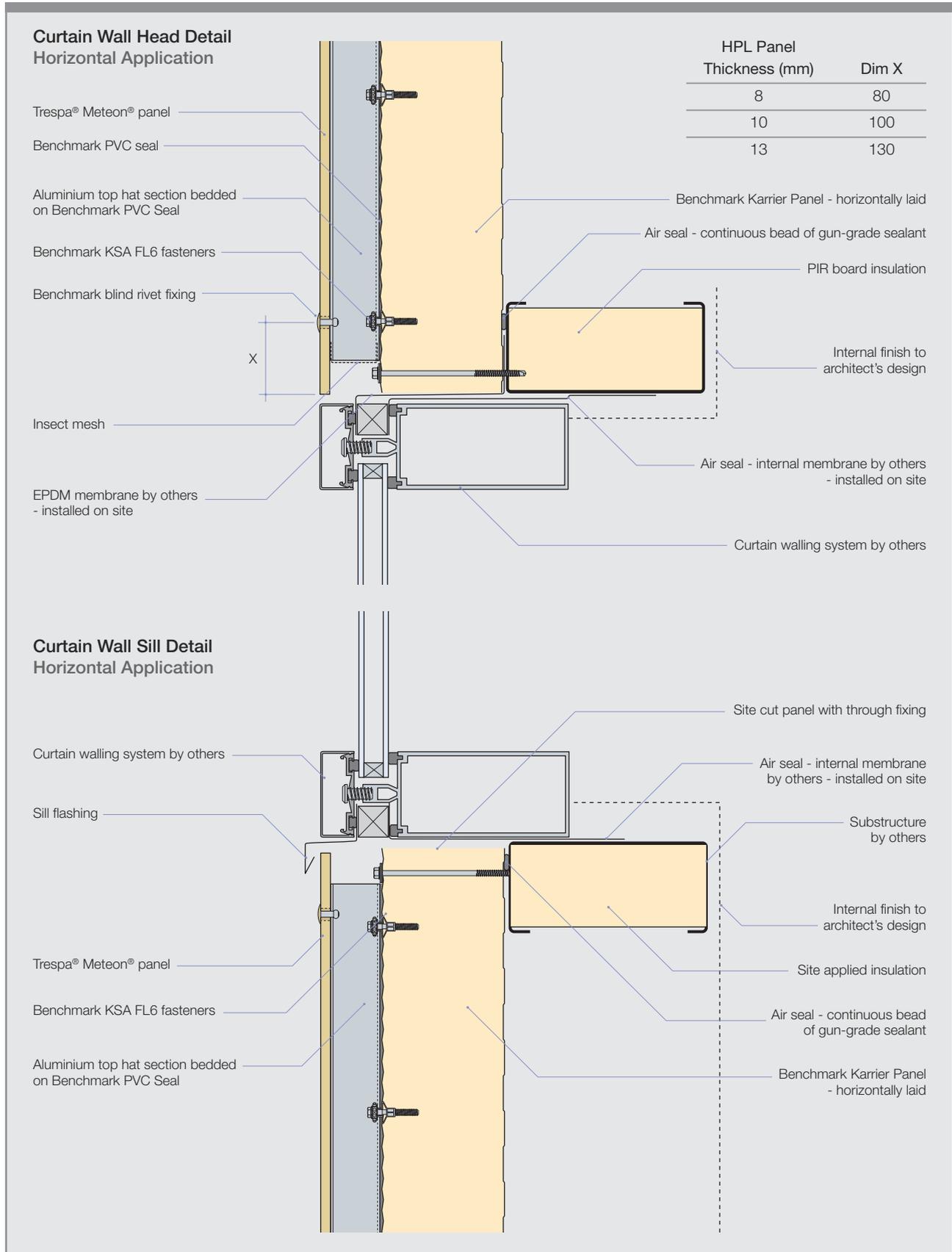
All technical information is subject to alterations. Errors and omissions excepted.

**Window Jamb Detail
Horizontal Application**



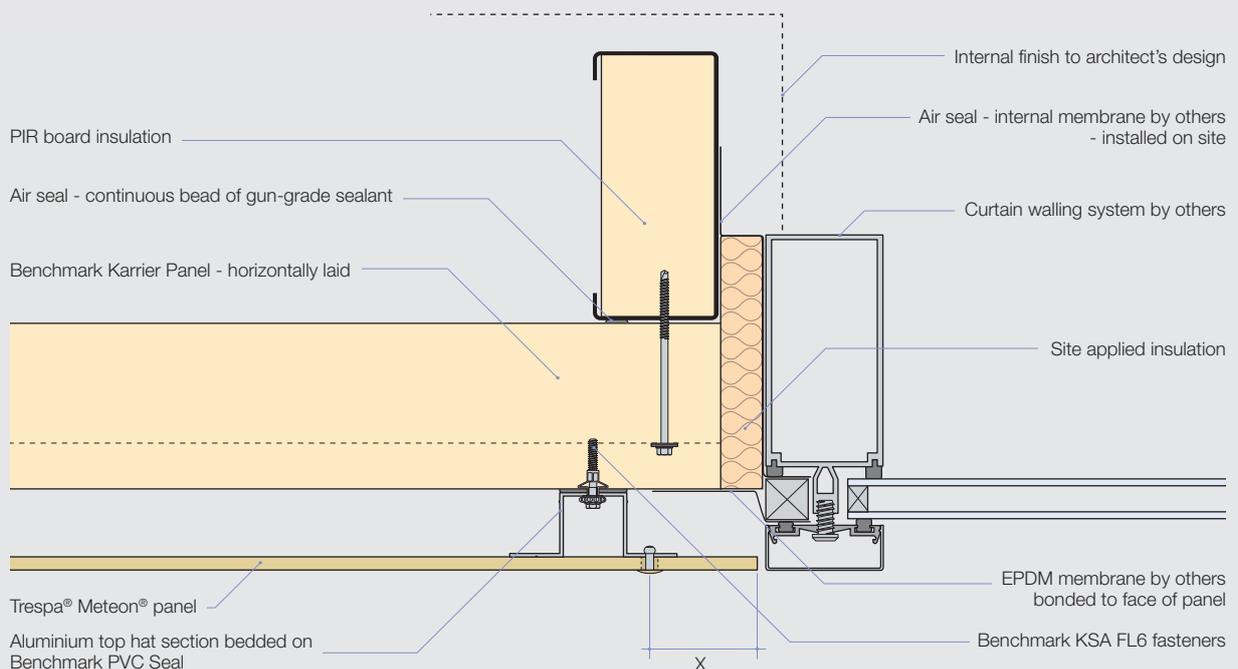
All technical information is subject to alterations. Errors and omissions excepted.

HPL System



All technical information is subject to alterations. Errors and omissions excepted.

**Curtain Wall Jamb Detail
Horizontal Application**



All technical information is subject to alterations. Errors and omissions excepted.

ACM System

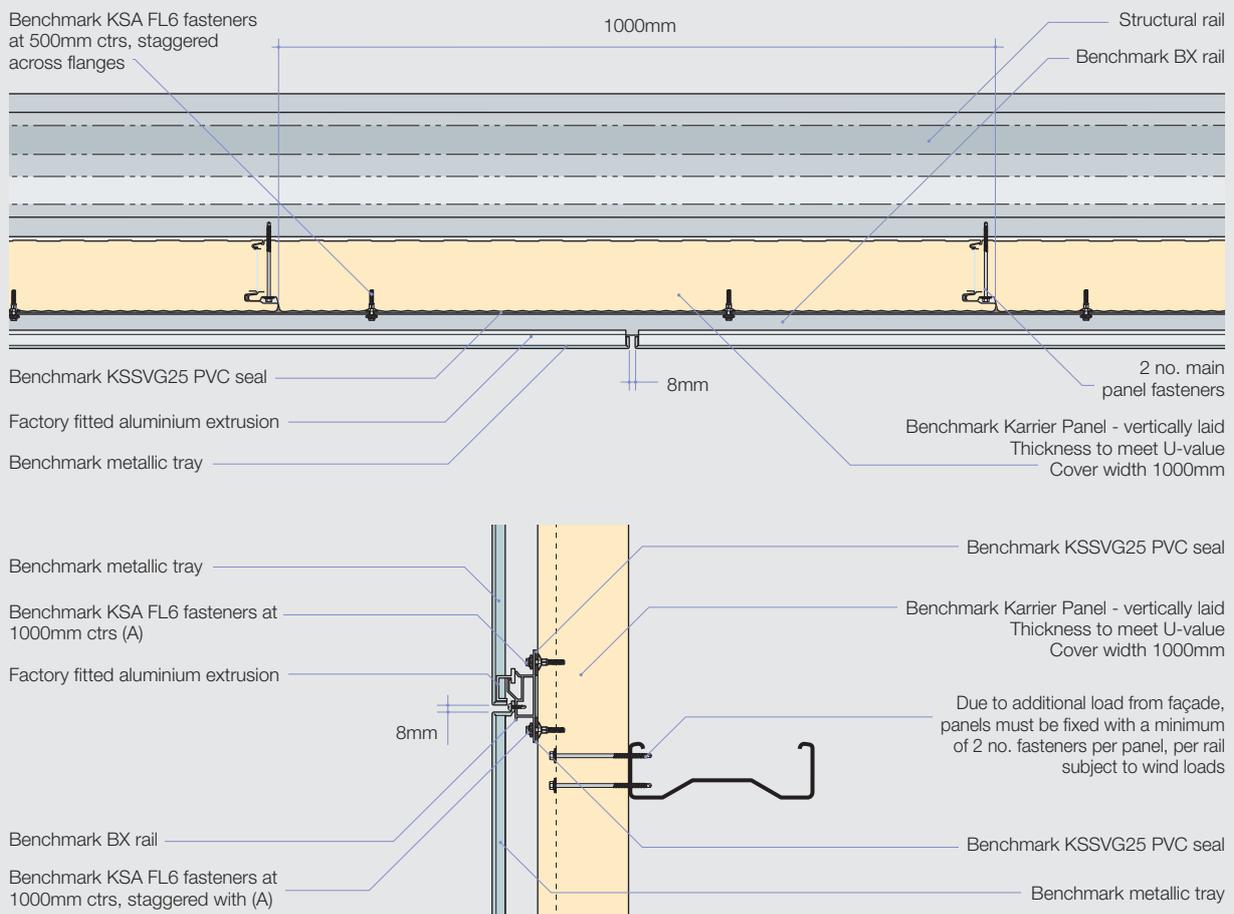
ACM System Overview

Benchmark ACM (aluminium composite material) trays consist of two high quality aluminium alloy sheets fully bonded to a high performance polyethylene core. The trays feature a folded top edge with an extruded aluminium track bonded at the base of the reverse.

A PVdF coating is applied to the aluminium prior to lamination into the end product as a composite panel. Aluminium sheet thickness is 0.5mm with an overall ACM thickness of 4.0mm.

A black coated aluminium secondary rail system is face fixed to the Karrier Panel system. The folded top edge of the tray is secured to the secondary rail system using self drilling screws.

System Layout Vertical Application

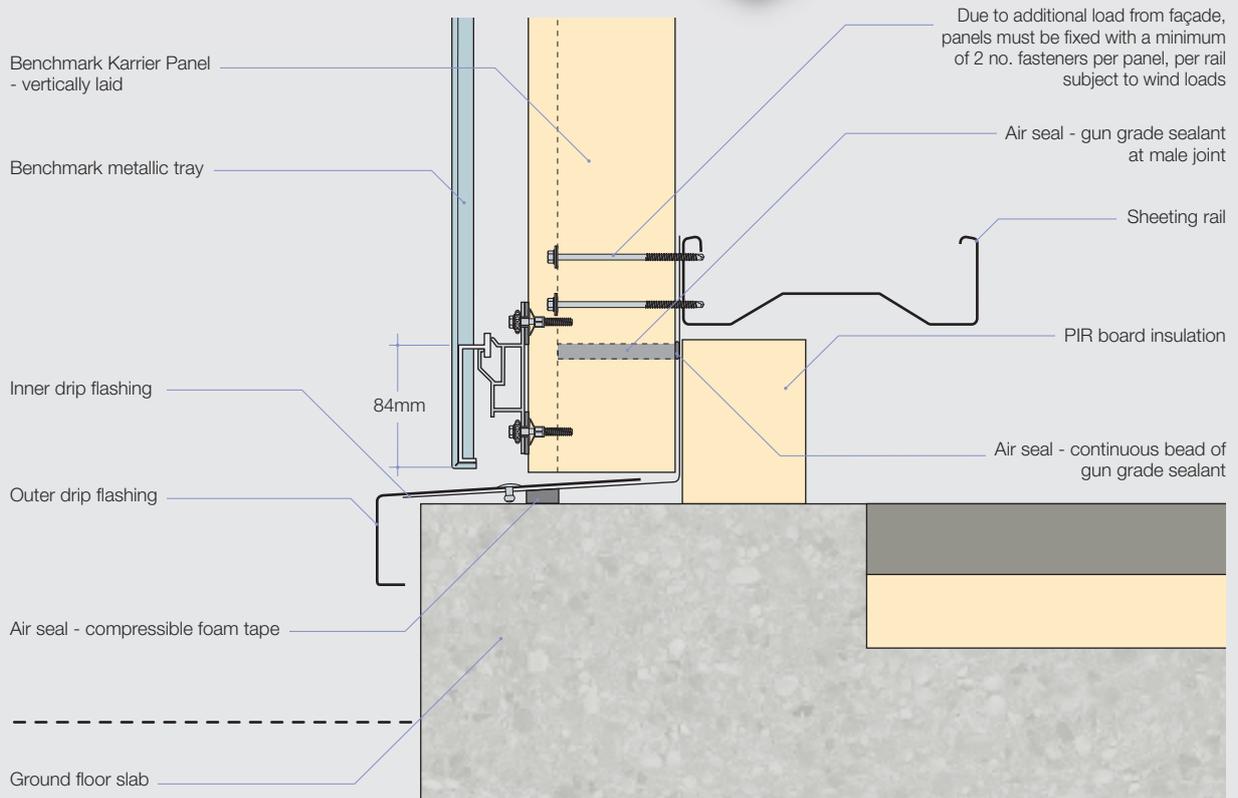


Product Data

Karrier Panel Thickness (mm)		80	100	120	150
Substrate thickness (mm):	external			0.60	
	internal			0.40	
Panel Length (mm)			2,000 - 14,500		
Panel Width (mm)			1,000		
U-value (W/m ² K):	FireSafe IPN Core	0.294	0.233	0.192	0.153
	ThermalSafe IPN Core	0.265	0.210	0.173	0.138
System Weight ^[1] kg/m ²		20.80	21.60	22.40	23.60

^[1] Combined weight of insulated panel, rail and façade. For project specific weights, contact Kingspan Benchmark.

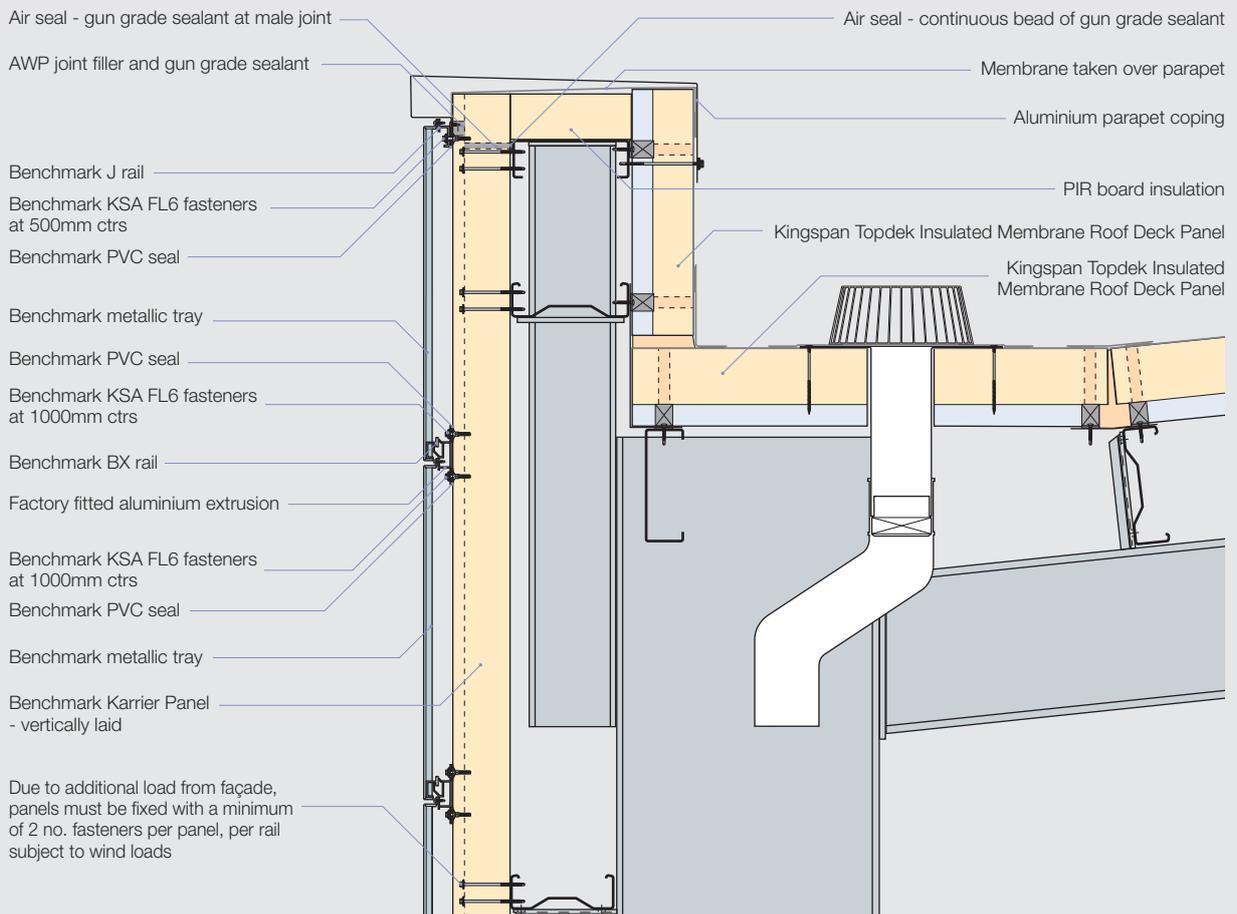
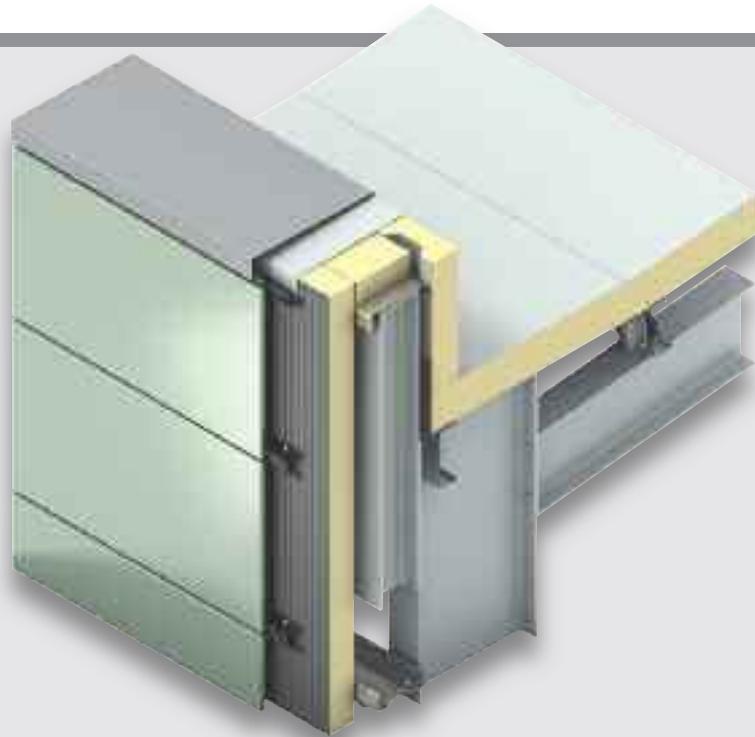
Drip Detail
Vertical Application



All technical information is subject to alterations. Errors and omissions excepted.

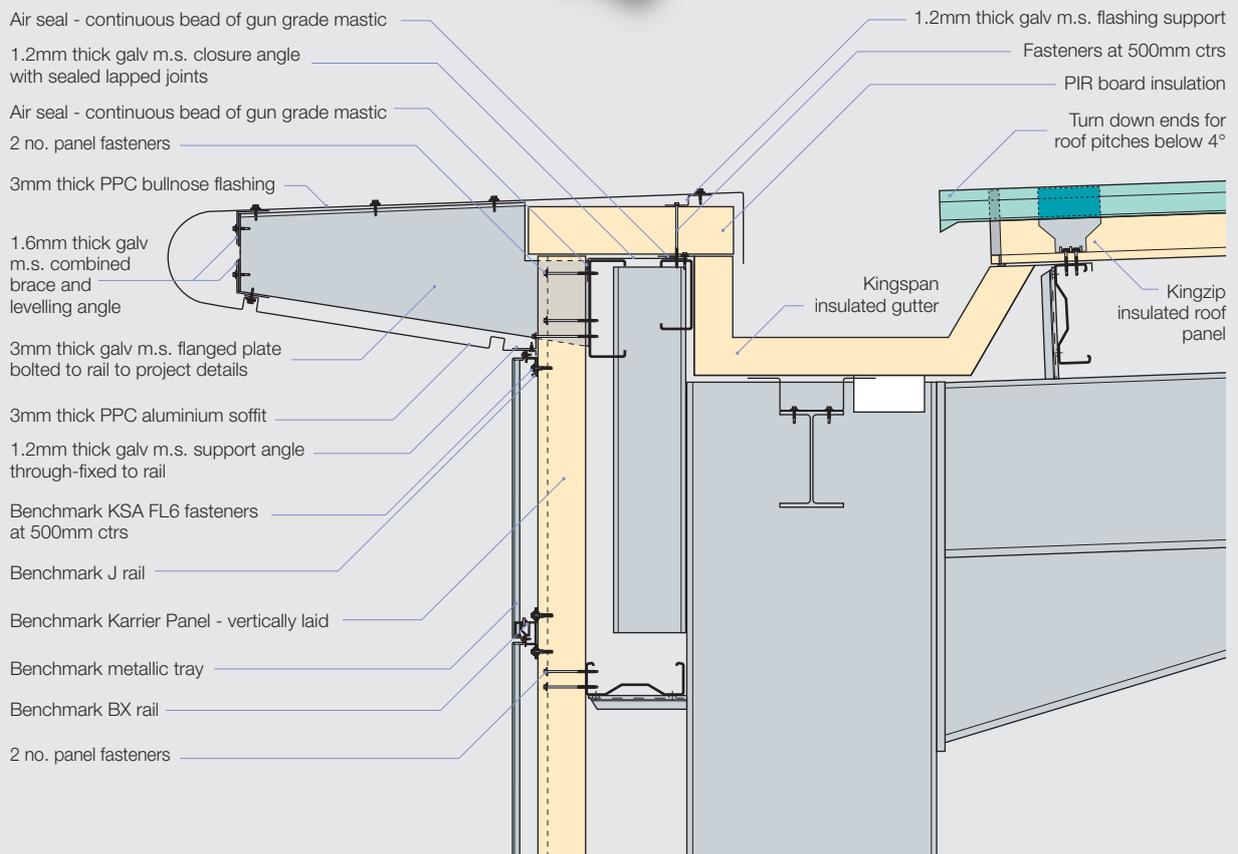
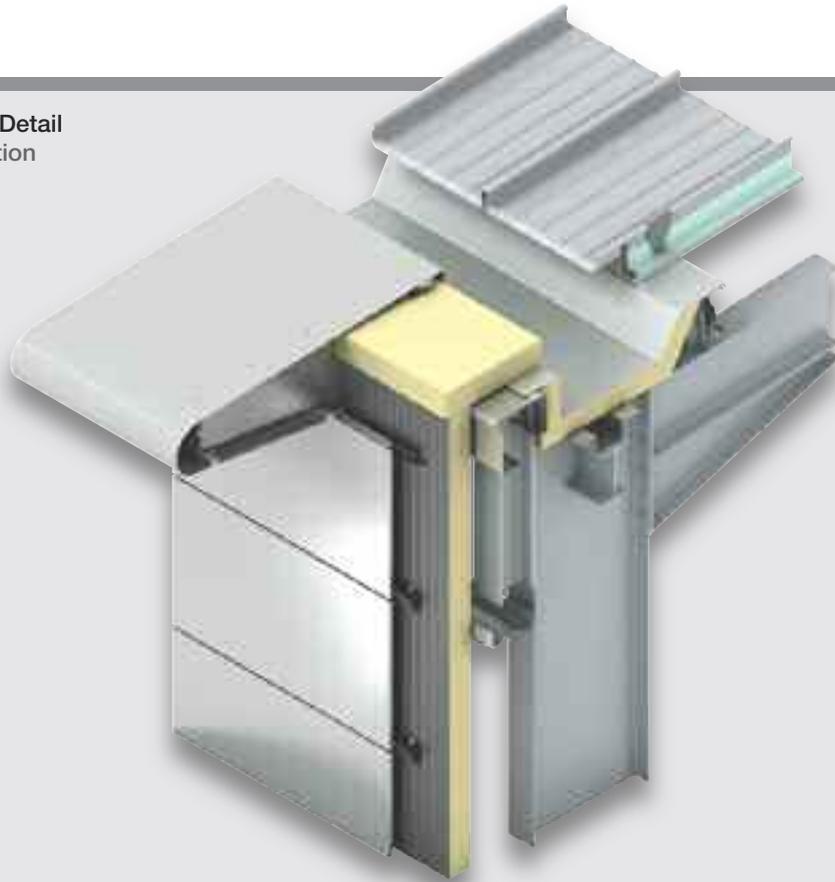
ACM System

Parapet Detail
Vertical Application



All technical information is subject to alterations. Errors and omissions excepted.

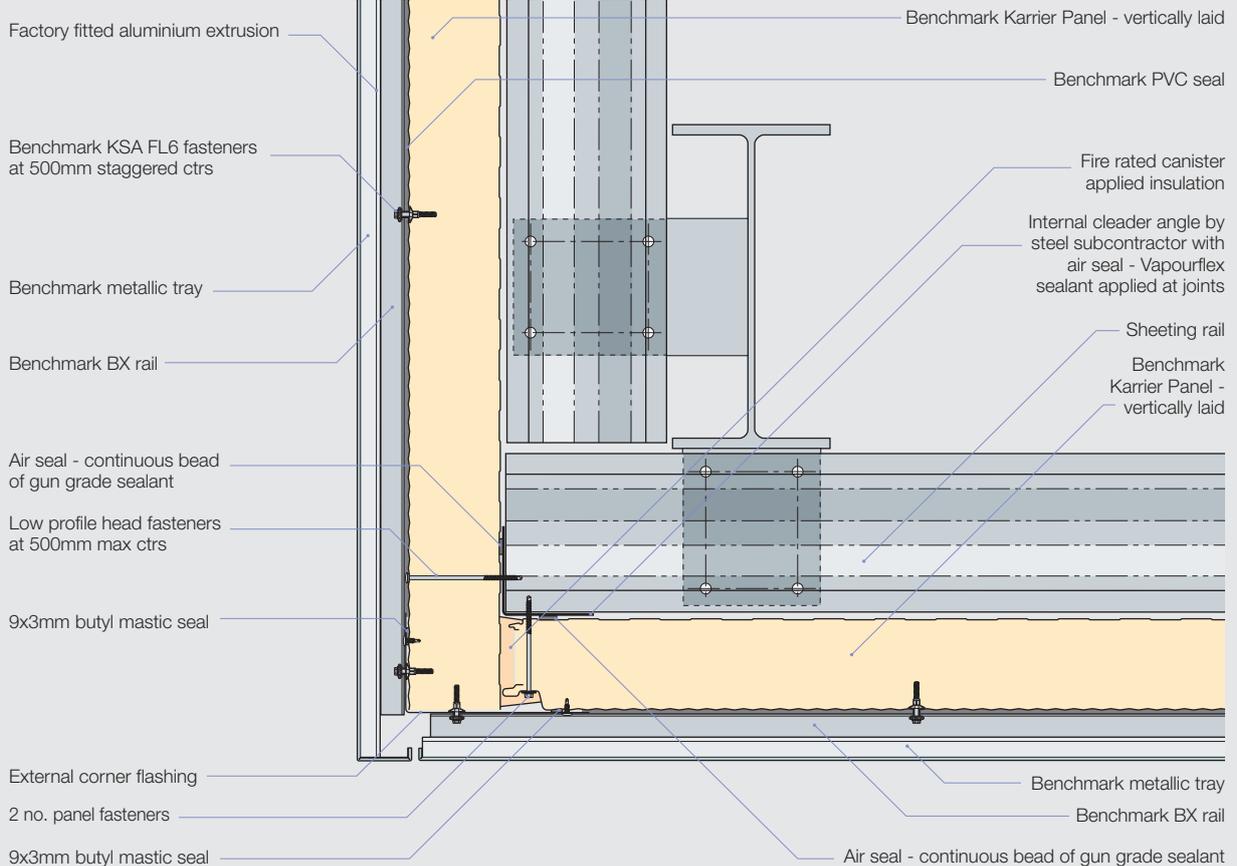
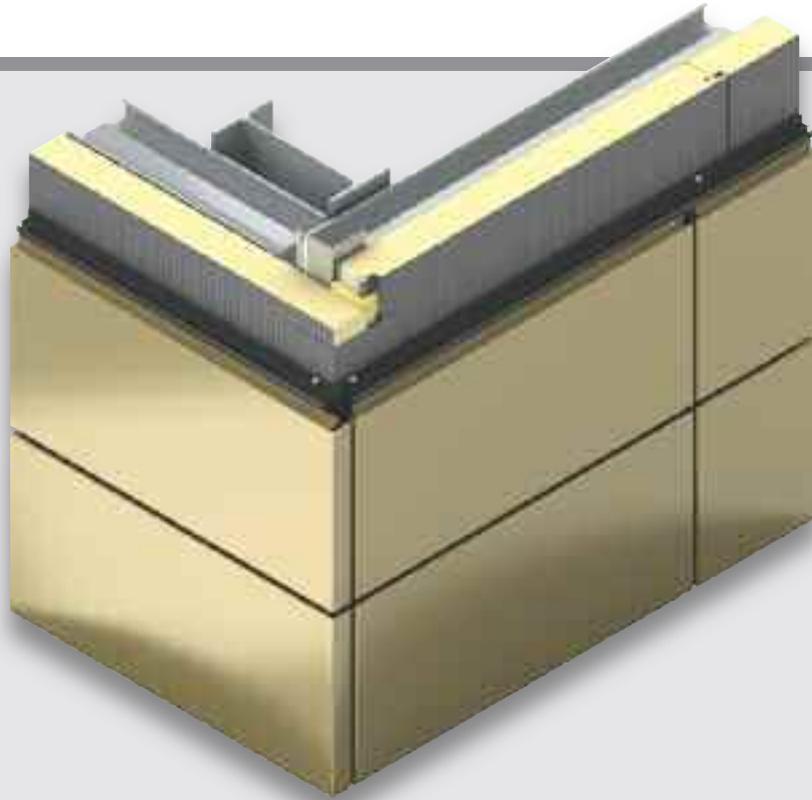
Bullnose Eaves Detail
Vertical Application



All technical information is subject to alterations. Errors and omissions excepted.

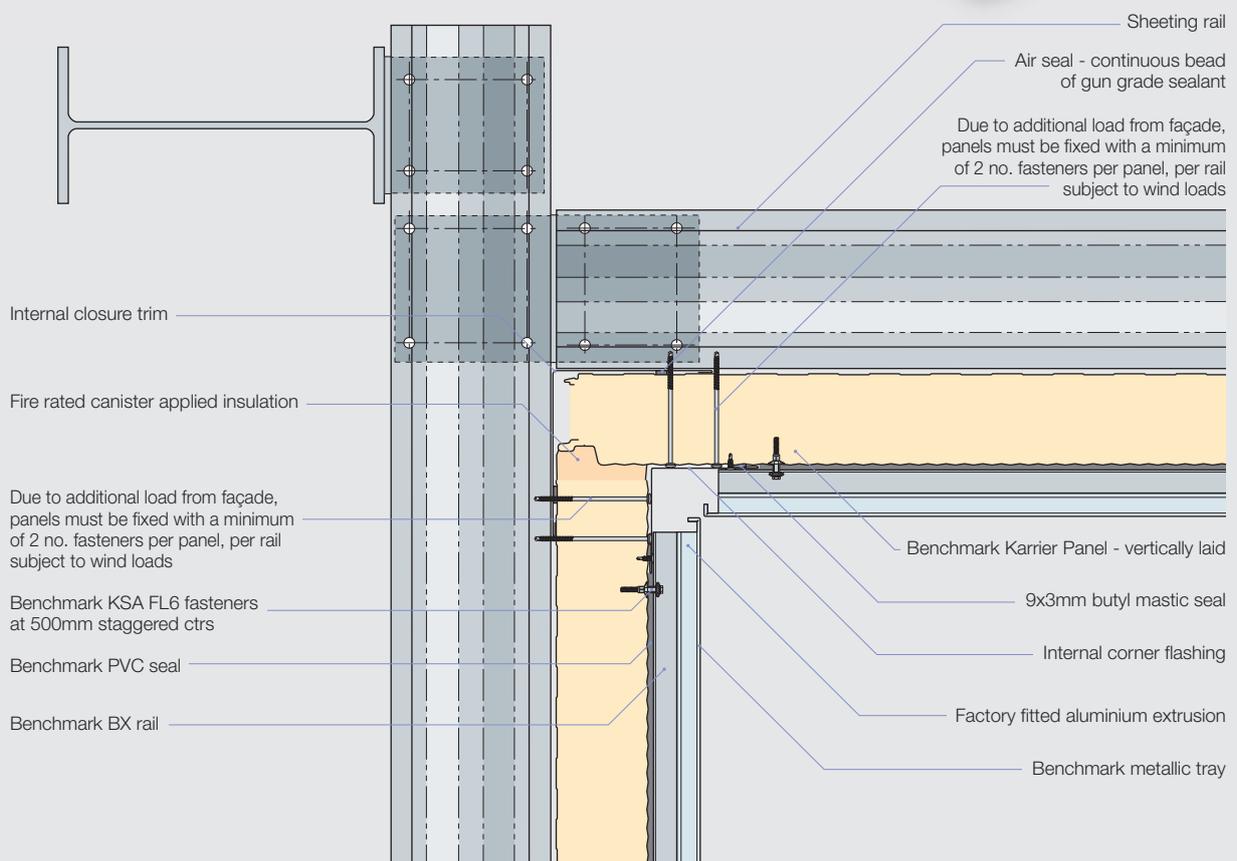
ACM System

External Corner Detail
Vertical Application



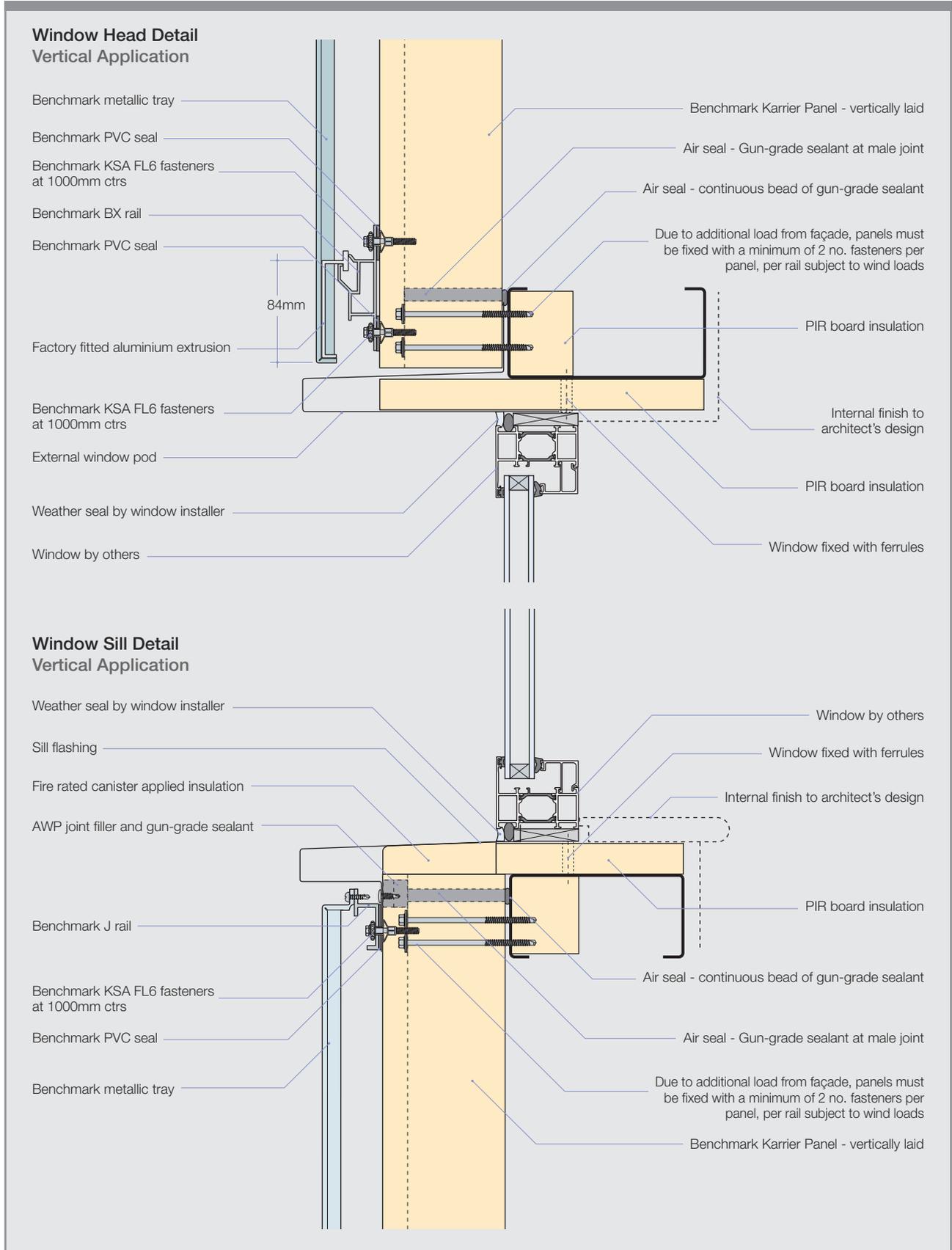
All technical information is subject to alterations. Errors and omissions excepted.

**Internal Corner Detail
Vertical Application**



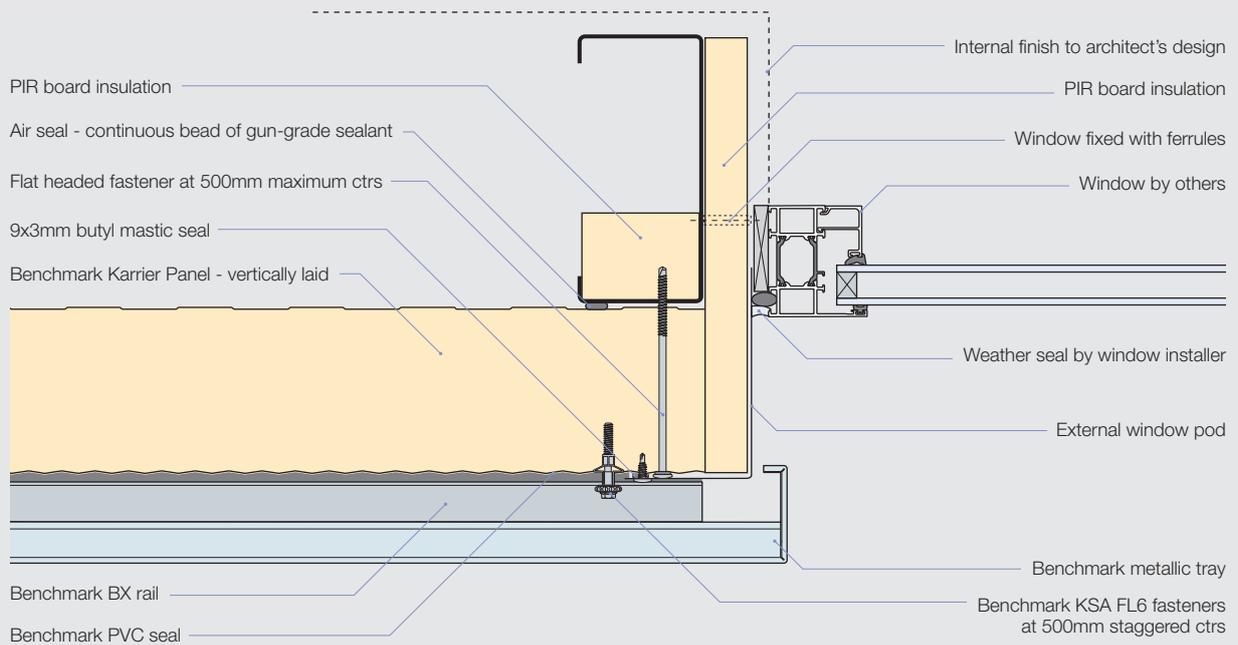
All technical information is subject to alterations. Errors and omissions excepted.

ACM System



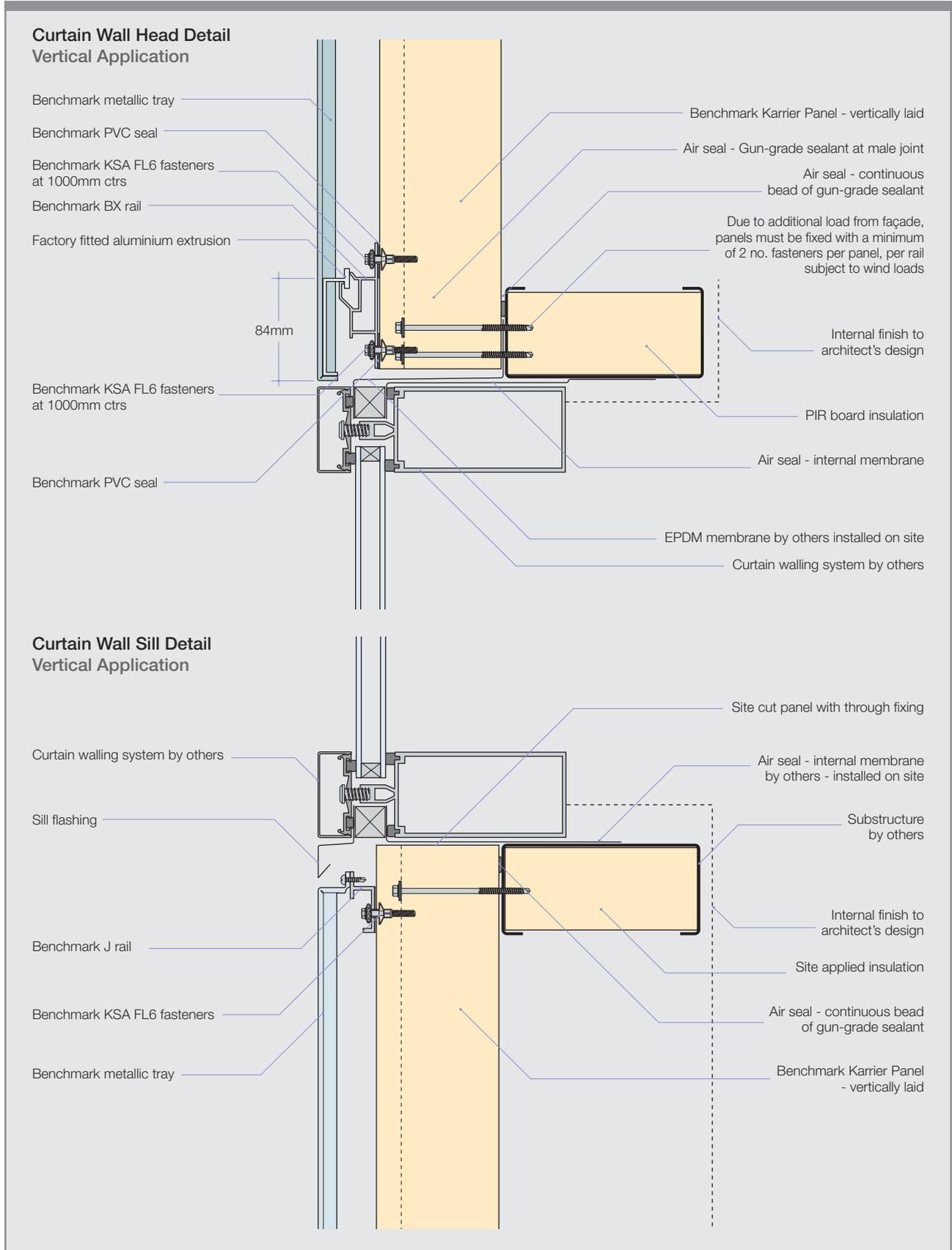
All technical information is subject to alterations. Errors and omissions excepted.

**Window Jamb Detail
Vertical Application**



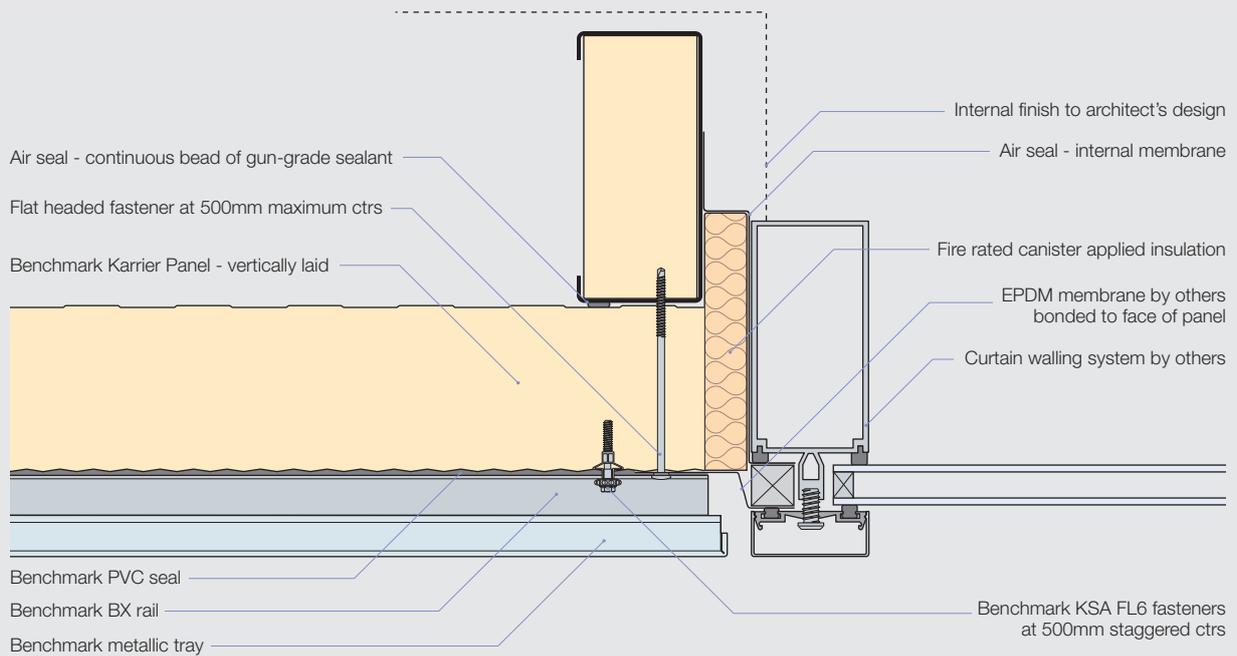
All technical information is subject to alterations. Errors and omissions excepted.

ACM System



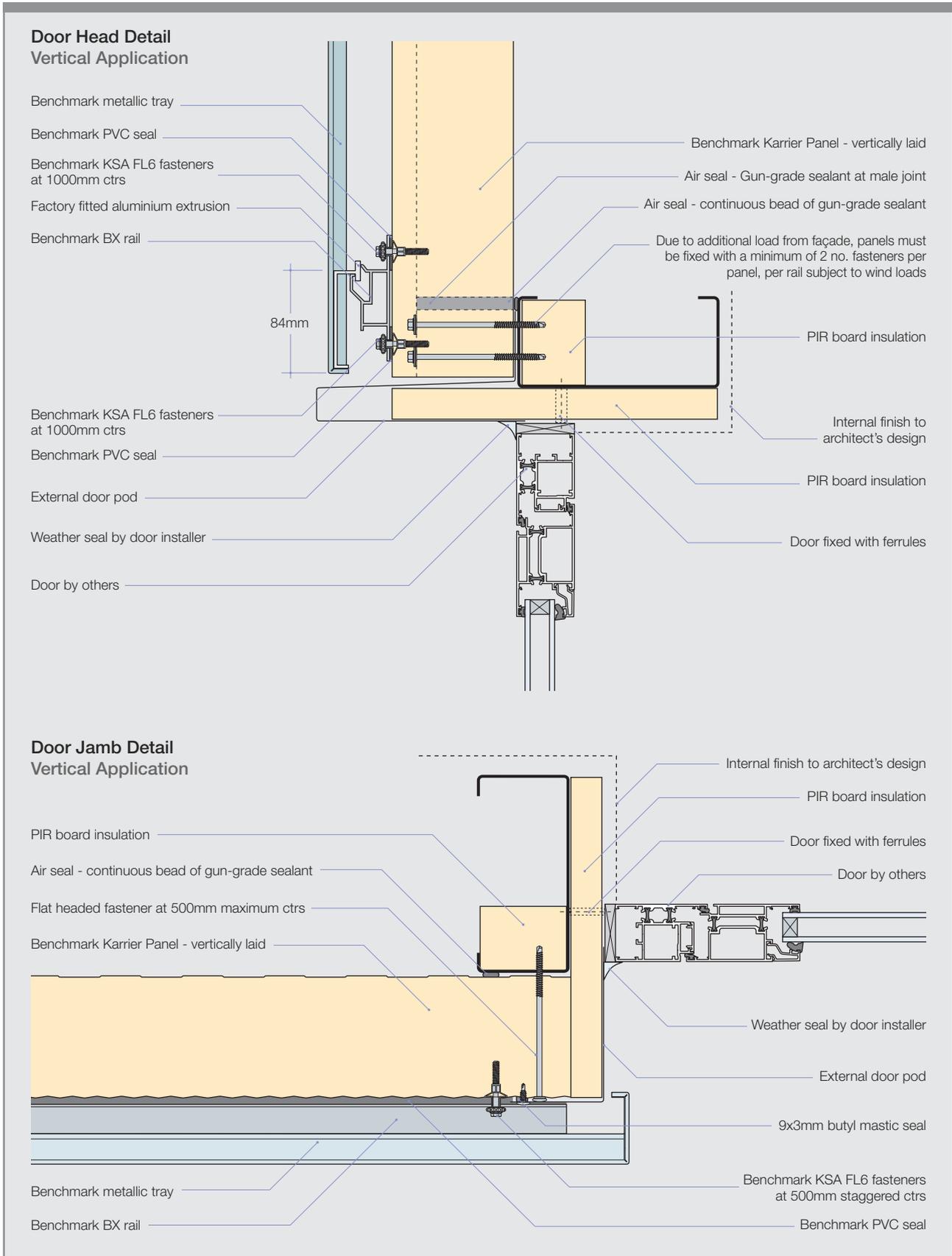
All technical information is subject to alterations. Errors and omissions excepted.

**Curtain Wall Jamb Detail
Vertical Application**



All technical information is subject to alterations. Errors and omissions excepted.

ACM System



All technical information is subject to alterations. Errors and omissions excepted.

Case Studies



PRODUCT RANGE

Higher Broughton Community Hub

Sector:	Leisure
Product:	Trespa® Façade on Engineered Façade System
Colour:	Pacific, Sun Yellow, Cyclam, Mineral Blue, Lavender Blue, and Spring Green
Architect:	Urban Vision Partnership Ltd
Main Contractor:	Laing O'Rourke
Cladding Contractor:	Advanced Roofing
Client:	Salford City Council



The new Broughton Hub in Salford has formed a colourful landmark for regeneration within the region thanks to Benchmark's range of architectural façades.

Architects Urban Vision Partnerships Ltd used a range of standard and bespoke Benchmark colours, textures and finishes to full effect on the Community Hub. The combination of six different colours of satin finish Trespa® Meteon panels, installed to the Karrier panels using matching coloured rivets, creates a stunning upper level to the building.

The 8mm Trespa® Meteon façades, pre-fabricated at Kingspan's Sherburn facility in the UK, were installed in a portrait format to create a chequered effect.

Tony Green, Senior Projects Manager at Advanced Roofing, said: *"In our experience, Benchmark's panels allow buildings to be clad in a very efficient and time saving manner. A good example of this is that Benchmark façades are provided ready drilled and cut, limiting the need for us to carry out on-site cutting. The Karrier panels also offer a simpler alternative to using a site-assembled rainscreen, allowing the structure to be quickly insulated and made watertight so that the internal fitting can begin."*

The panels not only provide the Hub with a vibrant exterior but help to form a resilient outer surface which is extremely weather resistant and virtually maintenance-free. They are also highly thermally efficient, contributing towards the buildings BREEAM rating and boosting its green credentials.

Case Studies



Glazer Children's Museum

Sector:	Education / Leisure
Product:	Designwall Inspiration
Architect:	Gould Evans
Main Contractor:	Delotto & Sons
Installer:	FG Metals
Location:	Tampa, Florida, USA

Heralded by USA Today, "Another reason to bring the kids to Tampa," Glazer Museum is a ground breaking educational and entertaining experience for children and families.

The building has a unique style with vibrant colours housing a museum 12 themed galleries and 117 hands-on minds-on exhibits.

Benchmark Designwall panels' one-step installation reduced on-site installation time at the Glazer Children's Museum. In fact, the Designwall series can decrease installation at specific locations by up to 50 percent compared to traditional multi-part wall systems.

With only a 16-month construction and move in process, the Glazer Children's Museum required exterior cladding that could be installed quickly and easily, Benchmark Designwall made this a reality.



Renault Dealership

Sector:	Retail
Product:	Designwall Evolution
Colour:	Kingspan Spectrum® Pearl
Architect:	Facet Ingénierie
Main Contractor:	Facet Ingénierie
Cladding Contractor:	Construction Labbe
Location:	Pont-l'Abbé, France



Case Studies



Lion Products

Sector: Industrial – Storage and Office

Product: Designwall Evolution

Colour: Tangerine Orange (HPS)

Architect: Webuild cvba, Houthalen-Helchteren

Main Contractor: Jaraco nv, Opglabbeek

Client: Lion Products NV

Location: Bonheiden, Belgium

Specification Data

Designwall Matrix®	122
Designwall Inspiration	124
Designwall Evolution	126
Karrier Panel	130
Tile System	132
HPL System	134
ACM System	138

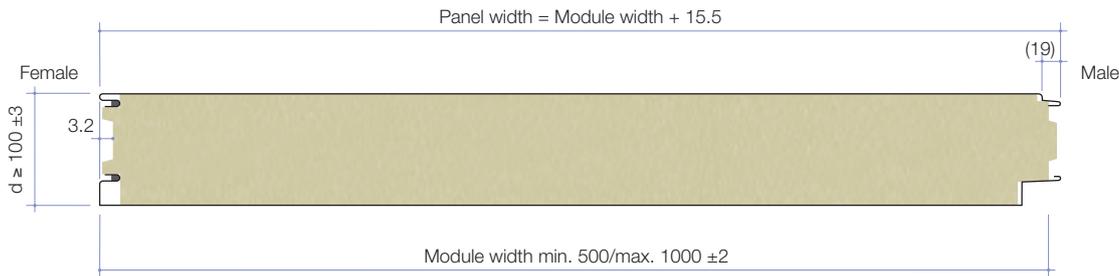


Designwall Matrix®

Application

Matrix® is the latest addition to the Benchmark Desinwall series. This advanced façade element complete with thermal insulation is a real eye catcher with its flat surface finish and the clean-cut, square-edged design. Its visual appearance is most striking and it is a product specially created for demanding and modern industrial architecture. The dimensions of the panels give buildings a distinctive and stylish look. Individual, distinguished and elegant - an abundance of possible designs provides wide range of opportunities for achieving outstanding architecture. The Matrix® façade system is both reliable and trend-setting.

Dimensions and Weight



Panel Thickness (mm)	80	100	120	140	150	160
Substrate thickness (mm): external			0,76	0,75		
internal			0,50	0,75		
Panel Length (mm)	1000 - 6000					
Panel Width (mm)	600 - 1000 (350 - 600 on request)					
U-value to EN ISO 6946 (W/m²K)	0,52	0,42	0,36	0,31	0,29	0,27
Thermal resistance (m²K/W)	1,76	2,20	2,64	3,09	3,31	3,53
Weight kg/m²	20,4	22,9	25,4	27,9	29,2	30,4
	22,6	25,1	27,6	30,1	30,4	32,6

Materials

Steel Facings

S320GD ZMg Ecoprotect® Steel with a minimum yield strength of 320 MPa. The standard gauge is 0.75mm on the external and 0.50mm (0.75mm if structural required) on the internal side. Other metals available upon request.

Profile

The panels feature a flat surface on both sides. On request a slightly profiled internal facing is available.

Coatings

External Weather Sheet: 25µ Pladur® Polyvinylidene fluorid (PVDF) or Pladur® Polyester (SP) as standard. **Inner Shell:** 15µ Pladur® DU RAL 9002 or 9010 ReflectionOne®, ReflectionsLume, Reflectionscinc also available upon request.

Protection

The panels are equipped with a protection film on both sides.

Insulation Core

Rockwool D2 mineral fibre insulation with a density of 125 kg/m³.

Seals

The system features impregnated sealing tapes to maximize thermal efficiency and create a double barrier against air and water penetration.

Performance

Thermal Insulation

Thermal performance according EN ISO 6946.

Panel Thickness (mm)	Rockwool D2 $\lambda = 0.044$ (W/mK)	
	U-value (W/m ² K)	R-value (m ² K/W)
80	0,52	1,76
100	0,42	2,20
120	0,36	2,64
140	0,31	3,09
150	0,29	3,31
160	0,27	3,53

U: Thermal transmittance. R: Thermal resistance. λ : Thermal conductivity.

Biological

Benchmark Designwall Matrix® panels are immune to attack from mould, fungi, mildew and vermin. No urea formaldehyde is used in the construction and the panels are non-deleterious.

Fire

Reaction to fire

Designwall Matrix® panels have been tested and approved and comply with national building regulations and standards. The panels are classified as A-s1,d0 according EN 13501-1.

Fire Resistance

According to EN 1365 - Fire resistance tests for loadbearing elements - Designwall Matrix® panels achieve:

EI30 for a panel thickness ≥ 80 mm

EI90 for a panel thickness ≥ 120 mm

For more Information on fire resistance performance, please contact Kingspan Benchmark Technical Department.

Structural

Please contact Kingspan Benchmark Technical Department for detailed load span tables and structural design services.

Acoustics

Depending on the panel thickness, the single figure weighted sound reduction R_w of Designwall Matrix® panels ranges between 28 and 32 dB.

Building Regulations

Benchmark Designwall Matrix® complies with European Standard EN 14509 : Self-supporting double skin metal faced insulating panels, and is conform to additional relevant national building regulations and standards.

Quality and Durability

Kingspan Benchmark panels are manufactured from the highest quality materials, using state-of-the-art production equipment to rigorous quality control standards, ensuring long term reliability and service life.

Guarantee

Kingspan Benchmark provides a comprehensive guarantee which covers the durability, external coatings and performance.

Packing

Benchmark Designwall Matrix® elements are stacked horizontally, with weather sheet upward. Removable hot melt adhesive is laid between each panel. The top, bottom, sides and ends are protected with polystyrene and timber packing and the entire pack is wrapped in polyethylene. The number of panels in each pack depends on panel length and weight.

Typical pack height is 1100mm. Maximum pack weight 1500kg.

Panel Thickness (mm)	80	100	120	140	150	160
No. panels/pack (max)	12	10	8	7	6	5

Delivery and Off-loading

Transportation of Benchmark Designwall Matrix® packs to site is by road transport (unless indicated otherwise). It is the customer's responsibility to check the site for restrictions, for example, entrance to site, power lines, and agree a storage area to be used.

Additionally, the customer must identify the correct type/methods of off-loading/hoisting facilities to be used, i.e., crane, crane forks, lifting beam/slings and airbags, forklift or specialist lifting equipment.

Always check the 'current' certification (SWL certification) of the crane, crane forks, lifting beam, slings, forklift, or specialist lifting equipment prior to carrying out off-loading/hoisting operation.

Site Installation Procedure

Site assembly instructions are available from the Kingspan Benchmark Technical Department.

Performance

Thermal Insulation

Thermal performance according to EN14509 A.10

Panel Thickness (mm)	PIR $\lambda = 0.024$ (W/mK)	
	U-value (W/m ² K)	R-value (m ² K/W)
80	0.297	3.197
100	0.239	4.014
120	0.199	4.855
150	0.160	6.080

U: Thermal transmittance. R: Thermal resistance. λ : Thermal conductivity.

Biological

Benchmark Inspiration panels are immune to attack from mould, fungi, mildew and vermin. No urea formaldehyde is used in the construction and the panels are non-deleterious.

Fire

Reaction to fire

Benchmark Inspiration panels have been tested and approved and comply with national building regulations and standards.

The panels are classified as B-s2,d0 according EN 13501-1.

For Information on fire resistance performance, please contact Kingspan Benchmark Technical Department.

Structural

Please contact Kingspan Benchmark Technical Department for detailed load span tables and structural design services.

Acoustics

Benchmark Inspiration panels have a single figure weighted sound reduction $R_w = 25$ dB.

Building Regulations

Benchmark Inspiration panels comply with European Standard EN 14509 : Self-supporting double skin metal faced insulating panels, and conform to additional relevant national building regulations and standards.

Quality and Durability

Kingspan Benchmark panels are manufactured from the highest quality materials, using state-of-the-art production equipment to rigorous quality control standards, ensuring long term reliability and service life.

Guarantee

Kingspan Benchmark provides a comprehensive guarantee which covers the durability, external coatings and performance.

Packing

The Benchmark Inspiration panels are stacked horizontally, with weather sheet upward. Removable hot melt adhesive is laid between each panel. The top, bottom, sides and ends are protected with polystyrene and timber packing and the entire pack is wrapped in polyethylene. The number of panels in each pack depends on panel length and weight.

Typical pack height is 1100mm. Maximum pack weight 1500kg.

Panel Thickness (mm)	80	100	120	150
No. panels/pack (max)	12	10	8	6

Delivery and Off-loading

Transportation of Benchmark Inspiration packs to site is by road transport (unless indicated otherwise). It is the customer's responsibility to check the site for restrictions, for example, entrance to site, power lines, and agree a storage area to be used. Additionally, the customer must identify the correct type/methods of off-loading/hoisting facilities to be used, i.e., crane, crane forks, lifting beam/slings and airbags, forklift or specialist lifting equipment.

Always check the 'current' certification (SWL certification) of the crane, crane forks, lifting beam, slings, forklift, or specialist lifting equipment prior to carrying out off-loading/hoisting operation.

Site Installation Procedure

Site assembly instructions are available from the Kingspan Benchmark Technical Department.

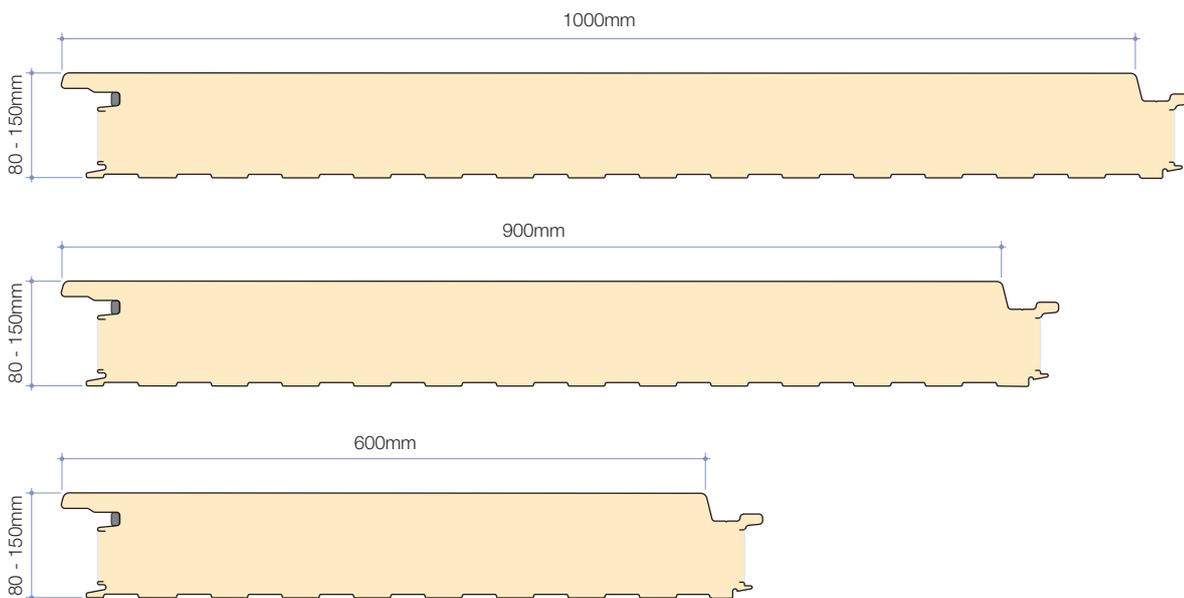


Designwall Evolution

Application

Evolution is the latest development in insulated panel technology from Benchmark. Part of the Designwall series, this stylish, sleek, flat, horizontally laid panel offers a unique range of features that allow maximum design flexibility, creating a truly bespoke system. This flexibility creates an illusion of varying panel widths in combination with joint reveal options and a wide range of vertical joint treatments. The Evolution range provides the aesthetics and architectural detailing required today, but without the complexity.

Dimensions and Weight



Panel Thickness (mm)		80	100	120	150
Substrate thickness (mm):	external			0.70	
	internal			0.50	
Panel Length ^[1] (mm)		2,000 - 6,000			
Panel Width (mm)		600, 900 & 1,000			
U-value to EN 14509 ^[2] (W/m ² K)	FireSafe IPN Core	0.294	0.233	0.192	0.153
	ThermalSafe IPN Core	0.265	0.210	0.173	0.138
Weight ^[3] kg/m ²		13.59	14.35	15.11	16.25

^[1] Shorter lengths available on request. ^[2] Considers joint influence (presuming 1000mm width). ^[3] Considers 1000mm width.

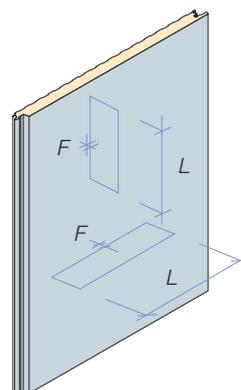
Product Tolerances

Length	-2	+2
Width	-2	+2
Thickness	-2	+2
End Squareness	-3	+3

Flatness Tolerance

Length (mm)	200	400	>700
Flatness (mm)	0.6	1.0	1.5

Note: Measurements not to be taken within 100mm of joint, i.e. the joint is excluded. Bow is also excluded.



Flatness tolerances according to EN 14509 annex D.

Designwall Evolution

Materials

Steel Facings

Hot-dip zinc coated steel with a total area weight of 275 g/m² of zinc, according to EN 10147 : 2000 and a minimum yield strength of 280 MPa. The standard gauge is 0.70mm on the external and 0.50mm on the internal side..

Profile

The panels feature a flat surface on the external weather sheet and a Q-Minibox profile on the internal liner sheet.

Coatings

External Weather Sheet: Kingspan Spectrum®, 60 µm polyurethane coated semi-gloss finish with a slight granular effect. Kingspan Spectrum® offers outstanding durability and weather resistance performance, excellent corrosion and UV-resistance as well as high colour and gloss retention. Its superior flexibility provides high resistance against mechanical damage.

Available in a wide range of solid and metallic colours, Kingspan Spectrum® is free of chlorine, phthalates, plasticizers and is 100% recyclable.

Internal Liner Sheet: Polyester coating with a nominal thickness of 15 µm. The standard colour is grey white, (similar RAL 9002). Further coating options are available on request.

Protection

The panels are equipped with a protection film on the external side.

Insulation Core

Rigid Kingspan FireSafe IPN closed-cell insulation is the standard core used, made to a non-deleterious specification with an Ozone Depletion Potential (ODP) of zero. Kingspan FireSafe IPN insulation is CFC / HCFC-free. Optionally, a Kingspan ThermalSafe IPN core with outstanding thermal performance is available.

FIREsafe
THERMALSsafe

Seals

Benchmark Evolution panel side joints have a factory applied anti-condensation seal fitted into the groove to automatically seal the joint between panels.

Performance

Thermal Insulation

Thermal performance according to EN 14509 A.10

Panel Thickness (mm)	FireSafe IPN $\lambda = 0.0224$ (W/mK)	
	U-value (W/m ² K) ^[1]	R-value (m ² K/W)
80	0.294	3.231
100	0.233	4.121
120	0.192	5.044
150	0.153	6.354

Panel Thickness (mm)	ThermalSafe IPN $\lambda = 0.0201$ (W/mK)	
	U-value (W/m ² K) ^[1]	R-value (m ² K/W)
80	0.265	3.603
100	0.210	4.594
120	0.173	5.623
150	0.138	7.082

^[1] Considers joint influence (presuming 1000mm width).

U: Thermal transmittance. R: Thermal resistance. λ : Thermal conductivity.

Biological

Benchmark Evolution panels are immune to attack from mould, fungi, mildew and vermin. No urea formaldehyde is used in the construction and the panels are non-deleterious.

Fire

Reaction to fire

Benchmark Evolution panels have been tested and approved and comply with national building regulations and standards. The panels are classified as B-s1,d0 according to EN 13501-1.

For Information on fire resistance performance, please contact Kingspan Benchmark Technical Department.

Structural

Please contact Kingspan Benchmark Technical Department for detailed load span tables and structural design services.

Acoustics

Benchmark Evolution panels have a single figure weighted sound reduction $R_w = 25$ dB.

Building Regulations

Benchmark Evolution panels comply with European Standard EN 14509 : Self-supporting double skin metal faced insulating panels, and conform to additional relevant national building regulations and standards.

Quality and Durability

Kingspan Benchmark panels are manufactured from the highest quality materials, using state-of-the-art production equipment to rigorous quality control standards, ensuring long term reliability and service life.

Guarantee

Kingspan Benchmark provides a comprehensive guarantee which covers the durability, external coatings and performance.

Packing

The Benchmark Evolution panels are stacked horizontally, with weather sheet upward. Removable hot melt adhesive is laid between each panel. The top, bottom, sides and ends are protected with polystyrene and timber packing and the entire pack is wrapped in polythene. The number of panels in each pack depends on panel length and weight.

Typical pack height is 1100mm. Maximum pack weight 1500kg.

Panel Thickness (mm)	80	100	120	150
No. panels/pack (max)				
1,000mm & 900mm width	13	11	9	7
600mm width	9	7	6	5

Delivery and Off-loading

Transportation of Benchmark Evolution packs to site is by road transport (unless indicated otherwise). It is the customer's responsibility to check the site for restrictions, for example, entrance to site, power lines, and agree a storage area to be used. Additionally, the customer must identify the correct type/methods of off-loading/hoisting facilities to be used, i.e., crane, crane forks, lifting beam/slings and airbags, forklift or specialist lifting equipment.

Site Installation Procedure

Site assembly instructions are available from the Kingspan Benchmark Technical Department.

Internal Liner Sheet

Polyester – a coating with a nominal thickness of 15 µm. The standard colour is grey white, (similar RAL 9002).

FoodSafe – a 150 µm thick polymer with a non-toxic coating that is resistant to mould, durable and easy to clean. It is chemically inert and safe for continuous contact with unpacked food. The standard colour is white. Other colours are available on request.

Insulation Core

Rigid Kingspan FireSafe IPN closed-cell insulation is the standard core used, made to a non-deleterious specification with an Ozone Depletion Potential (ODP) of zero. Kingspan FireSafe IPN insulation is CFC / HCFC-free. Optionally, a Kingspan ThermalSafe IPN core with outstanding thermal performance is available.



Seals

Benchmark Karrier panel side joints have a factory applied anti-condensation seal fitted into the groove to automatically seal the joint between panels.

Performance

Thermal Insulation

Thermal performance according to EN 14509 A.10

Panel Thickness (mm)	FireSafe IPN $\lambda = 0.0224$ (W/mK)	
	U-value (W/m ² K) ^[1]	R-value (m ² K/W)
80	0.294	3.231
100	0.233	4.121
120	0.192	5.044
150	0.153	6.354

Panel Thickness (mm)	ThermalSafe IPN $\lambda = 0.0202$ (W/mK)	
	U-value (W/m ² K) ^[1]	R-value (m ² K/W)
80	0.265	3.603
100	0.210	4.594
120	0.173	5.623
150	0.138	7.082

^[1] Considers joint influence (presuming 1000mm width).

U: Thermal transmittance. R: Thermal resistance. λ : Thermal conductivity.

Biological

Benchmark Karrier panels are immune to attack from mould, fungi, mildew and vermin. No urea formaldehyde is used in the construction and the panels are non-deleterious.

Fire

Reaction to fire

Benchmark Karrier panels have been tested and approved and comply with national building regulations and standards. Panels with FireSafe IPN core are classified as B-s1,d0 according EN 13501-1.

For Information on fire resistance performance, please contact Kingspan Benchmark Technical Department.

Acoustics

Benchmark Evolution panels have a single figure weighted sound reduction $R_w = 25$ dB.

Building Regulations

Benchmark Karrier panels comply with European Standard EN 14509 : Self-supporting double skin metal faced insulating panels, and conform to additional relevant national building regulations and standards.

Quality and Durability

Kingspan Benchmark panels are manufactured from the highest quality materials, using state-of-the-art production equipment to rigorous quality control standards, ensuring long term reliability and service life.

Tile System

Application

The Benchmark Tile rainscreen façade system features Agrob Buchtal's KeraTwin® K20 range of ceramic stoneware tiles combined with the specially developed Kingspan insulated Karrier Panel. The double webbed design of the tiles ensures increased durability and robustness while the vertical system rail provides quick and easy installation. The KeraTwin® K20 system is complemented by an extensive range of accessories for details such as corners and joints.

Tile System Dimensions and Weight

The Tile System has an overall typical weight, dependent upon Karrier Panel thickness:

Karrier Panel Thickness (mm)	80	100	120	150
Substrate thickness (mm): external			0.60	
internal			0.40	
Karrier Panel Length ⁽¹⁾ (mm)	2,000 - 14,500			
Karrier Panel Width (mm)	1,000			
U-value (W/m²K):				
<i>FireSafe</i> IPN Core	0.294	0.233	0.192	0.153
<i>ThermalSafe</i> IPN Core	0.265	0.210	0.173	0.138
System Weight ⁽¹⁾ kg/m²	38.30	39.10	39.90	41.10

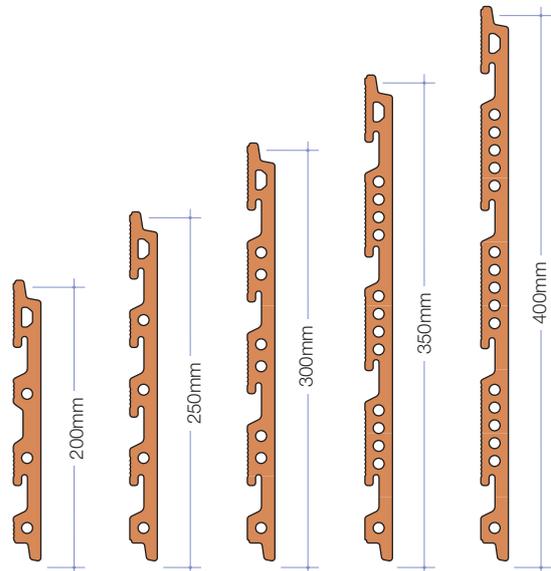
⁽¹⁾ Combined weight of insulated panel, rail and façade. For project specific weights, contact Kingspan Benchmark.

KeraTwin® K20 Tile Dimensions

Tiles are available in lengths of 400mm to 1,200mm, in 1mm increments with a nominal thickness of 20mm. Tile modules are also detailed as 'grid' size. The grid size is the actual physical size of the tile including the flanges for the horizontal joint. Grid size = tile face size + 5mm.

Standard tile heights (centre to centre of joint):

- 200mm;
- 250mm;
- 300mm;
- 350mm; and
- 400mm.



KeraTwin® K20 Tile Product Tolerances

Thickness, straightness of sides, rectangularity and surface flatness are all in accordance with DIN EN 14411.

Length (up to 1200mm)	-1	+1
Width	-2	+2
Thickness (20mm)	-1	+1
Flatness (per metre)	-0.4%	+0.4%
Rectangularity	-0.3%	+0.3%

Materials

KeraTwin® K20 Ceramic Tiles are extruded ceramic panels in accordance with DIN EN 14411. Available in a wide range of colours and glazes, the tiles have a natural material tolerance therefore colour can vary.

Coatings

KeraTwin® K20 tiles feature a Hydrotect® self-cleaning photocatalyst coating.

Fire

KeraTwin® K20 façades have a Class A1 rating and are non-combustible as defined by Building Regulations.

Acoustics

Benchmark Karrier panels (without additional façade system) indicate a single figure weighted sound reduction R_w of 25dB.

For detailed information on acoustic performance values, considering the Karrier panels in combination with the relevant façade system, please contact Kingspan Benchmark Technical Department.

Fixing

KeraTwin® K20 tiles are secured to the façade using CT20-OMEGA645 vertical omega profile rails. The omega rails are attached to the face of the Karrier Panel using special KSA FL6 fasteners.

Performance

The Benchmark Tile System has been tested to the CWCT standard test methods for Rainscreens and achieved the following results:

- Air permeability: Class A4 (600 Pa)
- Watertightness (static pressure): Class R7 (600 Pa)
- Watertightness (dynamic pressure): Class R7 (600 Pa)
- Resistance to wind: 2400 Pa serviceability, 3600 Pa safety

Quality and Durability

Kingspan Benchmark Tile is manufactured from the highest quality materials, using state-of-the-art production equipment to rigorous quality control standards, ensuring long term reliability and service life.

Guarantee

Kingspan Benchmark will provide external coating and product guarantees on a project specific basis.

Packing

Karrier Panels

The Benchmark Karrier panels are stacked horizontally, with weather sheet upward. Removable hot melt adhesive is laid between each panel. The top, bottom, sides and ends are protected with polystyrene and timber packing and the entire pack is wrapped in polythene. The number of panels in each pack depends on panel length and weight.

Typical pack height is 1100mm. Maximum pack weight 1500kg.

Panel Thickness (mm)	80	100	120	150
No. panels/pack (max)	13	11	9	7

KeraTwin® K20 Tiles

KeraTwin® K20 tiles are delivered on timber palettes. Each palette weighs approximately 750kg. The entire pack is wrapped in polythene.

Delivery and Off-loading

Karrier Panels

Transportation of Benchmark Karrier packs to site is by road transport (unless indicated otherwise). It is the customer's responsibility to check the site for restrictions, for example, entrance to site, power lines, and agree a storage area to be used. Additionally, the customer must identify the correct type/methods of off-loading/hoisting facilities to be used, i.e., crane, crane forks, lifting beam/slings and airbags, forklift or specialist lifting equipment.

KeraTwin® K20 Tiles

Care must be taken when offloading and moving the tiles around site to avoid impact damage and from damage that could occur transporting the tiles over rough terrain. When removing tiles from the pallet, do not drag them across the tile below as damage to the surface may result – always lift tiles from the pack.

Site Storage

Pallets should be stored on level ground in a safe, designated area of the site until required. Once opened to remove tiles, the remainder of the pack should be re-covered to protect from weather and site contamination.

Site Installation Procedure

Site assembly instructions are available from the Kingspan Benchmark Technical Department.



HPL System

Application

The Benchmark HPL façade system features Trespa® Meteon® range of high pressure compact laminates fixed in a variety of methods to the insulated Kingspan Karrier Panel. Available in three thicknesses, Meteon® panels are highly durable providing a long life of retained appearance and performance. Featuring integral decorative surface technology, Meteon® panels offer a vast range of colour and finish options, including the acclaimed Naturals and Wood Decors collections.

HPL System Dimensions and Weight

The HPL System has an overall typical weight, dependent upon Karrier Panel thickness and HPL thickness:

Karrier Panel Thickness (mm)		80	100	120	150
Substrate thickness (mm):	external			0.60	
	internal			0.40	
Karrier Panel Length ⁽¹⁾ (mm)		2,000 - 14,500			
Karrier Panel Width (mm)		1,000			
U-value (W/m ² K):	FireSafe IPN Core	0.294	0.233	0.192	0.153
	ThermalSafe IPN Core	0.265	0.210	0.173	0.138
System Weight ⁽¹⁾ kg/m ²	8mm HPL	28.50	29.30	30.10	31.30
	10mm HPL	31.30	32.10	32.90	34.10
	13mm HPL	35.50	36.30	37.10	38.30

⁽¹⁾ Combined weight of insulated panel, rail and façade. For project specific weights, contact Kingspan Benchmark.

Meteon® Panel Dimensions

Trespa® Meteon® typical standard panel sizes are 1,836 x 2,526mm and 1,506 x 3,026mm. The maximum panel size available is 1,836 x 3,026mm.

There are three thicknesses of Meteon® panel available: 8mm and 10mm as standard; and a 13mm invisible fix option is also available. 8mm thick panels are available for HPL 'face-fixed' system applications only.

Note: Dimensions are restricted to 1,196mm x 596mm or 1,000mm x 1,000mm maximum with the alternative 'secret fix' method. All sizes indicated above exclude 10mm joint.

Project specific sizes are available – please contact Benchmark Technical Services for more information.

Meteon® Panel Product Tolerances

Thickness, straightness of sides, rectangularity and surface flatness are all in accordance with EN 438-2.

Length	-1	+1
Width	-1	+1
Thickness	-1	+1
Flatness (per metre)	-2	+2
Squareness	-1	+1

Materials

Trespa® Meteon® is a flat façade panel, based on thermosetting resins, homogeneously reinforced with wood based fibres and manufactured under high pressure and at high temperatures, according to European Standard EN 438 and to ISO 4586. Meteon® panels feature an integrated decorative surface using proprietary EBC technology and are available in a wide choice of colours and finishes.

Fire

Standard

Trespa® Meteon® panels have the reaction to fire classification Class D-s2,d0 according to EN 13501-1 : 2002 Fire Classification of Construction Products and Building Elements, EN 438-7 and ISO 4586.

FR - Fire Retardant

Trespa® Fire Retardant panels have the reaction to fire classification: Class B-s2,d0 in accordance with standards stated above.

Acoustics

Benchmark Karrier panels (without additional façade system) indicate a single figure weighted sound reduction R_w of 25dB.

For detailed information on acoustic performance values, considering the Karrier panels in combination with the relevant façade system, please contact Kingspan Benchmark Technical Department.

HPL System

Environmental

Trespa® Meteon® panels are certified according to the environmental management system standard ISO 14001: 2004, awarded by Lloyds register.

Fixing

Trespa® Meteon® façades can be fixed to Karrier Panels using the following methods.

Benchmark 'Face-Fixed' System

Meteon® panels are fixed with rivets to aluminium omega and zed profiles which are attached to the Karrier Panel system.

Benchmark 'Secret Fix' System

Metal hanging brackets are fixed to Meteon® panels with stainless steel undercut anchors. These concealed brackets allow the Meteon® panels to be secretly attached to black coated aluminium rails, which are fixed to the Karrier Panel system. Each Meteon® panel has two adjusting points and a fixed point at the top through the attached brackets.

Benchmark 'Secret Fix' with Vertical Straps on Rails*

Meteon® panels are fixed invisibly by attaching straps to the façade that fix back to a horizontal rail which is attached to the Karrier Panel.

The extruded aluminium straps (tested to BS 1474 in 6063/T6 grade alloy) are secured to the façade panel using undercut stainless steel expanding anchors. The straps are secured to the aluminium secondary rail system (tested to BS 1474:1987 and powder coated black) using self drilling/self tapping stainless steel coated black screws. The secondary rail system is attached to the Karrier Panel.

Quality and Durability

Kingspan Benchmark HPL is manufactured from the highest quality materials, using state-of-the-art production equipment to rigorous quality control standards, ensuring long term reliability and service life.

Guarantee

Kingspan Benchmark will provide external coating and product guarantees on a project specific basis.

Packing

Karrier Panels

The Benchmark Karrier panels are stacked horizontally, with weather sheet upward. Removable hot melt adhesive is laid between each panel. The top, bottom, sides and ends are protected with polystyrene and timber packing and the entire pack is wrapped in polythene. The number of panels in each pack depends on panel length and weight.

Typical pack height is 1100mm. Maximum pack weight 1500kg.

Panel Thickness (mm)	80	100	120	150
No. panels/pack (max)	13	11	9	7

Meteon® Panels

The packing and storage of Trespa® Meteon® panels varies slightly dependent upon the attachment method specified.

Benchmark 'Face-Fixed' System

Meteon® panels will be laid flat on pallets which have supports at not more than 600mm centres. The packs will be wrapped in a waterproof membrane.

Benchmark 'Secret Fix' Systems

Meteon® panels will have brackets attached (for the Vertical Straps on Rails option, straps are attached), therefore they will be laid on a pallet, face-to-face and back-to-back, with supports in between at maximum of 600mm centres. The pallets will have supports at not more than 600mm centres. Packs will be wrapped in a waterproof membrane.

Delivery and Off-loading

Karrier Panels

Transportation of Benchmark Karrier packs to site is by road transport (unless indicated otherwise). It is the customer's responsibility to check the site for restrictions, for example, entrance to site, power lines, and agree a storage area to be used. Additionally, the customer must identify the correct type/methods of off-loading/hoisting facilities to be used, i.e., crane, crane forks, lifting beam/slings and airbags, forklift or specialist lifting equipment.

Meteon® Panels

For both face-fixed and secret fix options, boards should be stored in a clean, dry, frost-free room. Treat panels like hardwood. Leave panels lying flat on top of each other to prevent moisture or high temperatures affecting one side only. When storing panels, make sure that there are no cavities between panels. Ensure no moisture forms between panels; do not place moisture sensitive paper layers between the panels. Panels removed from packs should be installed as soon as possible. The panels should not be stored upright or leaning against anything as warping may occur.

Meteon® panels are decorative end products so need to be treated with care. Do not slide them, but lift them and prevent getting dirt on and between the panels. If needed to be marked / coded, use adhesive stickers. If panels have been provided with special protective foil, remove the foil within 24 hours the panels being removed from the pallet. When lifting pack with straps, fit protective corner pieces under straps.

Site Storage

Pallets should be stored on level ground in a safe, designated area of the site until required. Once opened to remove tiles, the remainder of the pack should be re-covered to protect from weather and site contamination.

Site Installation Procedure

Site assembly instructions are available from the Kingspan Benchmark Technical Department.



ACM System

Application

Featuring the extraordinarily flat Alucobond® aluminium composite material façade, the Benchmark ACM system offers a façade material that is extremely weatherproof and impact-resistant combined with proven insulated panel technology. Consisting of a plastic core between two high quality aluminium cover sheets, Alucobond® ACM displays excellent product properties, including extraordinary flatness and proven durability. ACM is available in an anodized finish, pre-painted aluminium sheets, post painted aluminium sheets or post-powder coated.

HPL System Dimensions and Weight

The HPL System has an overall typical weight, dependent upon Karrier Panel thickness and HPL thickness:

Karrier Panel Thickness (mm)		80	100	120	150
Substrate thickness (mm):	external			0.60	
	internal			0.40	
Karrier Panel Length ⁽¹⁾ (mm)		2,000 - 14,500			
Karrier Panel Width (mm)		1,000			
U-value (W/m ² K):	FireSafe IPN Core	0.294	0.233	0.192	0.153
	ThermalSafe IPN Core	0.265	0.210	0.173	0.138
System Weight ⁽¹⁾ kg/m ²	Tray: 4mm gauge	20.80	21.60	22.40	23.60

⁽¹⁾ Combined weight of insulated panel, rail and ACM cassette. For project specific weights, contact Kingspan Benchmark.

ACM Cassette Dimensions

ACM thickness

Overall gauge thickness of the ACM material is 4.0mm (aluminium sheet thickness is 0.5mm).

Available dimensions

The maximum visible face dimensions for tray cassettes are subject to wind loadings. Please contact Benchmark Technical Services for maximum dimensions available.

ACM Product Tolerances

Length	-2	+2
Width	-2	+2
Thickness	-2	+2
Squareness	-2	+2

Materials

Benchmark ACM (aluminium composite material) consists of two high quality aluminium alloy 5005H42 sheets fully bonded to a high performance polyethylene core. A PVdF coating is applied to the aluminium prior to lamination into the end product as a composite panel. Benchmark ACM is available in a large range of colours and finishes.

Acoustics

Benchmark ACM façade system has a single figure weighted sound reduction $R_w = 25\text{dB}$.

Environmental

Benchmark ACM can be fully recycled, i.e., both the core material and the aluminium cover sheets can be recycled and used for the production of new material. The raw material is covered by an environmental product declaration. Please contact Benchmark Technical Services for further information.

ACM System

Fixing

An extruded aluminium track to BS1474 in 6063/T6 grade alloy is bonded to the tray cassette. Folded top edge of cassette secured to aluminium secondary rail system using self-drilling / self-tapping stainless steel coated screws.

Extruded aluminium secondary rail system to BS1474 in 6063/T6 grade alloy. Coated black.

Quality and Durability

Kingspan Benchmark ACM is manufactured from the highest quality materials, using state-of-the-art production equipment to rigorous quality control standards, ensuring long term reliability and service life.

Guarantee

Kingspan Benchmark will provide external coating and product guarantees on a project specific basis.

Packing

Karrier Panels

The Benchmark Karrier panels are stacked horizontally, with weather sheet upward. Removable hot melt adhesive is laid between each panel. The top, bottom, sides and ends are protected with polystyrene and timber packing and the entire pack is wrapped in polythene. The number of panels in each pack depends on panel length and weight.

Typical pack height is 1100mm. Maximum pack weight 1500kg.

Panel Thickness (mm)	80	100	120	150
No. panels/pack (max)	13	11	9	7

ACM Cassettes

The ACM cassettes are packed on a pallet. In order to protect the cassettes, the top, bottom, sides and ends of the pallet are protected with polystyrene, including between the cassettes and the entire pack is wrapped in polythene.

Delivery and Off-loading

Karrier Panels

Transportation of Benchmark Karrier packs to site is by road transport (unless indicated otherwise). It is the customer's responsibility to check the site for restrictions, for example, entrance to site, power lines, and agree a storage area to be used. Additionally, the customer must identify the correct type/methods of off-loading/hoisting facilities to be used, i.e., crane, crane forks, lifting beam/slings and airbags, forklift or specialist lifting equipment.

ACM Cassettes

Pallets must be handled carefully during transport and unloading. Do not handle open pallets. Upon delivery the pallets must be examined for any damage due to moisture – panels that have become wet must be dried to avoid any spots or corrosion forming. Individual cassettes must be lifted off the pallet by two people holding all four corners and not drawn over each other. Carry the cassettes vertically. Wear gloves to avoid staining.

To avoid possible reflection differences, it is recommended to install the panels in the same direction as marked on the protective peel-off foil. Please note that should the protective foil partially come off during processing, dirtied edges can occur over time.

To avoid residuals of glue sticking to the surface of the panels due to UV radiation, it is recommended to remove the protective foil as soon as possible after the installation.

The protective foils and the panel surfaces must not be marked using ink (marker), adhesive tapes or stickers, as the lacquered surfaces could be damaged by solvents or plasticizers.

Colour variations may occur between panels originating from different production batches. To ensure colour consistency, the total requirement for a project should be placed in one order.

Site Storage

Karrier Panels

Pallets should be stored on level ground in a safe, designated area of the site until required. Once opened to remove tiles, the remainder of the pack should be re-covered to protect from weather and site contamination.

ACM Cassettes

Protect Benchmark ACM pallets during storage against rain, penetration of moisture and condensation. Avoid any condensation forming, for example when transporting cold panels to warmer rooms. Only pallets of identical size should be stacked. Store the pallets stacked one over the other (do not store panels standing vertically), with a maximum of 2 pallets of the same format stacked on top of each other, with heavy pallets at the bottom.

Storage exceeding 6 months should be avoided, as it may become difficult to remove the protective foil. When stacking the panels nothing should be placed in between them, as this may produce marks on the panels.

Site Installation Procedure

Site assembly instructions are available from the Kingspan Benchmark Technical Department.

Colours & Finishes

Kingspan Spectrum®
High Performance Colour Coating Range 142

Integrated Façade System
Textures & Finishes

- Tile 146
 - High Pressure Laminate 148
 - Aluminium Composite Material 150
-



Kingspan Spectrum®

High Performance Colour Coating Range

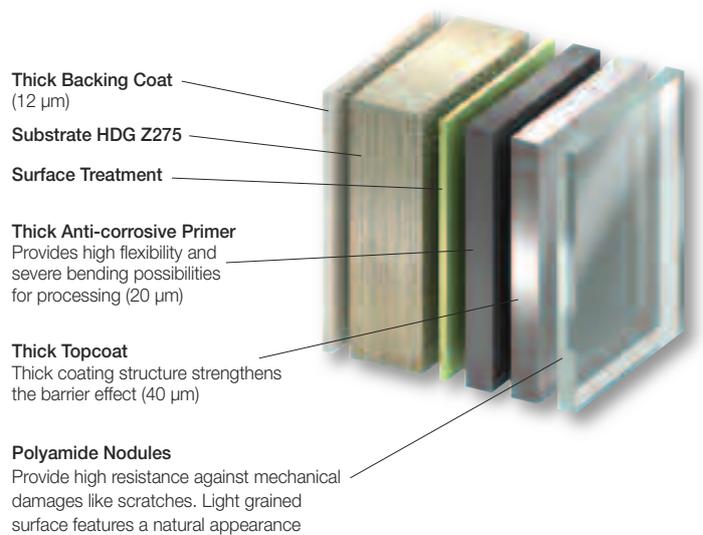
Kingspan Spectrum® is a proven organic coating on an alloy substrate inspired by choice, aesthetic brilliance and guaranteed natural performance.

Features and Benefits

- A wide range of solid and metallic colours are available*
- Polyurethane coated semi-gloss finish with a slight granular effect
- Available on all Kingspan insulated panels and related ancillaries
- Alloy substrate provides excellent corrosion resistance
- Excellent durability and weather resistance
- A result of many years of research and development.

Kingspan Spectrum® is covered by the Kingspan Total Coating Guarantee for up to 25 years.

- Simple Guarantee administration
- Cut edge protection for the life of the Guarantee
- Not orientation dependent
- Guarantee is available to the building owner and is transferable
- Zero maintenance for the life of the Guarantee
- No notice requirement for the end of the Guarantee period



Environmental Considerations

- Kingspan Spectrum® organic coating is based on an alloy substrate and is free of PVC's and phthalates which helps to facilitate recycling of the substrate.
- The production process of Kingspan Spectrum® meets the most stringent environmental regulations concerning surface treatments, solvent emissions and the removal of recognised harmful substances in the coating.
- Kingspan Spectrum® does not pose any health or contamination risk to the consumer or the environment
- Kingspan Insulated Panels are actively researching the most efficient way of recycling and re-using this material.

* Bespoke colours are available on request. Please contact Kingspan Benchmark.

Kingspan Spectrum® Range

Solid Colours



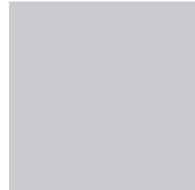
Onyx*
RAL 7016



Basalt
RAL 7012



Adventura
RAL 7000



Moonstone
RAL 7035



Citrine
RAL 1015



Pearl*
RAL 9010



Steel Blue
RAL 5011



Kyanite*
RAL 5010



Zircon
RAL 5014



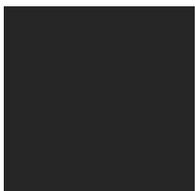
Lazuli*
RAL 5002



Greenrock
RAL 6003



Camelia*
RAL 3009



Jet
RAL 9005

Metallic Colours



Silver*
RAL 9006



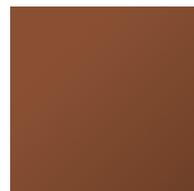
Obsidian*
RAL 9007



Diamond
RAL 9023



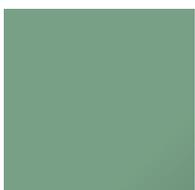
Greyrock
KC 100



Goldstone
RAL 2013



Topaz
KC 200



Emerald
KC 300



Beigestone
RAL 1035



Opal
KC400

Colour samples are only representative of the Kingspan Spectrum® colours.

RAL reference numbers represent the nearest colours and are not exact matches to Kingspan Spectrum®.

Please ensure that you request a swatch sample from the Kingspan Benchmark Marketing Department to view accurate colour and texture prior to specification.

* Standard colours available, non-standard colours available on request and have a minimum order quantity and extended lead time.

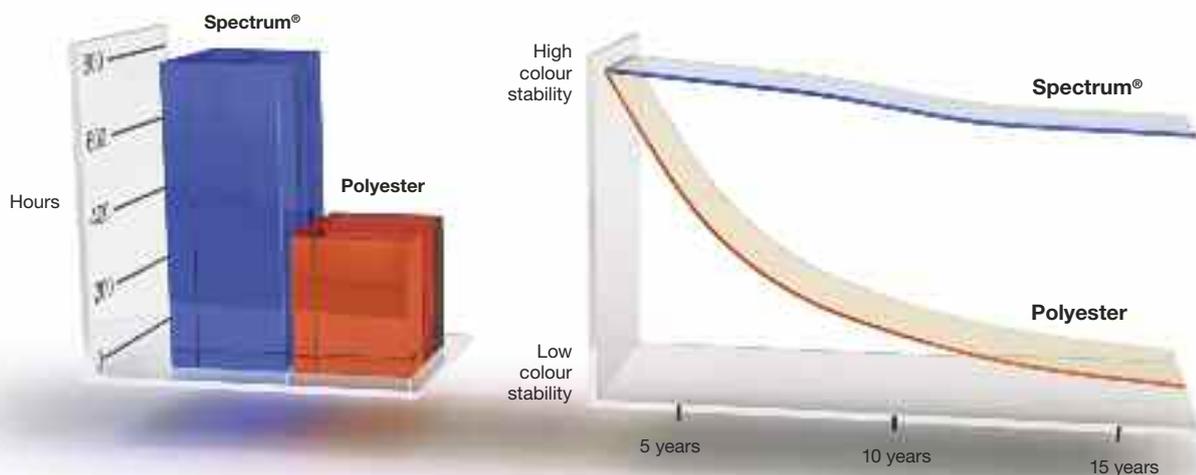
Please contact the Quotations Department for further information.

Kingspan Spectrum®

High Performance Colour Coating Range

Performance

Properties		Kingspan Spectrum®	Polyester
Applications		External use in severe environments	Basic coating for standard outdoor applications
Description	Thickness	60 µm	25 µm
	Composition on front	20 µm primer + 40 µm top coat	5 µm primer + 20 µm top coat
	Composition on back	12 µm (2 layers) backing coat	7 µm backing coat
	Gloss (Gardner 60°)	30 GU	30 GU
	Appearance	slightly grained	smooth
Temporary protection		not required	self-adhesive film
Robustness	Adhesion of the coating (T-bend)	≤ 1 T	≤ 2 T
	Resistance to cracking on bending (T-bend)	≤ 1.5 T	≤ 3 T
	Surface 'pencil' hardness	F to H	HB to H
	Clemen scratch resistance	≥ 3 kg	≥ 2 kg
Durability	Corrosion resistance: Salt spray test	700 h	360 h
	Corrosion resistance category	RC5	RC3
	Humidity resistance	1500 h	1000 h
	UV resistance: UVA + H2O test (2000 h)	ΔE < 2, GR ≥ 80%	ΔE ≤ 5, GR ≥ 30%
	UV resistance category	RUV 4	RUV 2
	Resistance to various substances	very good	good
	Guarantee	automatic 10 years	max 5 years



Durability

Salt-spray test

Kingspan Spectrum® products show a major improvement of the corrosion resistance as compared to the standard polyester product.

UV Resistance

Colour stability

Kingspan Spectrum® products show much better performance than standard polyester coatings, and approach the performance of PVDF.



COLOURS & FINISHES

Majura Park
CANBERRA, AUSTRALIA

Integrated Façade System

Textures & Finishes

Tile

The natural warmth, subtle shades appearance and beauty of clay tiles creates attractive, timeless modern façades for today's built environment.

The Kingspan Benchmark Wall Tile façade system features Agrob Buchtal's KeraTwin® K20 range of ceramic stoneware tiles in many colours, finishes and textures. Available in discreet earthy shades and striking contrasting colours, KeraTwin® K20 tiles feature both glazed and unglazed surface finishes providing scope for creative façade design and appealing visual effects.

Additionally, tiles feature a Hydrotect® coating – an environmental photocatalyst cleaning technology – offering stunning façades that clean themselves when it's raining!

The double webbed design of the tiles ensures increased durability and robustness while the vertical system rail provides quick and easy installation.

The KeraTwin® K20 system is complemented by an extensive range of accessories for details such as corners and joints.

- Extremely weather resistant, tested to EN 438-2: 29
- Extensive range of accessories for a complete solution
- Hydrotect® self-cleaning coating - virtually maintenance-free
- Comprehensive design and technical support
- Individual tiles can be removed and replaced as necessary
- Available with the Benchmark Total Guarantee
- Manufactured and supplied under a quality system certified to BS EN ISO 9001: 2000
- Manufacturing plants are ISO 14001 (Environmentally) accredited

Only a small selection of colours are shown in this publication - please contact Kingspan Benchmark for further information and product samples.



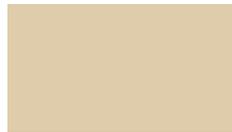
SpectraView – Harmony Colour System



6201 Cream 1
Glazed



6203 Cream 3
Glazed



6205 Cream 5
Glazed



6213 Yellow 3
Glazed



6215 Yellow 5
Unglazed



6222 Apricot 2
Glazed



6224 Apricot 4
Glazed



6231 Salmon Red 1
Glazed



6233 Salmon Red 3
Glazed



6242 Rosé 2
Glazed



6245 Rosé 5
Glazed



6252 Neutral Grey 2
Glazed



6255 Neutral Grey 5
Glazed



6261 Grey 1
Glazed



6264 Grey 4
Glazed



6272 Blue 2
Glazed



6274 Blue 4
Glazed



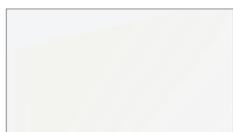
6283 Green 3
Glazed



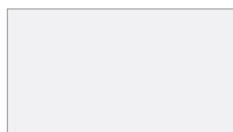
6284 Green 4
Glazed



6285 Green 5
Glazed



4230 Glacier White
Glazed



4234 Chalk White
Unglazed



4530 Gloss Black
Unglazed



4534 Matt Black
Unglazed

SpectraView – Contrasting Colours



150 Lemon Yellow
Glazed



151 Orange
Glazed



154 Contrasting Red
Glazed



152 Apple Green
Glazed



153 Violet
Glazed



144 Intense Blue
Glazed

Natura



410 Cream
Unglazed



411 Ochre
Unglazed



412 Salmon
Unglazed



413 Red
Unglazed



418 Brown
Unglazed



414 Light Grey
Unglazed



415 Vulcan Grey
Unglazed



416 Smoky Blue
Unglazed



417 Patina Green
Unglazed

Design



1091 Haze 2
Glazed



1092 Haze 4
Glazed



1101 Stonewall 2
Glazed



1103 Stonewall 4
Glazed



1111 Mega 2
Glazed



1112 Mega 3
Glazed



1170 Bosco 1
Glazed



1171 Bosco 2
Glazed



1180 Metal 1
Glazed



1181 Metal 2
Glazed



1116 Rockface 2
Glazed



1403 Golden Red
Unglazed



1410 Golden Cream
Unglazed



1414 Golden Grey
Unglazed



1415 Golden Anthracite
Unglazed

COLOURS & FINISHES

Integrated Façade System

Textures & Finishes

High Pressure Laminate (HPL)

A colourful range of architectural façades that are not only beautiful, but extremely robust and durable.

Featuring Trespa® Meteon® high pressure compact laminates, the Kingspan Benchmark Wall HPL façade system has been created in partnership with Trespa®.

Featuring integral decorative surface technology combined with a vast range of colours, finishes and texture effects, Trespa® Meteon® panels are highly durable providing a long life of retained appearance and performance.

Colour and finish options include the acclaimed Naturals and Wood Decors collections in addition to the Uni Colours and Metallics ranges. Only a small selection of colours, finishes and textures are shown in this publication - please contact Kingspan Benchmark for further information and product samples.

- Extremely weather resistant, tested to EN 438-2: 29
- Very high impact resistance
- Through-fix and secret-fix façade options
- Virtually maintenance-free
- Comprehensive design and technical support
- Ancillary items are available in similar complementary colours for a complete solution
- Individual façade panels can be removed and replaced as necessary
- Available with the Benchmark Total Guarantee
- Manufactured and supplied under a quality system certified to BS EN ISO 9001: 2000
- Manufacturing plants are ISO 14001 (Environmentally) accredited



Metallics



Copper Yellow
M 53.0.2



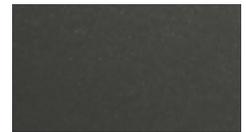
Titanium Bronze
M 05.5.1



Bottle Green
M 34.3.1



Azurite Blue
M 21.3.4



Graphite Grey
M 21.8.1

Wood Decors



Loft Grey
NW01



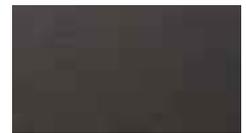
Harmony Oak
NW03



Loft Brown
NW05



Montreaux Sun glow
NW07



Wenge
NW09



English Cherry
NW10



Santos Palisander
NW11



Natural Bagenda
NW12



Country Wood
NW13



French Walnut
NW14



Milano Sabbia
NW15



Milano Terra
NW16



Milano Grigio
NW17

Naturals



Erosion
NA05



Patina
NA06



Deep Blue
NA07



Sierra Red
NA08



Oxidation
NA09



Titanic
NA10

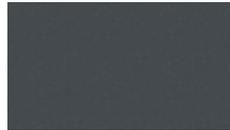
Uni Colours



Dark Denim
A 22.6.2



Black
A 90.0.0



Anthracite Grey
A 25.8.1



Mid Grey
A 21.5.1



Sienna Brown
A 10.4.5



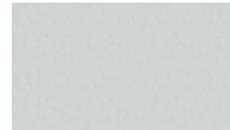
White
A 03.0.0



Silver Grey
A 03.4.0



Pastel Grey
A 03.1.0



Pastel Grey
A 21.1.0



Stone Grey
A 08.3.1



Royal Blue
A 22.1.6



Lime Green
A 37.0.8



Mojito Green
A 04.0.6



Gold Yellow
A 04.1.7



Passion Red
A 12.1.8

Integrated Façade System

Textures & Finishes

Aluminium Composite Material (ACM)

With a wide choice of colours and effects, combined with clean lines, ACM finishes can create modern, striking architectural building façades backed by proven durability.

Kingspan Benchmark Wall ACM façade system has been created in partnership with Alucobond®, the market leading manufacturer of aluminium composite panels worldwide.

As a light composite material consisting of two aluminium cover sheets and a plastic core, Alucobond® ACM displays excellent product properties such as extraordinary flatness, a large variety of colours and perfect formability – all from façade material that is extremely weatherproof, impact-resistant and break-proof.

Only a small selection of colours and finishes are shown in this publication - please contact Kingspan Benchmark for further information and product samples.

- ACM finishes approved to c.216/C5a/2009/0148 (Czech Republic), Z-33.2-6 (Germany), A-884 (Hungary) and AT-15-4058 (Poland)
- High weather and impact resistance
- Virtually maintenance-free
- Comprehensive design and technical support
- Individual façade panels can be removed and replaced as necessary
- Available with the Benchmark Total Guarantee
- Manufactured and supplied under a quality system certified to BS EN ISO 9001: 2000
- Manufacturing plants are ISO 14001 (Environmentally) accredited
- ACM finishes are fully recyclable

ALUCOBOND®

Solid Colours



Cream
102



Beige
103



Anthracite Grey
105



Ruby
202



Moss Green
204



Patina Green
205

Metallic Colours



Grey
502



Bronze
504



Sunrise Silver
600



Gold
601

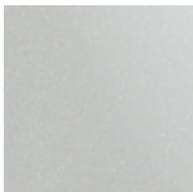


Seafoam Green
604



India Copper
704

Special Effects



Light Grey Shine
800



Sparkling Black
Metallic
888



Sparkling Blue
Metallic
889



Sparkling Red
Metallic
890

Colour samples are only representative of Alucobond® colours and finishes.

Please ensure that you request a swatch sample from the Kingspan Benchmark Marketing Department to view accurate colour and texture prior to specification.

Installation Guidance

Installation Guidance

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- Designwall Evolution 154
- Integrated Façades Systems 156



Installation Guidance

Designwall Inspiration

1.1

Apply a continuous line of sealing tape at the base and install the starter rails.



1.2

Install a nominal 160mm wide impermeable metal back up plate behind each vertical joint location (required if primary substructure is <160mm).



1.3

Install clips to the starter rail to secure the trailing (bottom) edge of the first panel.

Field apply a continuous line of self-adhesive sealing tapes over the face of the sealing plate and along the surface of the starter rail.



1.4

Position the first panel and install fixing clamp and fasteners to secure the panel to the substructure.





1.5
Position and install next panels above.



1.6
Position the vertical insulation strip.



1.7
Use timber cross spacing template to ensure exact positioning of the 4-way jointed panels.



1.8
Repeat the same procedure for the next adjacent bay of panels.

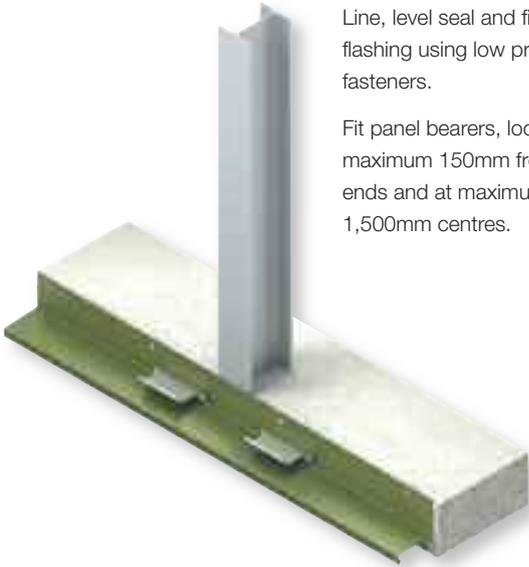
Installation Guidance

Designwall Evolution

1.1

Line, level seal and fix drip flashing using low profile fasteners.

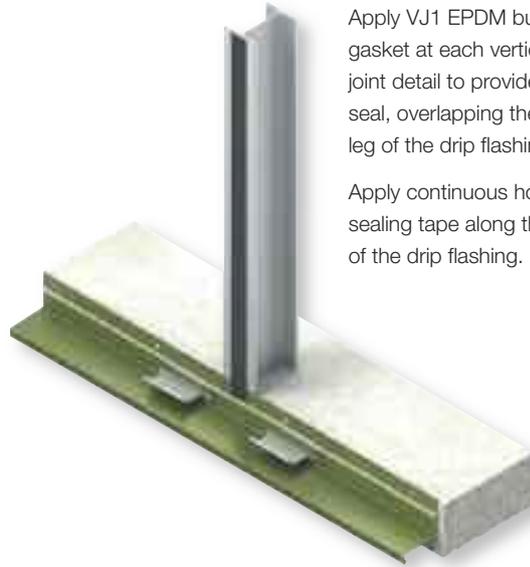
Fit panel bearers, located at maximum 150mm from panel ends and at maximum 1,500mm centres.



1.2

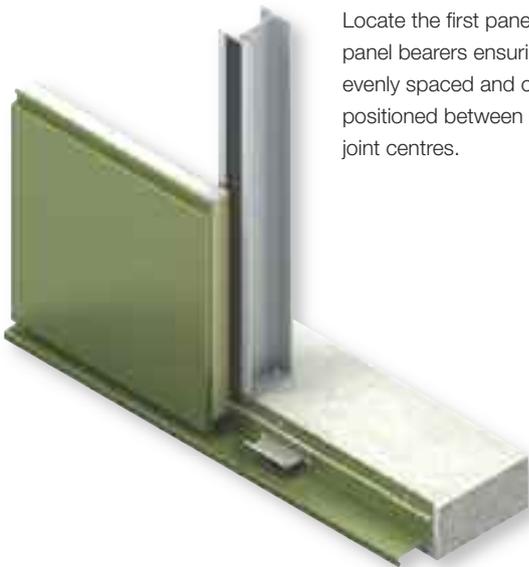
Apply VJ1 EPDM bubble gasket at each vertical panel joint detail to provide an air seal, overlapping the vertical leg of the drip flashing.

Apply continuous horizontal sealing tape along the surface of the drip flashing.



1.3

Locate the first panel on the panel bearers ensuring panel is evenly spaced and correctly positioned between vertical joint centres.



1.4

Install main fasteners through the male joint into each vertical rail location (load spreaders and number of fasteners according to structural requirements).

Bed an AWP filler in silicone sealant at panel ends and run a gun-grade air seal across male joint.





1.5

Lower next panel into position. Ensure the panel is evenly spaced and correctly positioned between vertical joint centres and install main fasteners.



1.6

Repeat the procedure for the next adjacent bay of panels, taking into account required gap dimensions (subject to vertical joint option).



1.7

Push in the EPDM receiver gasket, using the application roller for EQ2-20.



1.8

Install powder-coated extruded aluminium insert T-profile (option Q2A).

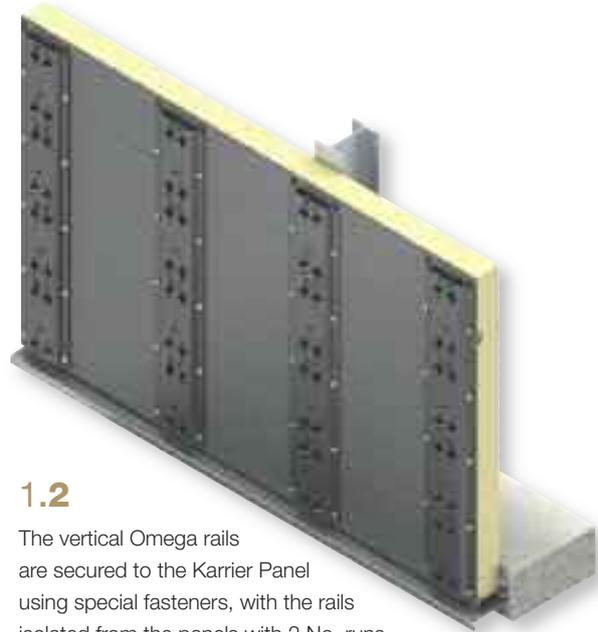
Installation Guidance

Integrated Façade System - Tile



1.1

The Tile system supposes a horizontally aligned installation of Karrier Panels as a basis substructure.



1.2

The vertical Omega rails are secured to the Karrier Panel using special fasteners, with the rails isolated from the panels with 2 No. runs of isolation tape.

The centre distance between the Omega rails is set by the chosen tile module, minus 8mm.



1.3

To ensure the correct spacing between the K20 tiles in the vertical joint, single spacers (CT20-JS645) or a continuous joint profile (CT20-JP640) can be applied.



1.4

Tile K20 tiles are simply hung on the vertical system rail with the holding grooves on the reverse side.

For mounting the tiles, no additional tools are required. The compression spring and removal protection integrated in the system rail prevents clattering and constraining forces in the case of alternating wind loads, and also the forcible removal of tiles.

Installation Guidance

Integrated Façade System - HPL



1.1

The HPL system supposes a horizontally aligned installation of Karrier Panels as a basis substructure.



1.2

Vertical KSAL30 Omega (or Zed) sections are secured in turn to the Karrier Panels using special fasteners. The sections are bedded on PVC sealing tapes. centres between the aluminium sections are given by the HPL module sizes and/or by structural requirements.



1.3

Trespa® Meteon® HPL panels are installed by blind rivet fixing method.



1.4

The gap between single Trespa® Meteon® HPL panels measures 10mm.

Installation Guidance

Integrated Façade System - ACM



1.1
The ACM system supposes a vertically aligned installation of Karrier Panels as a basis substructure.



1.2
Benchmark BX rails are secured horizontally to the Karrier Panels using special fasteners, with the rails isolated from the panels with 2 No. runs of isolation tape.



1.3
The ACM metallic trays are hung into the horizontal Benchmark BX rails at the bottom edge and fastened in the horizontal joint at the top edge.



1.4
The vertical and horizontal gaps between single trays measures 8mm.

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Kingspan Europe

Insulated Panels

Kingspan Insulated Panels has established a leading global position in design and manufacture of high quality, high performance insulated panel systems for all sectors of the construction industry.

Insulated Panels' websites contain downloads for construction details, model specifications and data sheets, as well as product information, case studies, photo galleries and much more.

Insulated Roof and Wall Systems

Kingspan's range of insulated panels have been successfully used worldwide on retail, distribution, commercial, industrial, leisure, residential, healthcare and education projects. The performance advantages of Kingspan Insulated Roof & Wall Systems are well recognised by property investors, building owners, designers and contractors.

Controlled Environments

Controlled Environment insulated panel systems are designed for use within temperature controlled and hygiene-safe environments such as: food processing, deep freeze, cold/chill store and clean rooms for bio-technology and pharmaceutical industries.

FireSafe, hygienic and fibre-free, these insulated panel systems are suitable for internal and external walls, roofs and ceilings with an internal 'box within a box' modular box system also available.

- www.paneele.kingspan.de
- www.plyty-warstwowe.kingspan.pl
- www.panely.kingspan.cz
- www.szendvicspanel.kingspan.hu



Integrated Renewable Solutions

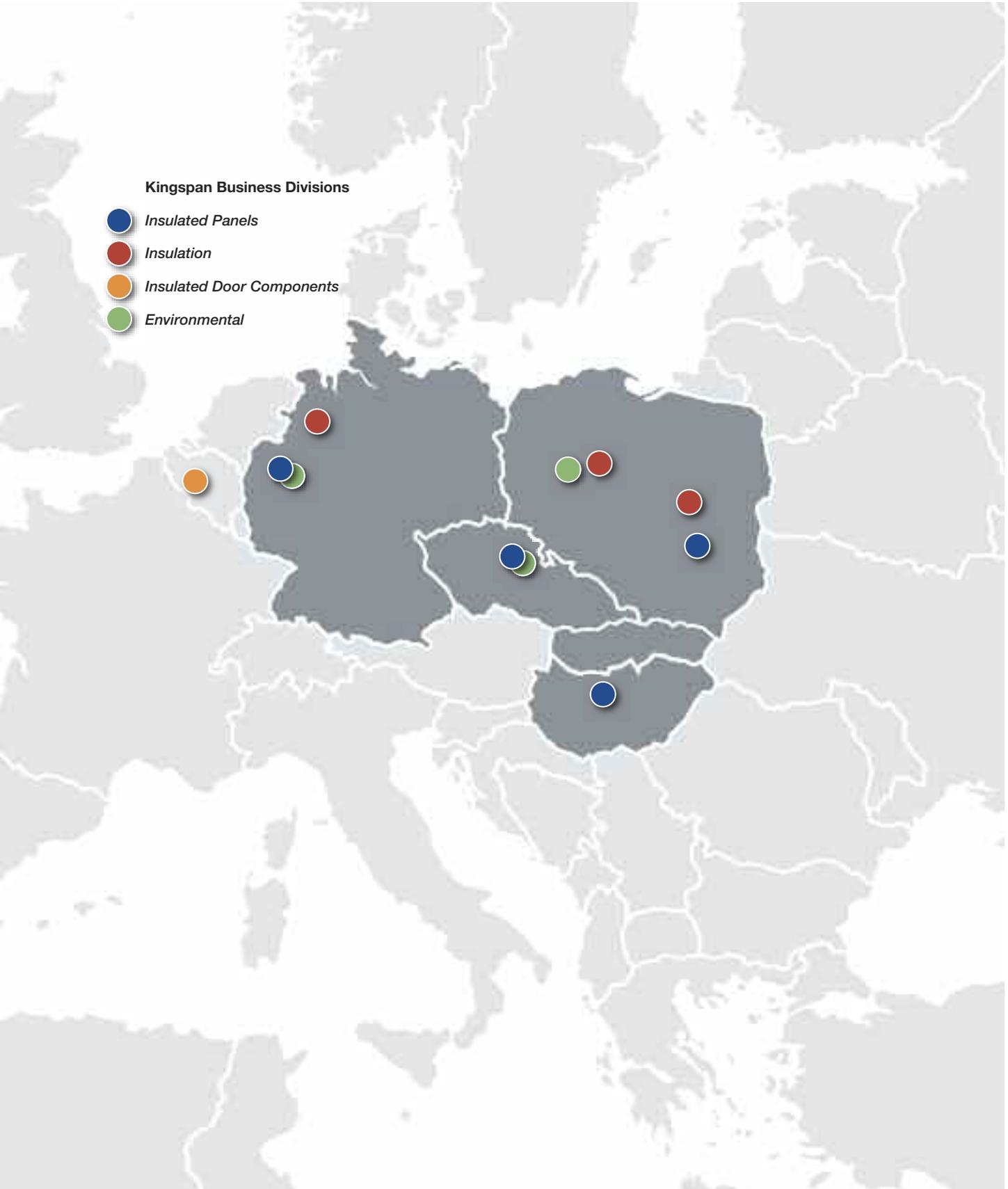
Renewable energy products complement roof and wall panels and can be easily integrated into any building project. Renewable energy can contribute significantly to the energy used within a building, thereby reducing bills and carbon footprint.

EnergiPanel Solar Air Heating System

EnergiPanel™ is a new, innovative, insulated solar-air heating system designed for wall applications as a supplement to the main heating system. Solar energy is collected simply by using the outer steel skin as a solar energy absorber and incorporating profiled hollows beneath the crowns to facilitate air movement up through the panel.

PowerPanel Integrated Solar PV Solutions

PowerPanel is a fully integrated insulated panel and solar PV systems. The product range includes crystalline silicon modules for roofs and walls and a thin film solar laminate for roofs. The systems are suitable for new and refurbishment applications and can be installed at the same time as the insulated roof panels.



Kingspan Europe

Insulation

Kingspan Insulation is a market leading manufacturer of premium and high performance rigid insulation products and insulated systems for building fabric and building services applications.

Insulation for Roofs, Walls & Floors

Kingspan Insulation has a vast product range including premium performance rigid Kooltherm® insulation; high performance rigid Therma® insulation; and Unidek high performance rigid extruded polystyrene insulation.



To complement the range Kingspan Insulation have developed Optim-R™, the next generation insulation solution that is up to five times more energy efficient than other commonly available insulation materials.

Kingspan Insulation products are suitable for a variety of applications including:

- pitched and flat roofs;
- tapered roofing systems;
- solid and cavity walls;
- insulated dry lining;
- timber and steel framing;
- externally insulated cladding and render systems;
- floors;
- soffits; and
- ductwork in building services applications.



Engineered Timber Systems

Kingspan Insulation offers a range of highly insulated and airtight engineered timber building fabric systems for both domestic and non-domestic buildings, with the capacity to exceed ever increasing regulatory requirements. The solutions include:

Kingspan TEK® Building System

Kingspan TEK® Building System consists of structural insulated panels (SIPs) connected with a unique jointing system for walls and roofs, and intermediate floors using I-beams or open web joists.

The Kingspan TEK® Building System creates buildings that can have extremely low levels of energy use, providing a perfect high performance building fabric solution ideal for Passivhaus design.

Factory Insulated Timber Frame Systems

Kingspan timber frame systems are widely used by developers, contractors and self-builders across the private and affordable housing market and are suitable for the construction of buildings up to six storeys high. The timber frame systems feature factory-installed high performance Kingspan insulation, helping to provide required thermal and airtightness specifications.



- www.kingspaninsulation.de
- www.kingspaninsulation.pl
- www.kingspaninsulation.cz
- www.kingspan-unidek.de

Insulated Door Components

Kingspan manufactures a wide range of insulated door panels and hardware components that are used within Industrial and Residential sectional overhead doors.

These components are incorporated into completed sectional door assemblies through approved partner organisations who provide a complete supply, installation and aftercare service package.



- www.kingspandoor.com

Environmental

Kingspan Environmental has a long history of innovation in manufacturing world-class products and offers a wide range of affordable renewable and environmental solutions.

Renewable Technologies

Solar Thermal Systems

With a choice of either Thermomax vacuum tube or Flat Plate panels, Kingspan's range of solar thermal solutions can deliver up to 70% of a building's hot water for space and water heating. In combination with Kingspan's market leading hot water storage systems, they can be supplied as total packages for building integration and user operation.

KingspanWind®

To complement the renewables range, Kingspan offers a range of wind turbine generators of up to 6 kilowatt. These compact turbines are suitable for many applications from homes, to farms and small enterprises.



Environmental Management

Liquid Storage & Dispensing Solutions

Leading the way in storage tank design and in-tank technology, Kingspan environmental management systems are without question, the market's premier liquid storage solutions:

- heating oil tanks;
- diesel dispensing tanks;
- AdBlue systems;
- potable water storage;
- recycling containers; and
- agricultural and roadway products.

Offering innovative, secure and reliable storage solutions, Kingspan environmental containers continue to be the first choice for homeowners, contractors, developers and businesses across Europe.



Water Management

Kingspan Environmental design and manufacture systems for the management of wastewater, surface water and rainwater for both domestic and commercial applications:

- sewage treatment plants;
- pumping chambers;
- fuel/oil separators;
- stormwater attenuation tanks; and
- rainwater recycling systems.

Telemetry & Monitoring Systems

The Kingspan Environmental electronics facility creates award-winning systems for a wide variety of applications including fluid monitoring, fuel dispensing and refrigeration control and datalogging.

- www.environmental.kingspan.com
- www.kingspansolar.de
- www.kingspansolar.com
- www.kingspanwind.com







Benchmark Façades Europe

Head Office: Benchmark Façades Europe, Am Schornacker 2, 46485 Wesel, Germany, Tel: +49 281 9 52 50 12
www.kingspanbenchmark.de

Benchmark Façades Hungary, 2367, Újhartyán, Horka dűlő 1. Hungary, Tel: +36 29 573 400
www.kingspanbenchmark.info

Benchmark Façades Poland, ul. Przemysłowa 20, 27-300 Lipsko, Poland, Tel: +48 48 378 3100
www.kingspanbenchmark.pl

Benchmark Façades Czech Republic, Vážní 465, Hradec Králové, 500-03, Czech Republic, Tel: +420 495 866 111
www.kingspanbenchmark.cz
