



Specialists in Roofing  
and Waterproofing

# *PermaQuik*<sup>TM</sup>

Hot Melt Bitumen Waterproofing



The Walkie Talkie building  
(20 Fenchurch Street, London)

Company Overview	4
The Correct Choice	8
Radmat Support	9
System Overview	10
System Installation	12
Typical details	14
Components and Accesories	20
Other Radmat Systems	21

## Library of Birmingham



**Radmat Building Products is an independent British company that provides exceptional building products to some of the most well- known projects in the world.**

Within the United Kingdom Radmat is best known for supplying the PermaQuik 6100 hot melt waterproofing system through a national network of Radmat approved contractors.

PermaQuik has been used in the UK for over 15 years, and across Canada and the United States for more than 40 years. The system's sustained high performance is guaranteed under Radmat's recently extended 35 year warranty.

**35 year material and labour guarantee**

**The Westfield Centre** in Shepherds Bush has one of the largest roofs ever designed in central London. With a huge choice of possible waterproofing systems, **PermaQuik** was chosen to provide the long term security necessary to protect one of the most expensive areas of retail space in the world.





**The Walkie Talkie building  
(20 Fenchurch Street, London)**

A comprehensive range of systems using Radmat's **PermaQuik**, **ParaFlex** and **EshaUniversal** roofing membranes have been installed during the creation of the landmark building, which includes a breathtaking 'Sky Garden' – one of the highest green roofs in the world.  
Architects: Raphael Viñoly



Many architects and clients have sought Radmat's well-known technical expertise in waterproofing solutions, leading to PermaQuik being specified for:

- Government buildings where exceptional reliability and longevity are key considerations, e.g. GCHQ Cheltenham, MOD Whitehall, The Treasury, City Hall, Scottish Parliament, The Home Office
- PFI hospitals and schools where long-term performance is a fundamental requirement for underpinning the client's 30 year-plus responsibilities for building performance

**PermaQuik will last the design life of the structure**

**Bloomberg European HQ** building uses **PermaQuik's Hot Melt Monolithic Waterproofing System; PQ6100, PQ2017, PQ2060/61**, an ideal solution as it combined excellent waterproofing performance with toughness, durability, flexibility and strong adhesion to a variety of substrates including zero falls.



The new **Library of Birmingham** installation used **PermaQuik PQ6100 Hot Melt Monolithic** waterproofing system, set to deliver exceptional performance befitting of the uniquely designed structure which has set a remarkably high standard for library design.



**A roofing solution that is BBA Certified to last ‘the life of the building’**

PermaQuik has been specified and used on a number of public buildings such as the Library of Birmingham (above) and the GCHQ building (below).

PermaQuik has also been used for schools and academies, and been independently assessed for performance and durability. This type of independent certification is of considerable benefit, and never more so than for the *Building Schools for Future* programme. Their documented recommendations state that the roof coverings should be independently certified to have a minimum life of 30 years.



**GCHQ building, Cheltenham**  
Beneath the central green roof at GCHQ, **PermaQuik** was specified to provide a lifetime of waterproofing security.



**Crossrail Place, Canary Wharf**

Extensive and densely planted gardens are the main feature in the roof terrace above the Cross Rail terminal, shops and restaurants. **PermaQuik** was the waterproofing choice of contractors Prater Ltd.

PermaQuik is regularly used as the waterproofing protection beneath permanent features such as green roofs. Our system has been accredited to last the lifetime of the structure; it is fully adhered, can self heal and is widely used in zero fall applications and within water retaining structures. Very few systems provide such credentials, and these attributes should always be considered a necessity when waterproofing beneath substrates that will be extremely costly to remove.

Working in conjunction with trained horticulturists, Radmat provides a wide range of systems, from standard hand-seeded biodiverse roof gardens to options with immediate visual effect such as wildflower or sedum roof blankets.

**Blue and Green roof systems that provide first-class performance**

Used extensively on and around the higher terrace and over the many podium levels, **PermaQuik** was the waterproofing choice for **Olympic Village, London**.





Used extensively on and around the higher terrace and over the many podium levels, **PermaQuik** was the waterproofing choice for **City Hall, London**.



Certificate No 97/3336

### Technical Expertise

Our technical staff are experts in waterproofing solutions and are passionate about sharing their knowledge with architects, clients and contractors through RIBA approved CPD courses. Contact Radmat on **01858 410 372** or email [techenquiries@radmat.com](mailto:techenquiries@radmat.com) for more details.



### Why PermaQuik?

Radmat has been at the forefront of the expansion of hot melt technology in Europe for the past 15 years, and in North America for the last 40 years. At Radmat we frequently work with architects, clients, main contractors, and our approved contractor network, to improve the quality of our offer. This has led to a huge growth in the use of hot melts technology. Working closely with Shell UK, Radmat have developed a blended bitumen that is workable at considerably lower temperatures, and has reduced packaging to minimise any excess site waste.

Whilst many companies may look to copy the Radmat formula, many will not succeed. Given the importance of a watertight building, PermaQuik will always be the proven solution.

### Production

The PermaQuik 6100 monolithic membrane and its associated products are fully certified for quality. With manufacturing bases for PermaQuik in Ontario Canada, and Lancashire England, we have the ability to supply our products quickly and efficiently to a worldwide list of clients. Within each region we have looked to gain independent accreditation for our products and processes. In the United Kingdom PermaQuik is independently approved by the British Board of Agrément (BBA), certificate No. 97/3336, and is now coming to its fifth issue. The certificate states that once installed PermaQuik will continue to perform and remain weathertight for the design life of the structure to which it is applied.

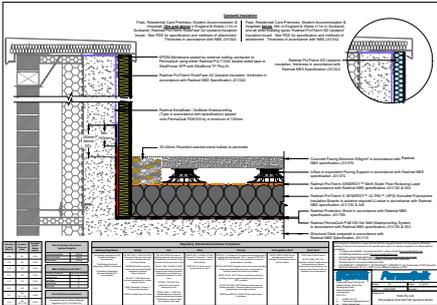
### Notable Contracts

<b>Westfield Shopping Centre</b>	The Buchan Group
<b>Scottish Parliament</b>	Enric Miralles & RMJM
<b>St Barts New Hospital</b>	HQK International
<b>Chiswick Park</b>	Richard Rogers Partnership
<b>The People Building Hemel Hempstead</b>	Fletcher Priests Architects
<b>The Deep</b>	Terry Farrell & Partners
<b>St.Mary Magdalene Academy</b>	Feilden Clegg Bradley Studios
<b>The Home Office London</b>	Terry Farrell & Partners
<b>City Hall</b>	Foster + Partners
<b>Canary Wharf BP 3 &amp; 4</b>	Terry Farrell & Partners
<b>Mossbourne Academy</b>	Richard Rogers Partnership
<b>University College London Hospital</b>	Llewellyn Davies
<b>GCHQ Cheltenham</b>	Gensler
<b>Tower Place</b>	Foster & Partners
<b>Manchester Civil Justice Centre</b>	Denton Corker Marshall
<b>New Hospital PFI</b>	Nightingale Associates
<b>Bishops Square</b>	Foster + Partners
<b>Derby New Hospital PFI</b>	Nightingale Associates
<b>MOD Headquarters Whitehall</b>	HOK International

**For instant support  
call Radmat on:  
01858 410 372**

Radmat offers extensive technical support at all stages of the construction process, enabling the development of appropriate and efficient design solutions for a wide range of building projects.

We are committed to make available first-class materials, installed by an approved list of contractors and agree designs that are both practical and cost effective.



### Detailed Design

Assistance with detailed design includes:

- CAD drawings
- Condensation analysis
- Hydraulic resistance
- Wind loadings and uplift
- Drainage fall/dispersal calculations
- NBS format specifications



### Tender Documentation

Radmat can assist with the compilation of roofing tender documentation for each building project, will provide a list of roofing contractors approved for the system and can also provide realistic cost advice at project planning stage installed PermaQuik will continue to perform and remain weathertight for the design life of the structure to which it is applied. Within Canada, PermaQuik is approved by the Canadian Government specification board (CGSB) under 37-GP-50M Standard for 'Hot applied rubberised asphalt for roofing and waterproofing'.

### Approved Contractors

The PermaQuik system is installed by a national network of Radmat contractors. These specialist trade contractors are trained and frequently monitored by Radmat technical personnel to maintain the high quality of service expected. During the design stage we either provide technical drawings and calculations for the contractors or we review and sign-off their details to ensure all elements of the build are fully checked.

### Site Visits

We provide on-site assessment of the installation process, firstly to determine that the substrate is acceptable and thereafter to ensure that the application of PermaQuik 6100 is carried out correctly and in line with our recommendations.

### Warranty

After the acceptable completion of the works, and following an independent electronic test, we will issue either a Standard or 35 year Gold single source workmanship and materials warranty.

### Data Sheets

Product, health and safety and material data sheets are available from Radmat on request or can be downloaded from our website at [www.radmat.com](http://www.radmat.com).



**PermaQuik 6100 monolithic membrane roofing system is a one part, hot applied, seamless rubberised self-healing membrane made from bitumen, natural rubbers, and a blend of polymers, further reinforced with a high tensile polyester fabric. This mix combines excellent waterproofing performance with toughness, flexibility, and strong adhesion to a variety of substrates.**



The membrane joins to form a fully sealed monolithic bond when areas of previously laid PermaQuik are lapped with new hot material. This allows the upstands to be installed first, giving other trades the ability to swiftly progress with the fabric of the building. It also enables work to stop and start as required without affecting the quality of the finished membrane. PermaQuik will even self-heal minor damage and is also designed to accept a high degree of structural movement.

PermaQuik provides the main waterproofing protection to any number of building types. Routinely specified as the preferred roofing solution, it is widely used beneath green roof installations, on ground floor plazas and in areas where long term weather tightness is a necessity.

**Seamless monolithic bond**

PermaQuik can be installed to site working temperatures of -18°C and after installation the membrane will immediately remain unaffected by rain, wind or snow. PermaQuik has been independently certified by the BBA to perform on a zero falls construction and has a durability statement of lifetime of structure.



The mixed-use development of **Principal Place**, comprising of a 15-storey office building (home to Amazon HQ) 20,000 square foot of retail space and a 50-storey luxury residential tower, used **PermaQuik** extensively throughout the development because of its durability for the brown and green roofs.

**Offers long-term protection under roof gardens**



## Benefits

- Quick and straightforward to apply
- Completely seamless to form a monolithic bond
- Water cannot track under the membrane – therefore enabling any damage to be traced quickly and easily repaired
- Adheres readily to any sound concrete, brickwork, timber or steel, and will effectively cover corners and any minor surface irregularities or protrusions
- Can be applied in temperatures down to -18°C (unlike conventional bitumen/asphalt membranes which require temperatures above freezing)
- Excellent low-temperature flexibility and adhesion characteristics
- No on-site curing time required
- When used over construction or bridging joints, without the need for specific detailing, the membrane is flexible enough to accommodate minor structural movements that are likely to occur
- Membrane interleaved with a reinforcement sheet gives triple protection to flashings/penetrations
- Once covered with a protection sheet, the waterproofed area can be immediately opened up to following trades
- Will self heal minor damage under applied loads
- Membrane functions efficiently when applied to roofs with zero falls
- Membrane has been independently assessed to last the lifetime of the structure.

Although roof areas will vary from project to project, a typical installation procedure for an inverted roof terrace is described below to illustrate the use of the PermaQuik system.

**PermaQuik** and **Texsa Root Barrier** are installed (right) on **The Forge, London**. This residential project is a mixture of **Blue** and **Green Roofs**, PermaQuik will ensure watertightness and durability to last the design life of the building.



Typical working surface



Sweep to remove debris



Apply Radmat Surface Conditioner

### Suitable Substrates

1. In situ structural concrete to BS 8110, density to be no less than 2100kg/m<sup>3</sup> and with no more than 5% moisture by volume when fully cured after a period of 14-21 days. Concrete should be wood float, wood trowelled or a similar finish but not power floated or tamped.
2. Precast concrete (structural grade)
3. Dense concrete blocks
4. Metal, timber boarding, WBP or marine plywood
5. Cement-bonded particle board
6. High-strength modified screed
7. Foamglas cellular insulation

### Concrete Substrate Preparation

Typically, the cleaning of a concrete surface will commence with a thorough sweep of all dirt and construction debris and then cleaning with a blower. Do NOT power wash with water.

All concrete surfaces must be left dry, frost free, free of voids, laitance or any other matter that may impair the high bond or performance of the membrane. Contact Radmat for advice on the effective removal of more difficult contaminants such as form-release agents or curing compounds.

The resultant surface should be uniform and lightly roughened to increase the bond achieved by the membrane.

After cleaning and any necessary repair work the concrete substrate should be primed with Radmat Surface Conditioner, a high penetration primer, spray or roller applied at the rate of 7-12m<sup>2</sup>/litre. Allow the primer to dry thoroughly. Metal, plywood and wood boarding need not be primed.



Install first layer



Apply 1st layer in 1m wide bays.



Install reinforcement layer.



Install final layer with protection sheet.



Check thickness of system.

## Application

After the concrete substrate has been primed, heat the blocks of PermaQuik 6100 in a double-lined oil or air type melter to a temperature of 150°C - 180°C and mix slowly. The application of PermaQuik should not proceed during inclement weather and rain soaked surfaces should be thoroughly dry before the first layer is applied.

The membrane should be installed on all the vertical surfaces prior to application of the horizontal surfaces. Ensure that when applied the material is returned onto the flat by a minimum of 150mm. Using a squeegee apply the first layer of membrane to the main areas of the substrate to a minimum thickness of 3mm. Work to a bay size of approximate 1m wide but allow to extend this to accommodate the 75mm overlap.

Apply PermaQuik PQ2016 fleece reinforcement, overlapped by 75mm, and brush into the membrane. Ensure there are no air pockets or creases. On the same day apply a second coat of PermaQuik to a minimum thickness of 3mm fully encapsulating the fabric reinforcement within the membrane.

A Radmat protection sheet should then be brush-rolled into the membrane surface as quickly as possible while it is still tacky and warm. All protection sheet edges should overlap by a minimum 75mm and sealed with PermaQuik. Once installed the waterproofed area can be accessed by operatives to install the subsequent coverings.

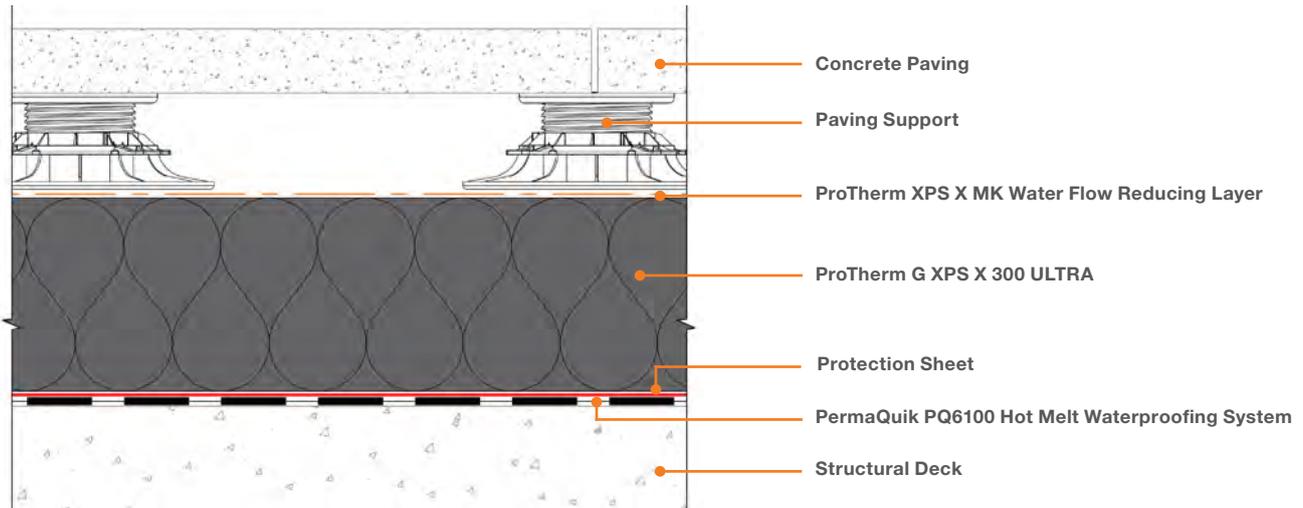
## Testing

Before the application of any insulation or covering materials the roof area should undergo either an electronic roof integrity test or a flood test. Any damaged areas will be highlighted and can be easily repaired. PermaQuik 6100 is a thermoplastic material, therefore the heat from the new material will reactivate the existing membrane to fuse both layers together, forming a monolithic barrier.

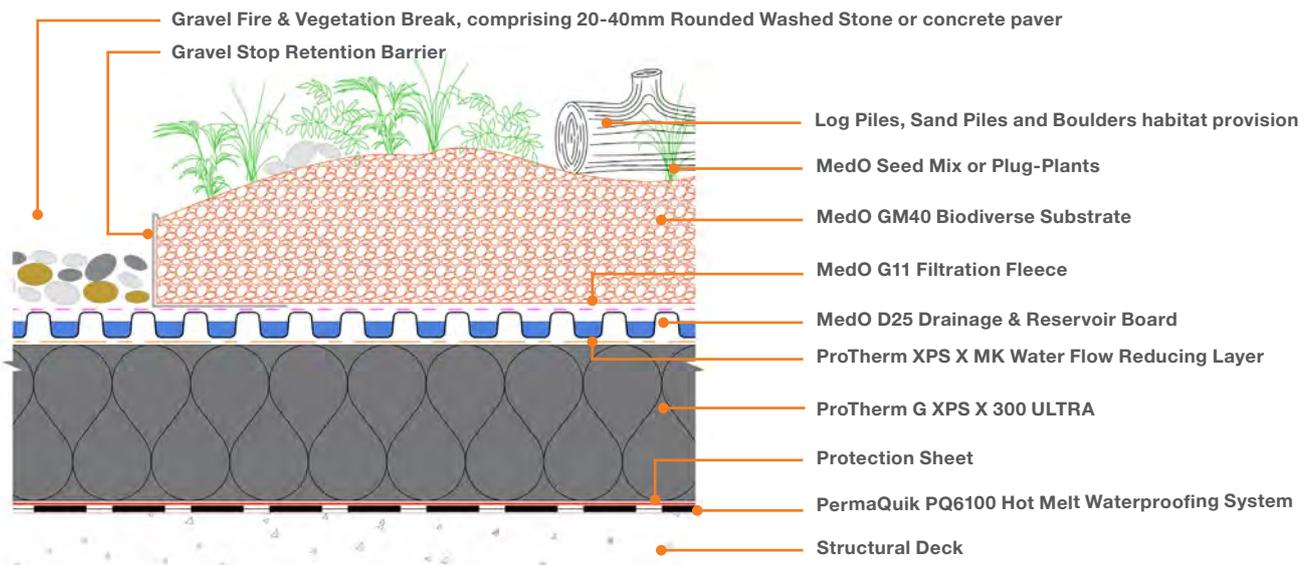
## Coverings

After the successful application of the PermaQuik membrane it can either be left exposed, provided a suitable protection layer is incorporated, or covered by insulation and a variety of materials including our MedO range of green roof systems.

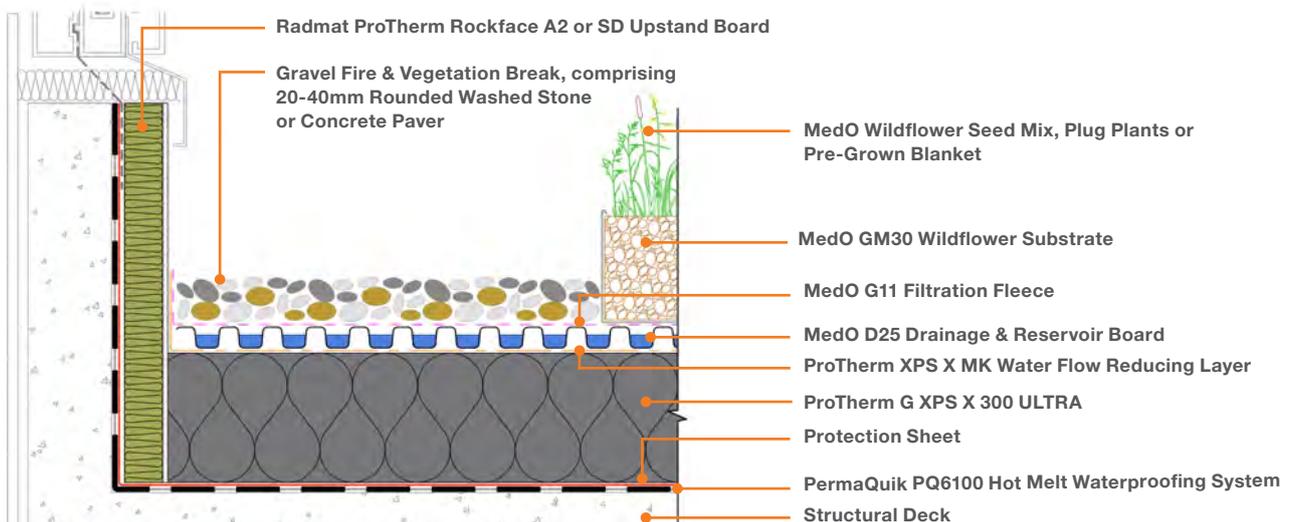
## Inverted Roof Build-up



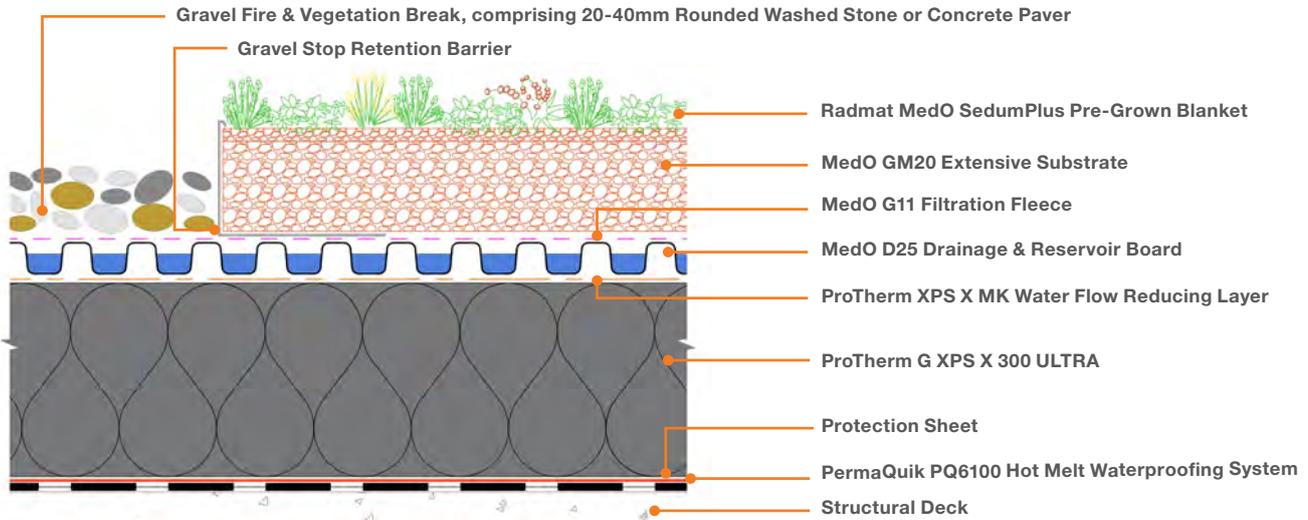
## Inverted Biodiverse Green Roof



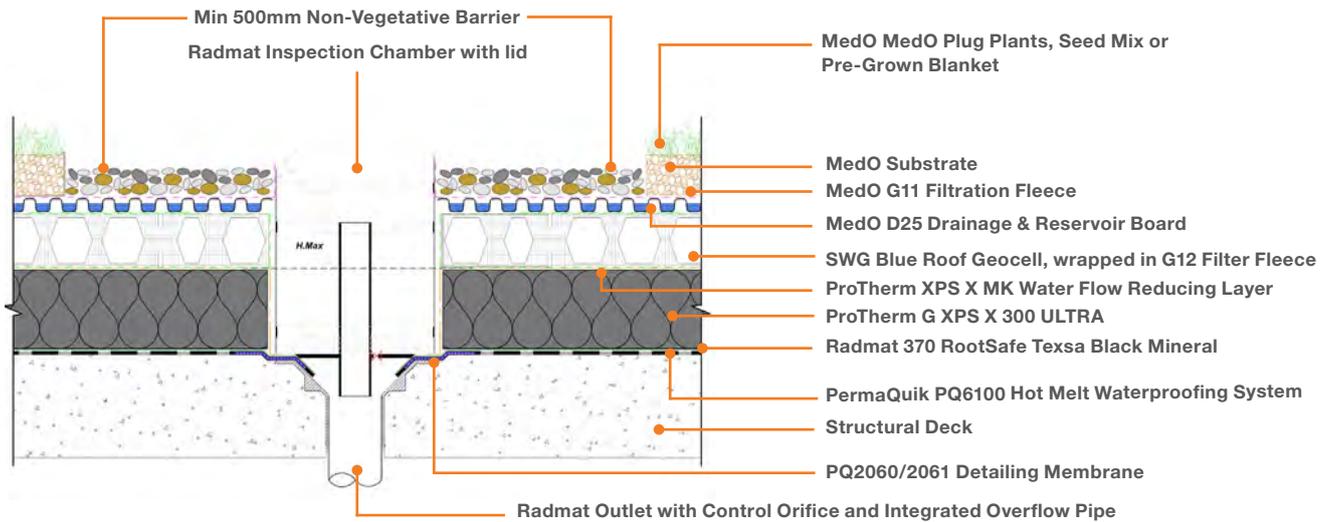
## Inverted Wildflower Green Roof (Insulated Upstand)



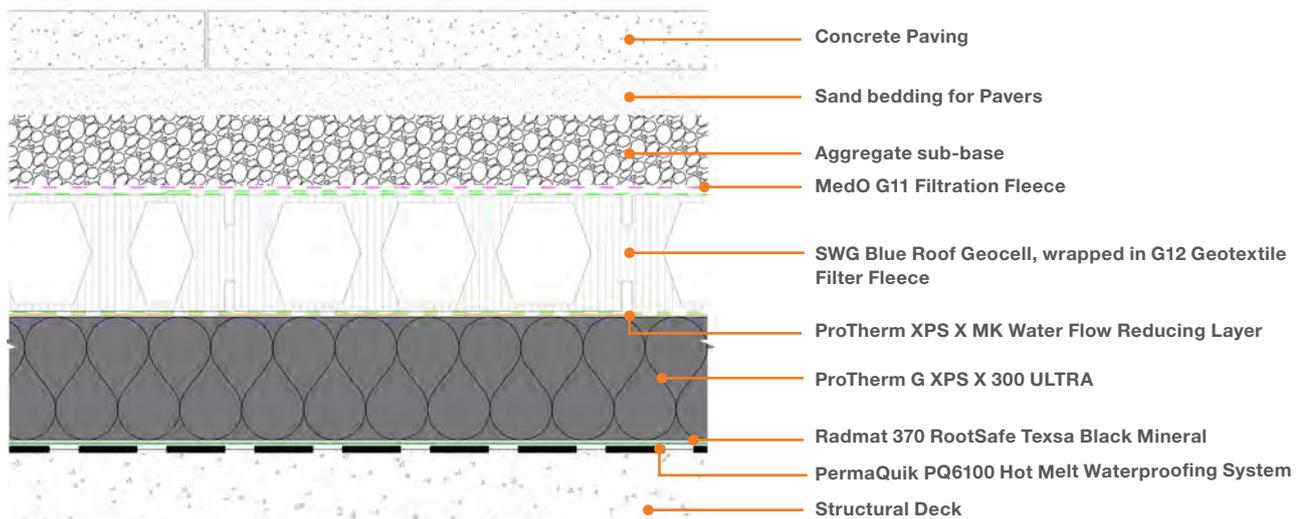
## Inverted Extensive Green Roof (Pre-grown)



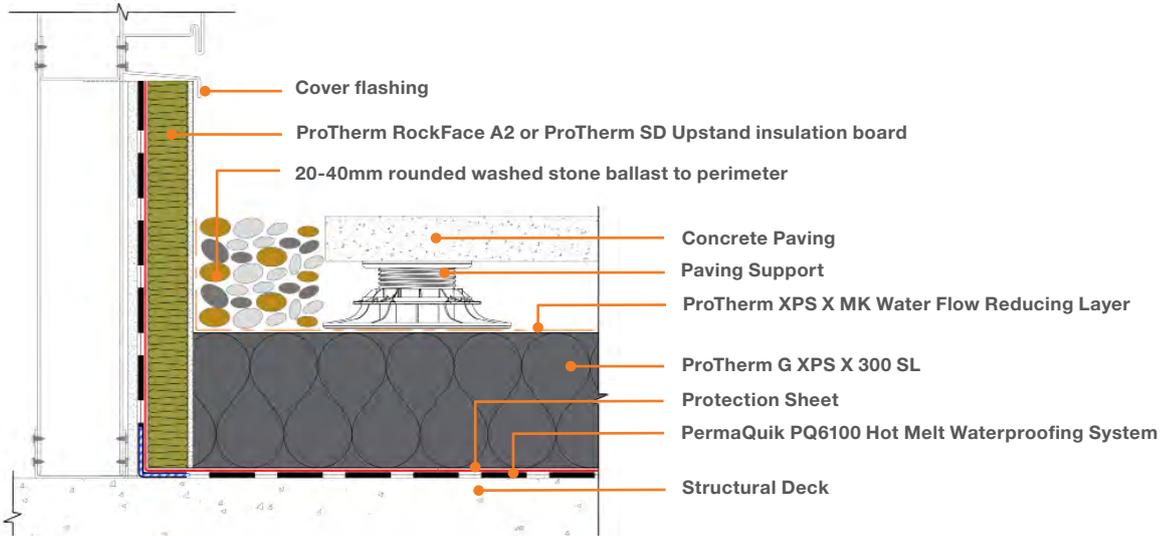
## Blue Roof Control Outlet Extensive Green Roof



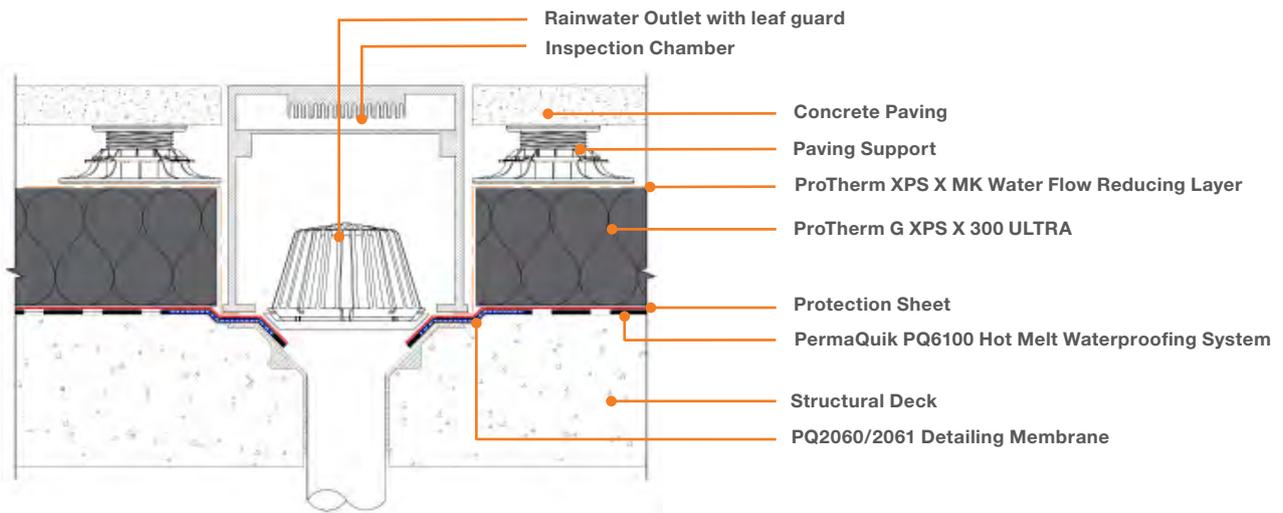
## Blue Roof Bedded Continuous Pavers



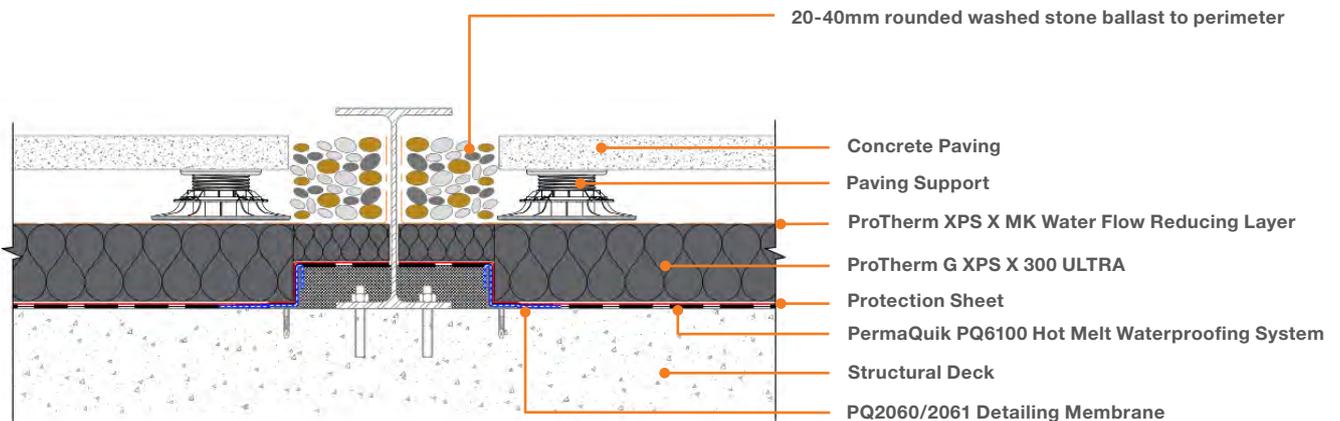
## Insulated SFS Uprand Detail



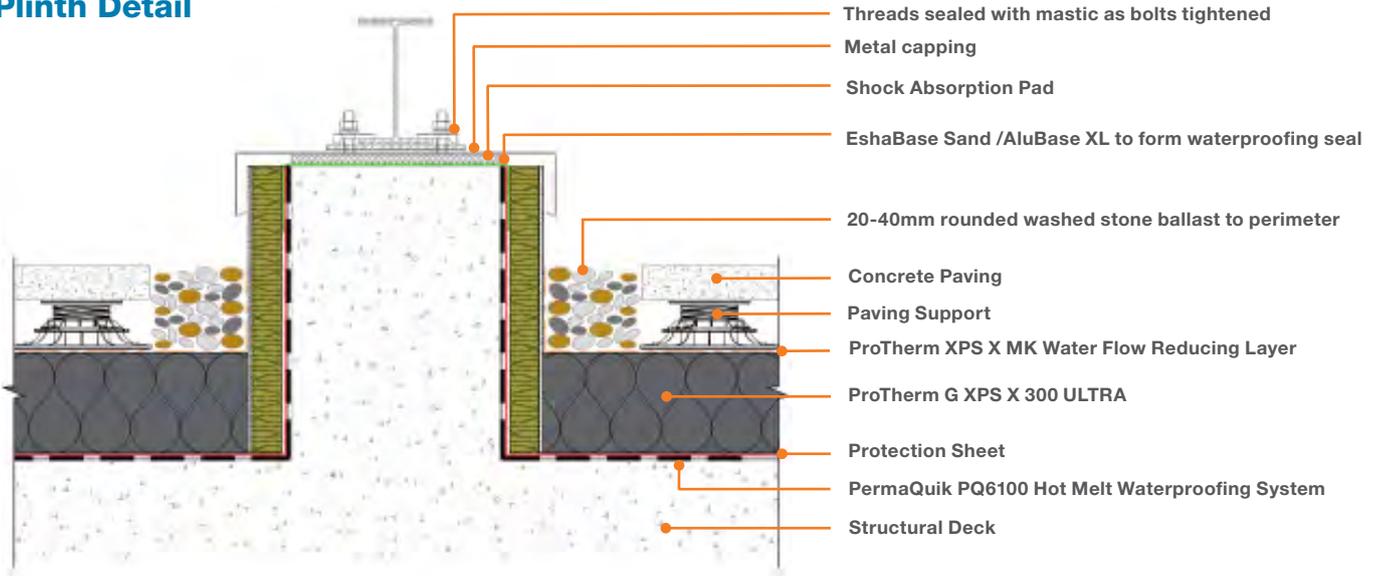
## Rainwater Outlet Details



## Pitch Pocket Details



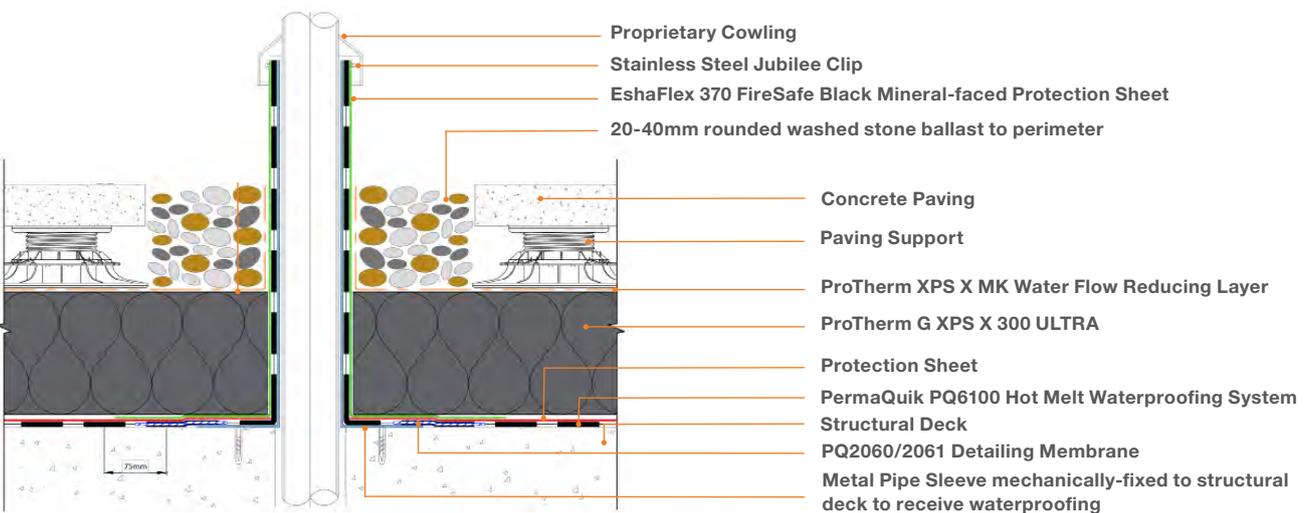
## Plinth Detail



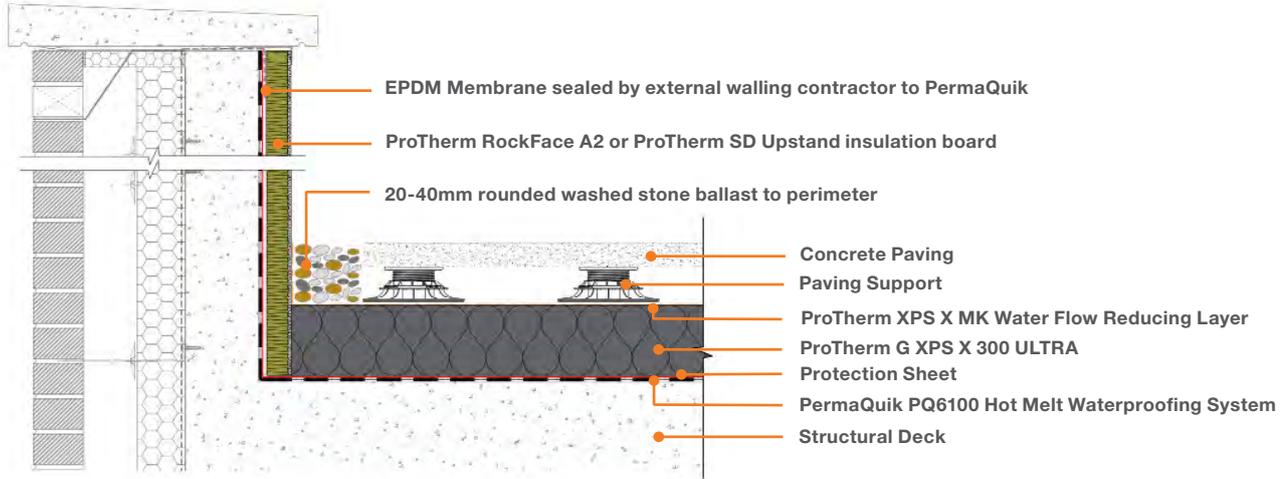
## Hot Pipe Penetration Detail



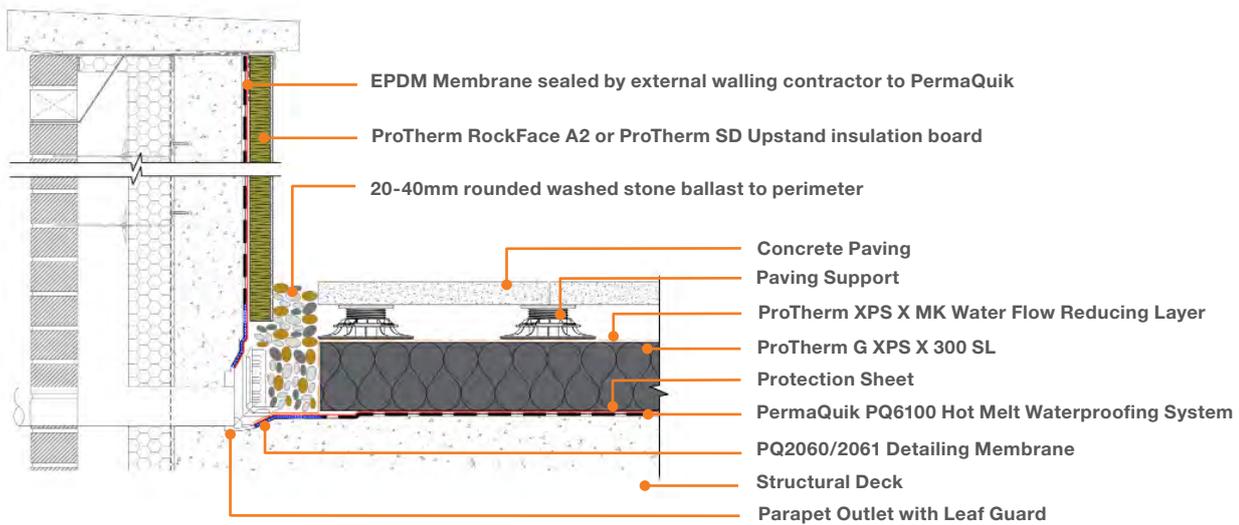
## Cold Pipe Penetration Detail



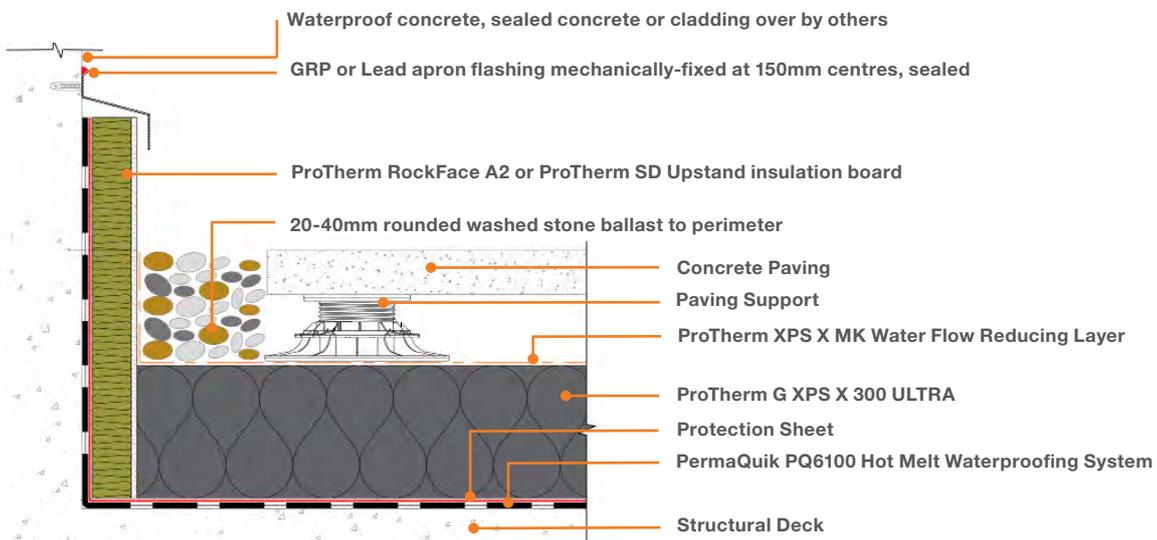
## Parapet Upstand Detail



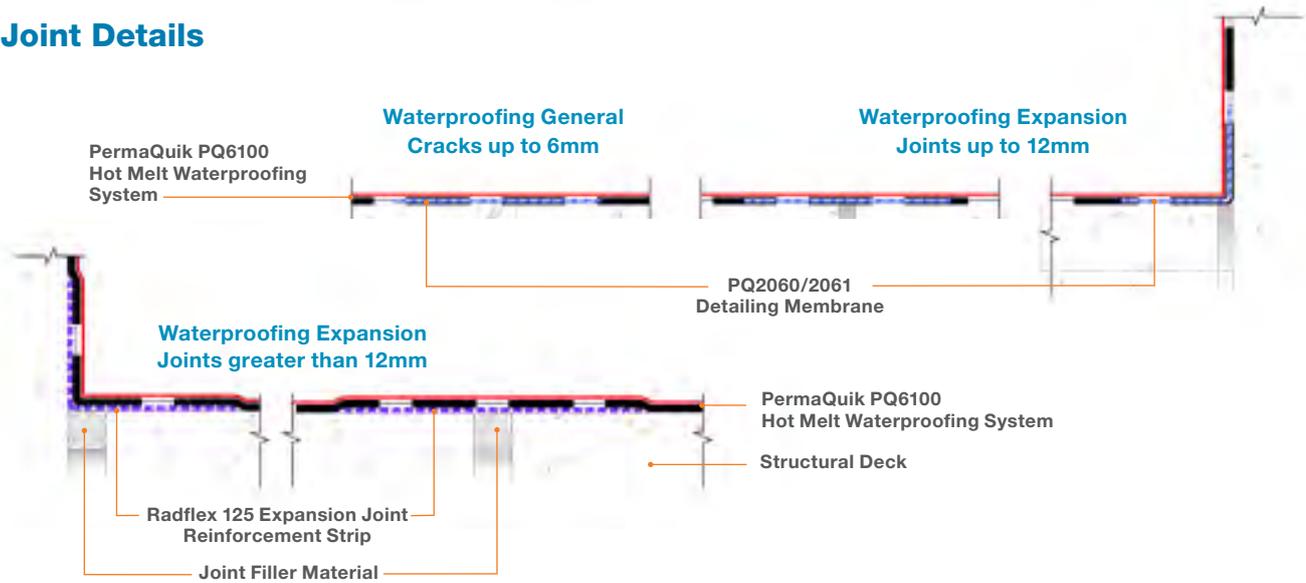
## Parapet Outlet Detail



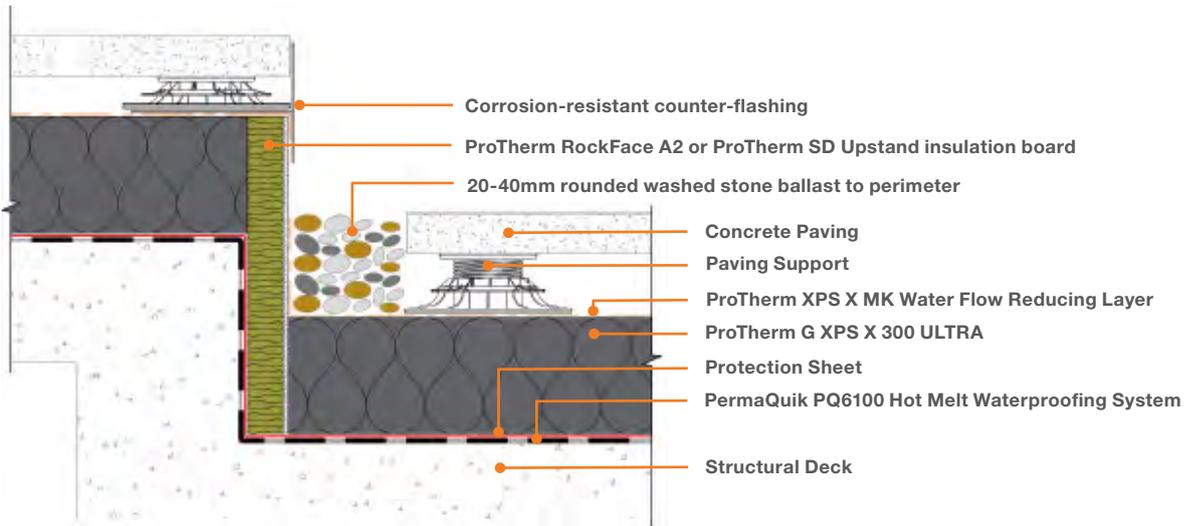
## Insulated Upstand with Termination Bar



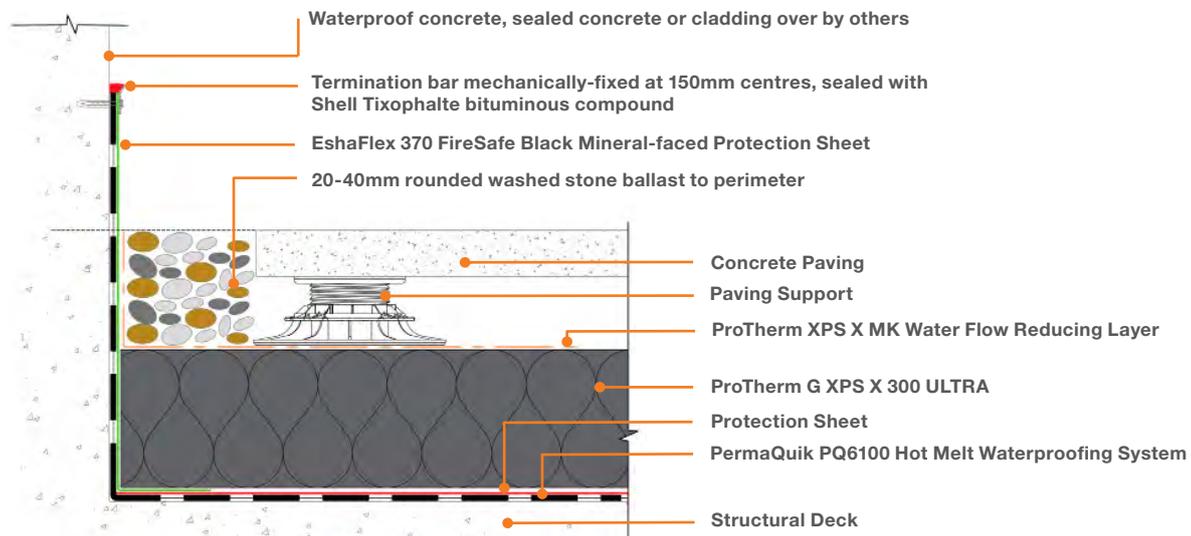
## Joint Details



## Change of Level Details



## Un-insulated Upstand with Termination Bar



<p><b>PermaQuik Monolithic Membrane PQ6100</b></p>	<p>A two-coat rubberised bitumen membrane, formulated from bitumen, natural and synthetic rubbers and fillers. Applied to an overall nominal 6mm thickness, it is used as the main waterproofing for roofing, podiums, plaza decks and under green roofs.</p>
<p><b>PermaQuik Reinforcing Fabric 2017</b></p>	<p>A lightweight polyester fabric, used as reinforcement for the PermaQuik monolithic membrane PQ 6100. It is designed to accommodate minor structural movement and shrinkage cracks.</p>
<p><b>PermaQuik Detailing Membrane PQ2060/61</b></p>	<p>Lightweight uncured neoprene rubber strip, malleable under gentle hand pressure, and used as flashing reinforcement to upstands, junctions between dissimilar materials and expansion joints.</p>
<p><b>EshaPrimer</b></p>	<p>A bitumen primer that is roller-applied to concrete surfaces to improve the adhesion of PermaQuik monolithic membrane PQ6100. EshaPrimer is a quick drying solution designed to penetrate and seal a variety of porous surfaces.</p>
<p><b>Radmat Red Primer</b></p>	<p>High penetration synthetic primer intended for use on concrete and various porous substrates.</p>
<p><b>High Bond Polymer Primer</b></p>	<p>A quick drying green synthetic rubber based primer for use with hot melt waterproofing systems designed to penetrate and seal a variety of porous surfaces including masonry, concrete, cementitious screed/renders, existing waterproofing and structural steelwork.</p>
<p><b>Radmat Standard Protection Sheet</b></p>	<p>A lightweight SBS oxidised bitumen membrane with a polyester core, used to protect the surface of the PermaQuik monolithic membrane PQ6100. Allows early foot traffic access to the roof.</p>
<p><b>Radmat PQ1800 Protection Sheet</b></p>	<p>A light duty reinforced bitumen membrane used to temporarily protect the surface of the PermaQuik PQ6100 membrane. Allows early foot traffic access to the roof. It has a bituminous glass fabric as lining and is suitable as an access sheet over PQ6100.</p>
<p><b>Radmat 370 RootSafe Texsa Black Mineral</b></p>	<p>An APP plastomeric bitumen-based waterproofing membrane, with anti-root treatment for blue/green roofing with non-woven polyester felt reinforcement. Used to protect the surface of the PermaQuik monolithic membrane.</p>
<p><b>Radmat Root Barrier P</b></p>	<p>An APP plastomeric bitumen-based waterproofing membrane, with anti-root treatment for blue/green roofing with non-woven polyester felt reinforcement. Used to protect the surface of the PermaQuik monolithic membrane.</p>
<p><b>PQ-T1520 Double Sided Sealing Tape</b></p>	<p>A double sided butyl rubber adhesive compound that provides an effective means of sealing and jointing EPDM membranes glass, steel, Plexiglas, polycarbonate, wood, aluminium, PVC and many other construction materials to PermaQuik PQ6100.</p>
<p><b>EshaFlex 370 Plain</b></p>	<p>A UV stable SBS modified elastomeric bitumen felt reinforced with a polyester fabric, used to protect the surface of the PermaQuik monolithic membrane PQ 6100. It is highly resistant to puncturing, has excellent tensile strength, is extremely flexible, and with slate grey granules, provides an aesthetically attractive roof appearance.</p>
<p><b>Protherm XPS X MK Water Flow Reducing Layer</b></p>	<p>A water vapour permeable membrane installed over extruded polystyrene insulation that allows the overall depth to be reduced without loss of performance.</p>
<p><b>ProTherm G XPS X 300 ULTRA</b></p>	<p>The thinnest available XPS for inverted roofs. A unique rigid, closed cell, extruded polystyrene board with integral high density skin.</p>

## ProTherm G XPS X 300/500/700 SL

Unique rigid, closed cell, extruded polystyrene board with integral high density skin. Zero Ozone Depletion Potential and a Global Warming Potential (GWP) of less than 5.

## ProTherm Quantum® PLUS+

VIP Inverted Roof Insulation. State of the art Vacuum Insulation Panels allowing the thinnest possible construction.

## ProTherm FOAMGLAS® INVATHERM™

Engineered to meet the demand for a Class A1 inverted roof insulation board for use on roofs, roof terraces and balconies. Suitable for use with any inverted roof waterproofing membrane including hot melt, liquid applied, reinforced bitumen membrane or single ply membrane.

## ProTherm SD Upstand Board

Used to thermally insulate and protect upstand walls in inverted flat roof systems. Manufactured from a CO2 blown extruded polystyrene foam factory laminated to a 6mm thick weather resistant high impact facing board.

## ProTherm RockFace A2

VIP Inverted Roof Insulation. State of the art Vacuum Insulation Panels allowing the thinnest possible construction.

## Blue Roof Geocells

Manufactured from Polypropylene, SWB/G Geocells are load bearing modular units, providing attenuation as part of a Blue Roof system that is designed to manage and control incident rainfall at a rate in line with the SuDS strategy or the attenuation requirements for a development.

## MedO DM10HD Drainage Element

Radmat DM10HD is a high-density drainage element for roof and podium areas requiring vehicular access or high volumes of pedestrian access, including motorised wheelchairs and mobility scooters.

## MedO DM12 Drainage Board

Radmat DM12 is a drainage board consisting of a non woven needle punched geotextile filter layer thermally bonded to one side of a 1.2mm deep HDPE (High Density Polyethylene) cuspatated core. DM12 is effectively impermeable one side. The textile filter has a flap extending beyond the core on one edge.

## MedO DCM25 Drainage Board

Radmat DCM25 is a heavy duty drainage element with incorporated protection properties for the use in intensive green roof applications or in hard landscape applications.

For the new **Scottish Parliament**, specifying the correct waterproof membrane for this unique building was of utmost importance for Enric Miralles & RMJM. *PermaQuik* was chosen for its proven track record. *PermaQuik* was also widely used beneath the intensive green roofs of the buildings.



**Call 01858 410 372  
for instant help or more  
information or visit:  
[www.radmat.com](http://www.radmat.com)**

**Radmat has a range of systems that can be used in isolation or integrated with PermaQuik.**

**Blue Roof System** – SWB Blue Roof Geocells provides attenuation as part of a Blue Roof system that is designed to manage and control incident rainfall at a rate in line with the SuDS strategy or the attenuation requirements for a development.



**MedO** Green Roof System



**The Forge, London.**  
**Blue Roof** Attenuation System



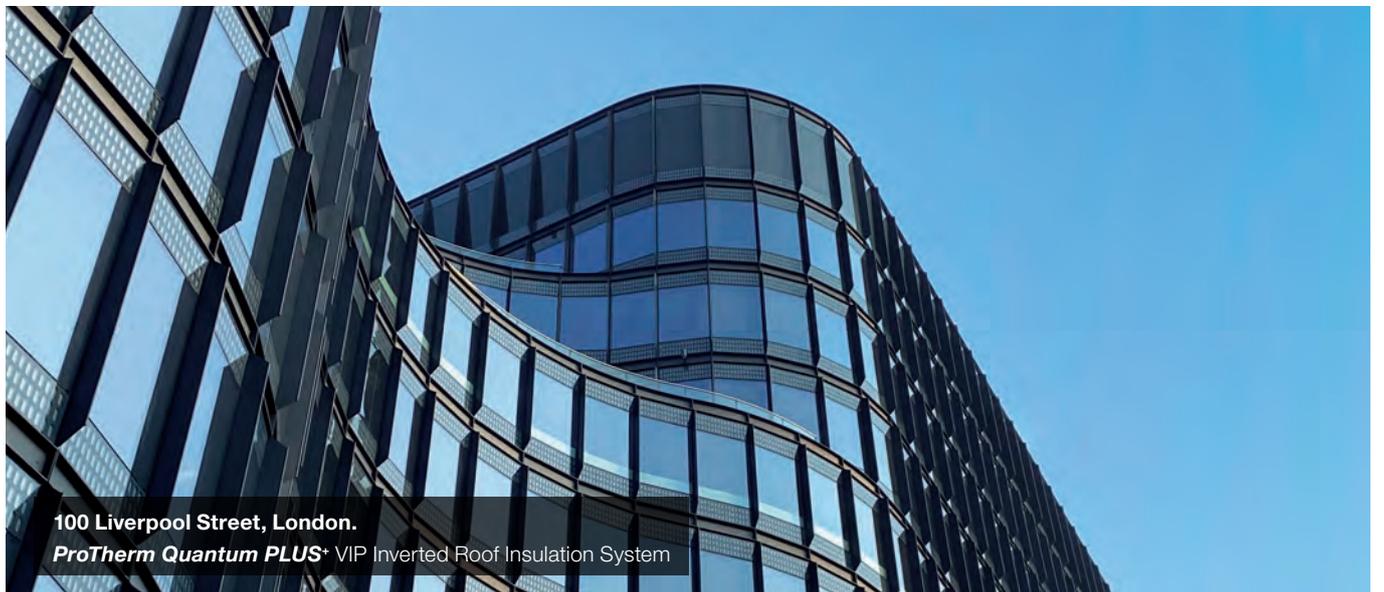
**ParaFlex** Cold Applied System

**ParaFlex** – a cold applied liquid resin waterproofing system that has unique fast-curing properties and can be laid at temperatures as low as -5°C.

**MedO** – our green roof solution suitable for extensive, semi-intensive, intensive and biodiverse green roofing systems.

**For technical assistance  
please email:  
[techenquiries@radmat.com](mailto:techenquiries@radmat.com)**

**ProTherm Quantum® PLUS+** – VIP inverted roof insulation. An innovative insulation system that can revolutionise a construction build. With a dramatic reduction in depth and no loss of thermal performance.



**100 Liverpool Street, London.**  
**ProTherm Quantum PLUS+** VIP Inverted Roof Insulation System



Sky Garden, Walkie Talkie, London  
Architects: Rafael Viñoly



**Radmat Building Products Ltd**  
Holland House, Valley Way, Rockingham Road,  
Market Harborough, Leicestershire, LE16 7PS.  
T : 01858 410 372  
E : [tech enquiries@radmat.com](mailto:tech enquiries@radmat.com)  
W : [www.radmat.com](http://www.radmat.com)



This information given in good faith being based on the latest knowledge available to Radmat Building Products Ltd. Whilst every effort has been made to ensure that the contents of the publication are current while going to press, customers are advised that products, techniques and codes of practice are under constant review and liable to change without notice.

For further information on Radmat products and services please contact us. [www.radmat.com](http://www.radmat.com)

© 2021 Radmat Building Products Ltd | All rights reserved | All trademarks acknowledged.