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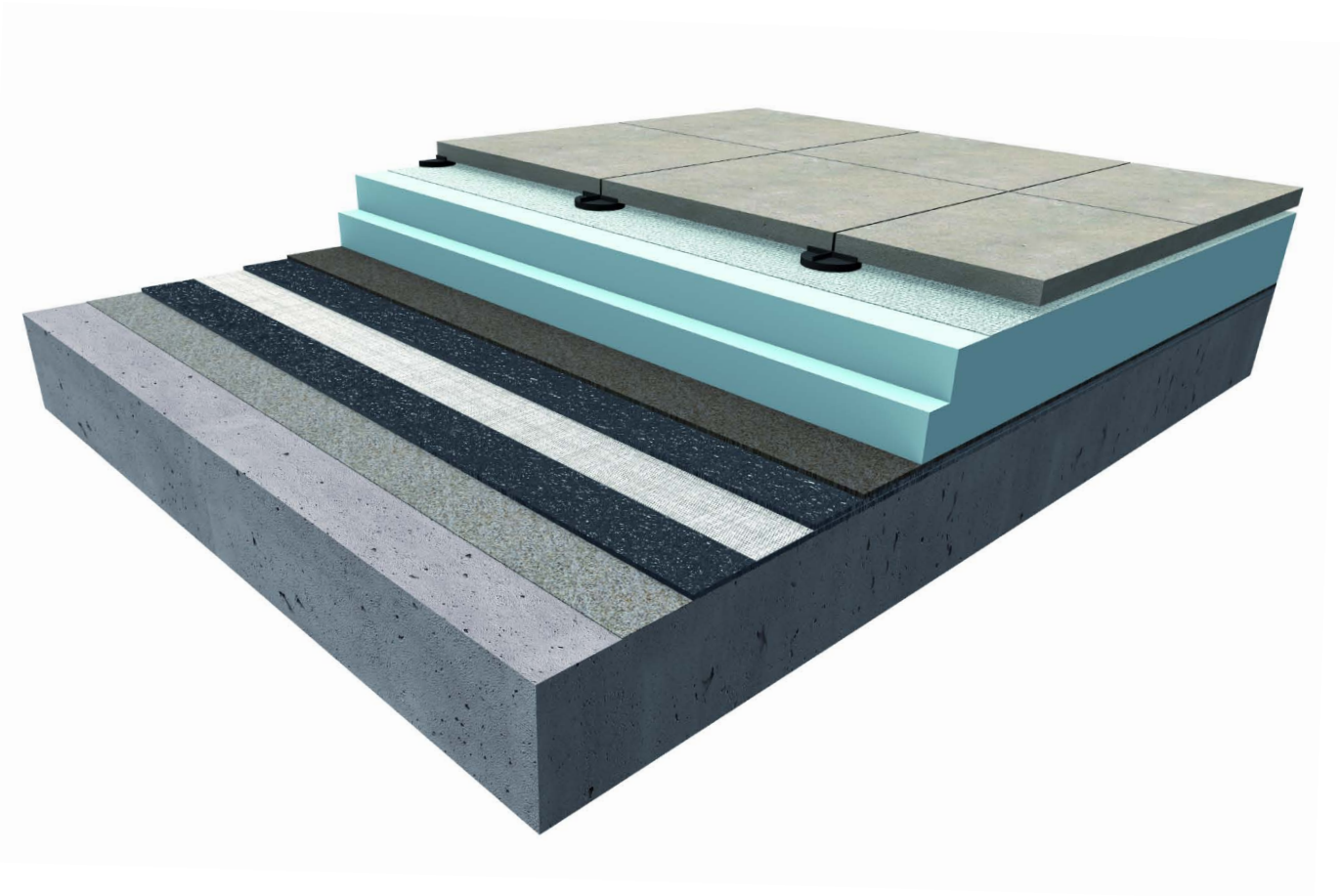
PermaQuik

Hot melt bitumen waterproofing







Radmat building products

COMPANY OVERVIEW

Contents

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.

Paternoster Square and the surrounding buildings are completely protected with PermaQuik 6100.

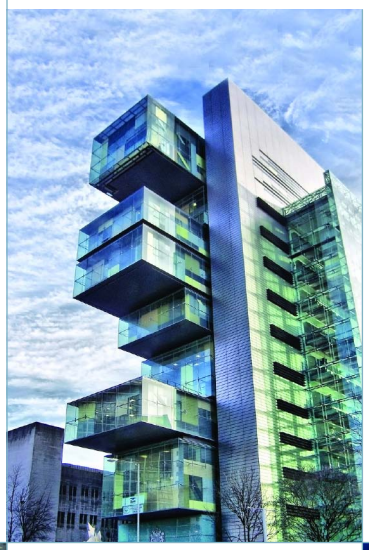
Foster & Partners selected PermaQuik for 51 Lime Street to protect the roof and terraces on the 23rd and 16th floor.

On the Dynamic Earth Centre, PermaQuik was specified to give the client a lasting watertight barrier for the underlying structure.

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.

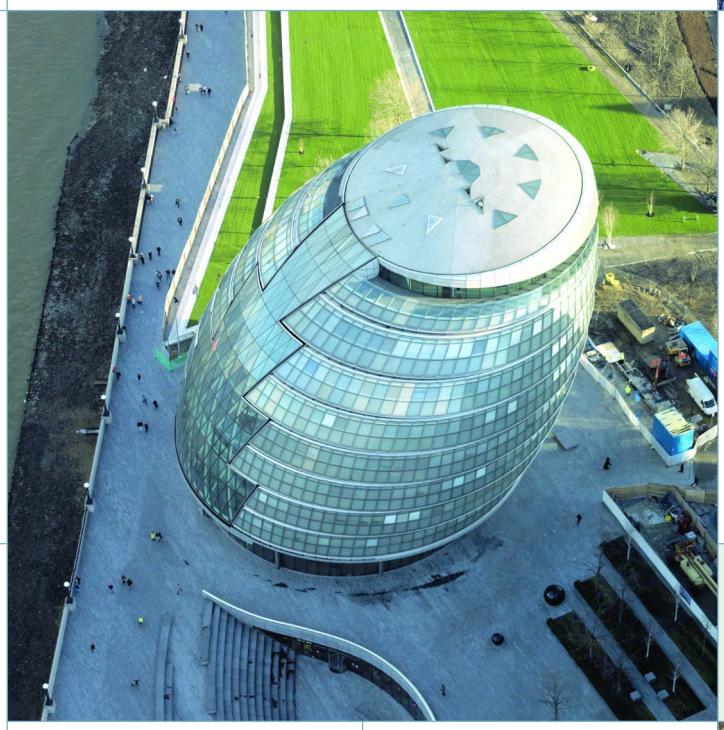
Many architects and clients have sought Radmat's well-known technical expertise in waterproofing solutions, leading to PermaQuik being specified for:

- 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



Specified by Denton Corker Marshall, PermaQuik was laid to zero falls on the award winning Manchester Civil Justice Centre.

Image courtesy of Tom Blackwell



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

Specified on a number of business headquarters, Radmat has supplied over 200,000m^2 of PermaQuik for a variety of roofs and podium decks at Canary Wharf.

PermaQuik will last the design life of the structure

PermaQuik has been chosen to waterproof many key buildings at the homes of legendary sporting events, from the Centre Court at Wimbledon to the roof of the new Ascot racecourse.

35 year material and labour guarantee

COMPANY OVERVIEW

PermaQuik has been specified and used on a number of 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.

"BSF will provide world class learning environments to inspire and engage young minds."

The Prime Minister, Gordon Brown

The new St Mary Magdalene Academy used PermaQuik as the critical watertight barrier prior to the installation of brown roofs, play areas and a rooftop multi-use games surface.

partnerships for schools

building schools for the future

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

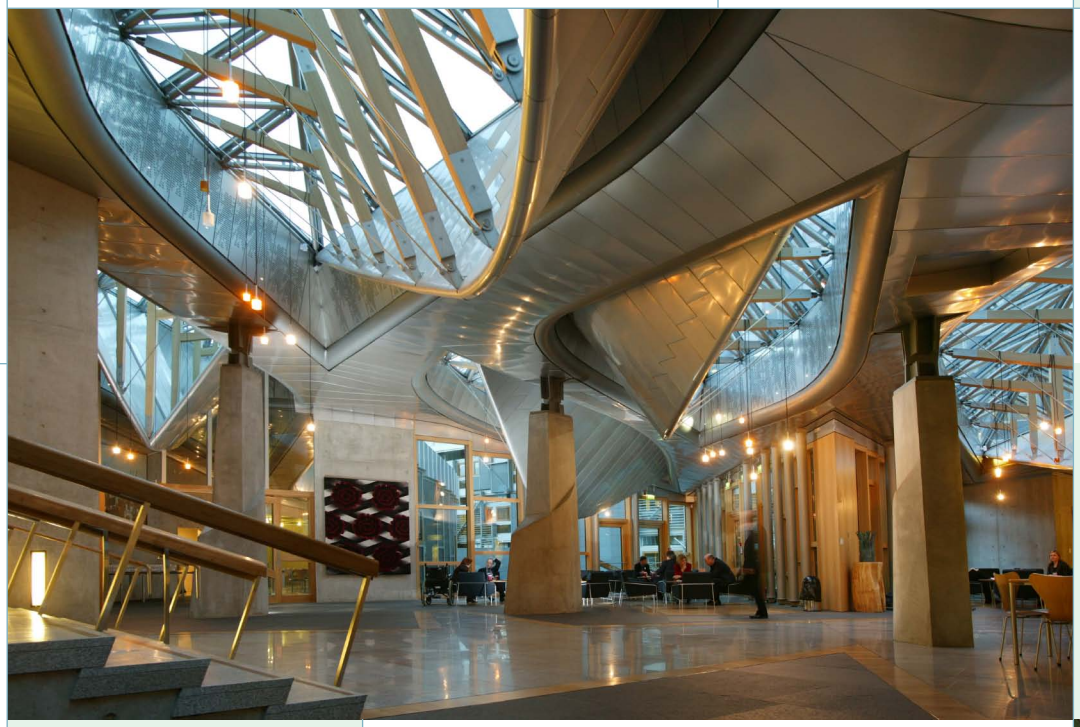
The University College London Hospital was one of many healthcare buildings to request PermaQuik for its proven ability to give a permanent watertight structure.

Kohn Pedersen Fox specified PermaQuik to meet their requirements of longevity and reliability on the development of the imposing London headquarters for Unilever.

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.

PermaQuik was used on The Deep, a spectacular award winning aquarium designed by the Terry Farrell Partnership.



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 Scottish Parliament buildings.

Images© Scottish Parliamentary Corporate Body - 2009

Green roof systems that provide first-class performance

THE CORRECT CHOICE

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.

Manufactured in the United Kingdom

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 Agrement (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.

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'.

BBA APPROVAL INSPECTION TESTING CERTIFICATION

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 direct on 01293 537907 for more details.

CPD certified

RIBA · CPD ASSESSED MATERIAL ·

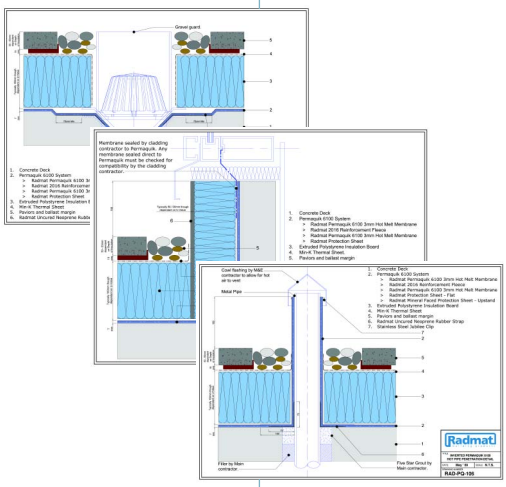
Notable Contracts

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

RADMAT SUPPORT

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
- Thermal calculations
- 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.

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

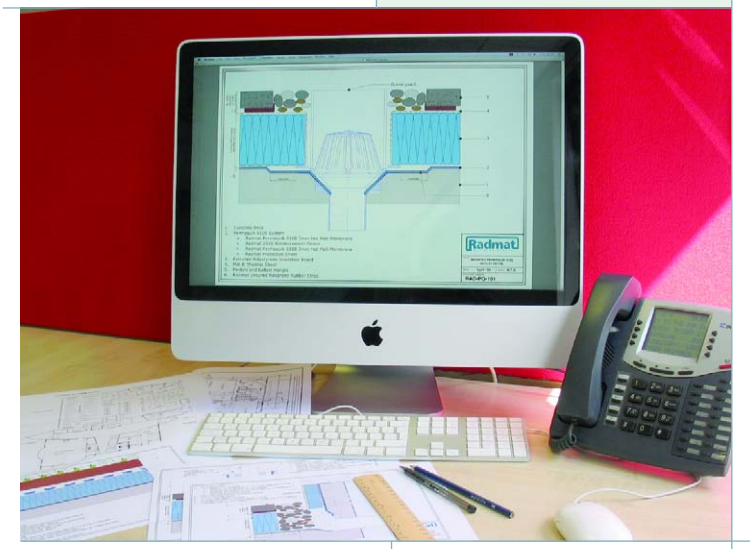
After the acceptable completion of the works, and following an independent electronic test, we will issue either a Standard or 35 year Gold single source workmanship and materials warranty.

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.

NBSPlus

For instant support call 01293 537907



SYSTEM OVERVIEW

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.

The system is made up of an initial surface conditioner followed by a 3mm first coat of PermaQuik. A polyester reinforcement fleece is then embedded into this followed again by a final 3mm top coat which is subsequently covered by a protective layer to complete the system.

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 Midcity Place took inspiration from the car industry to increase production efficiency. Bovis Lend Lease used PermaQuik as the preferred waterproofing solution.

Copyright Stanhope PLC by Hufton+Crowe

Wilkinson Eyre used PermaQuik to provide the waterproofing necessary to achieve a 'lifetime's security' for the Empress Building.

Offers long-term protection under roof gardens

On 1 Bishops Square Permaquik was specified as the correct waterproofing system to be used beneath the various roof and ground coverings, including a spectacular green roof system.

No on-site curing time required

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

SYSTEM INSTALLATION

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.

Suitable Substrates

Suitable substrates include:

1. In situ structural concrete to BS 8110, density to be no less than 2100kg/m^3 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^2/litre. Allow the primer to dry thoroughly. Metal, plywood and wood boarding need not be primed.

Typical working surface.

Sweep to remove debris.

Apply Radmat Surface Conditioner.

Install first layer.

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.

Apply in 1m wide bays.

Install reinforcement layer.

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.

Install final layer with protection sheet.

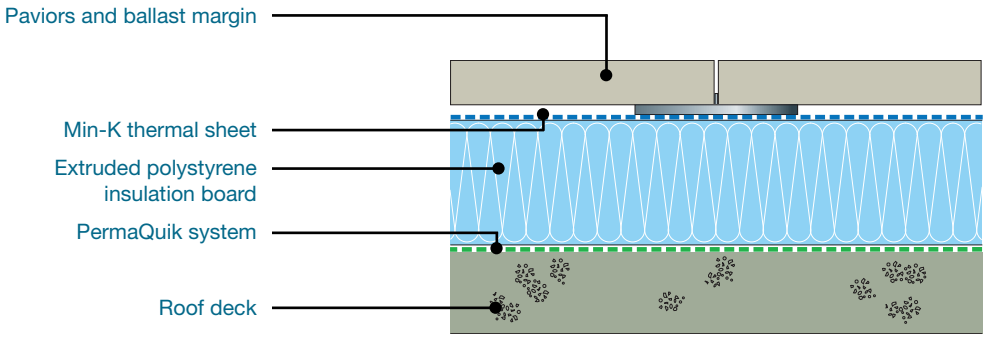
Covering Materials

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.

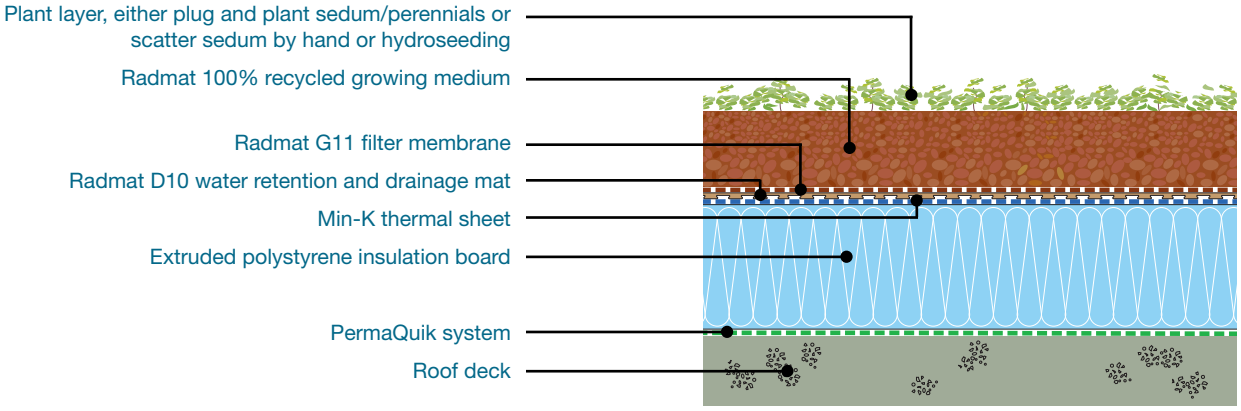
Check thickness of system.

TYPICAL DETAILS

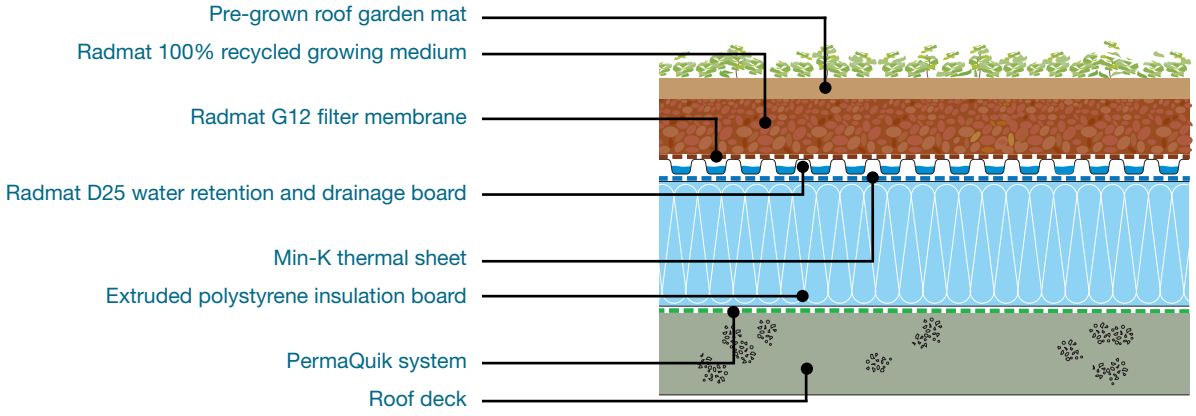
Inverted Roof Build Up



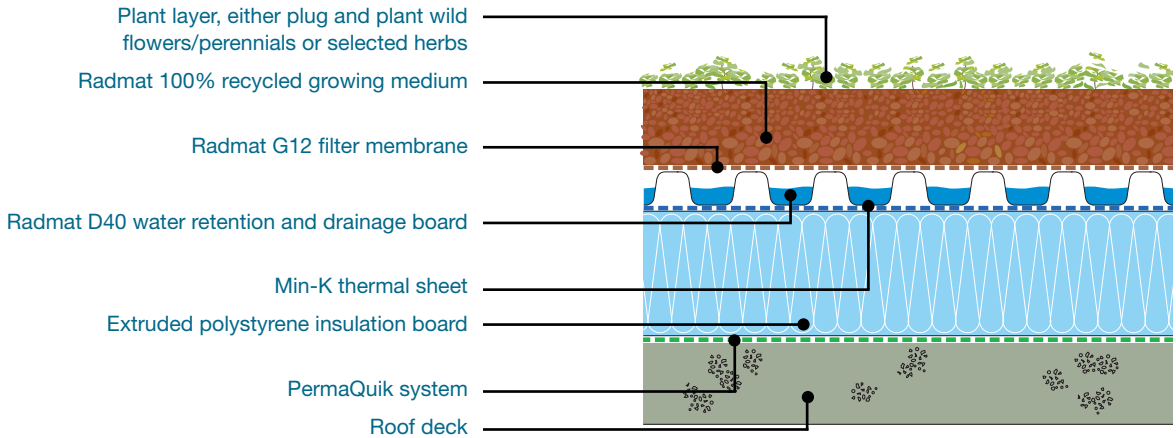
Brown Biodiverse Green Roof



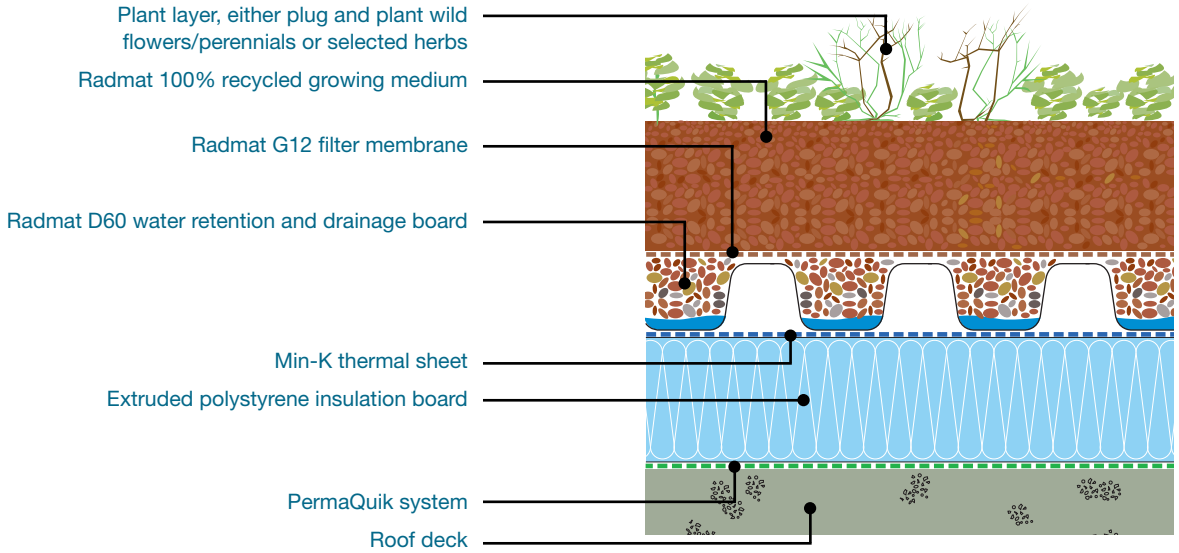
Pre-Grown Green Roof
(wildflower or sedum roof garden mat)



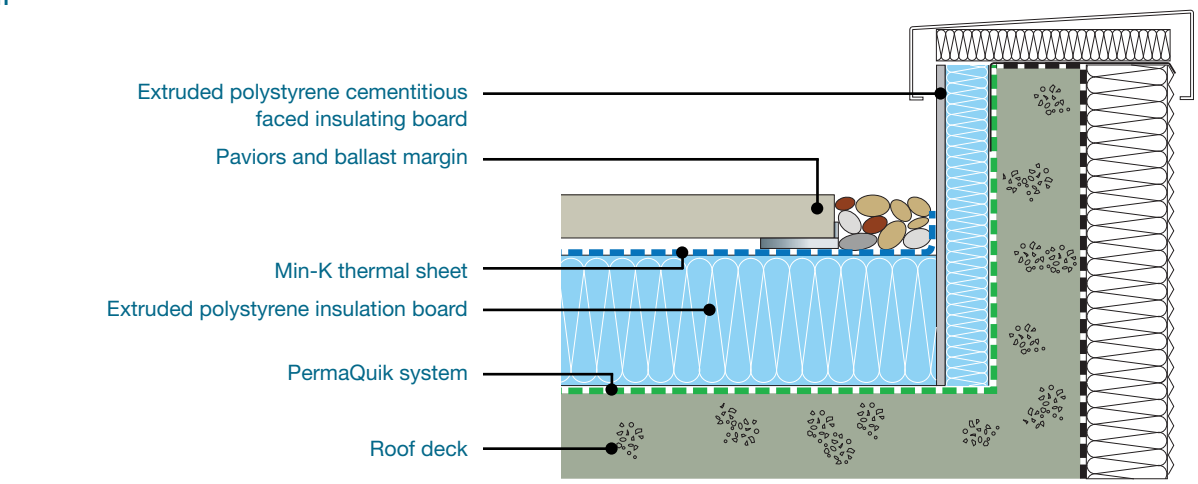
Semi-Intensive Green Roof



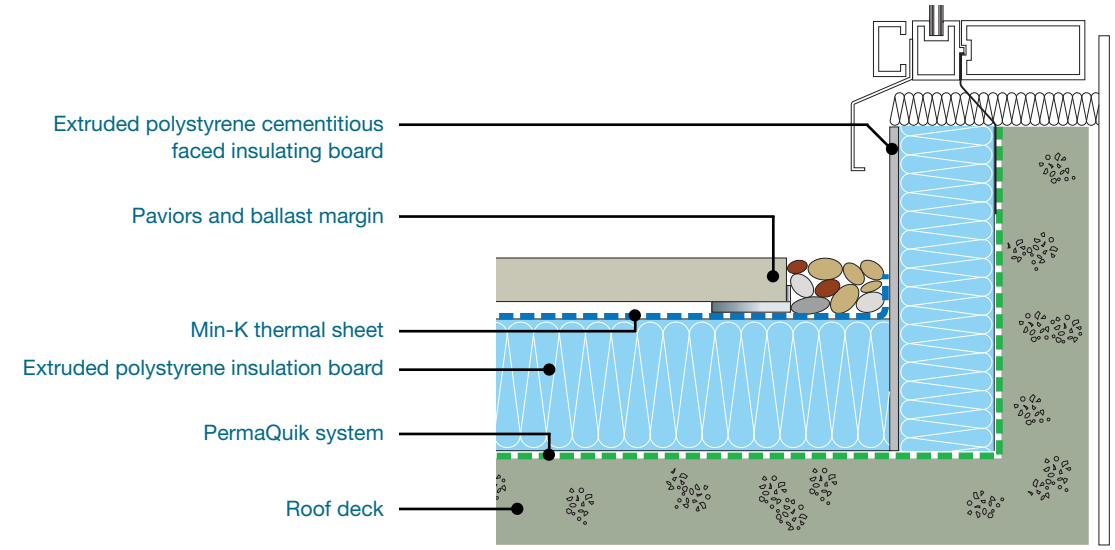
Intensive Green Roof



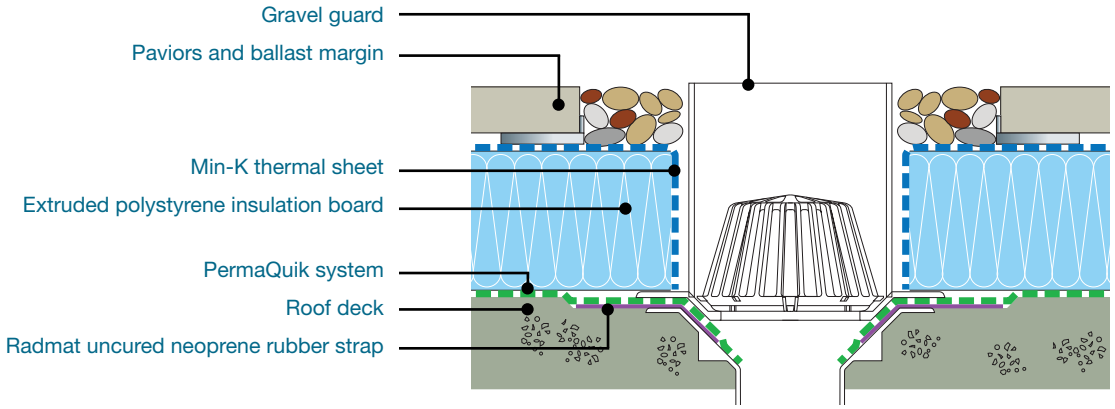
Parapet Detail



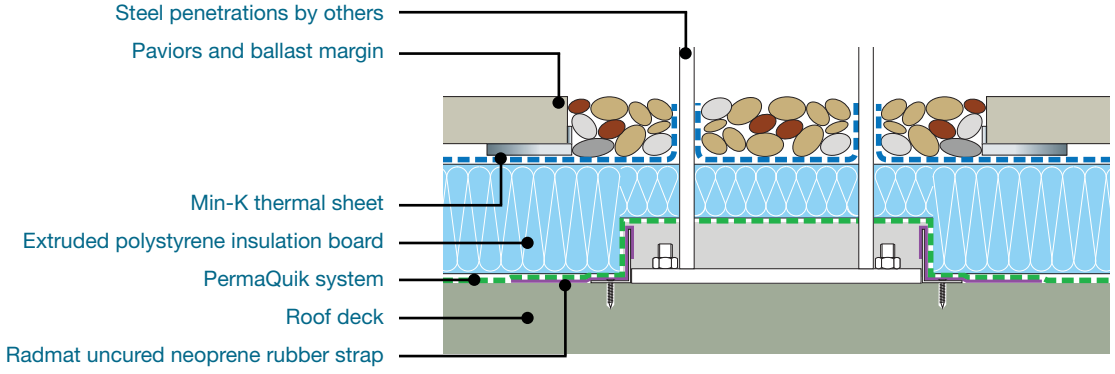
Upstand Detail



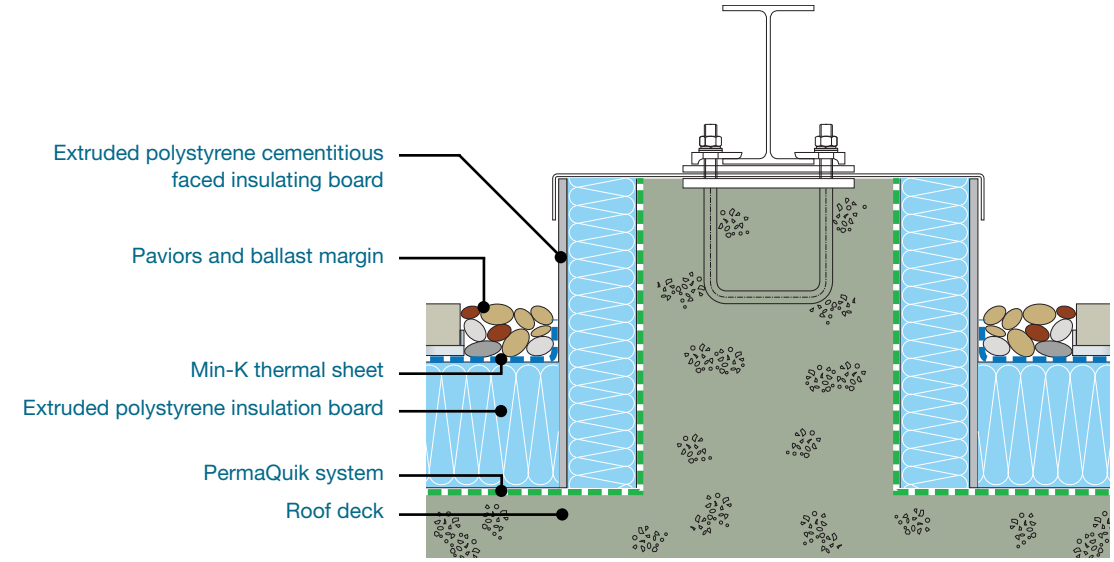
Outlet Details



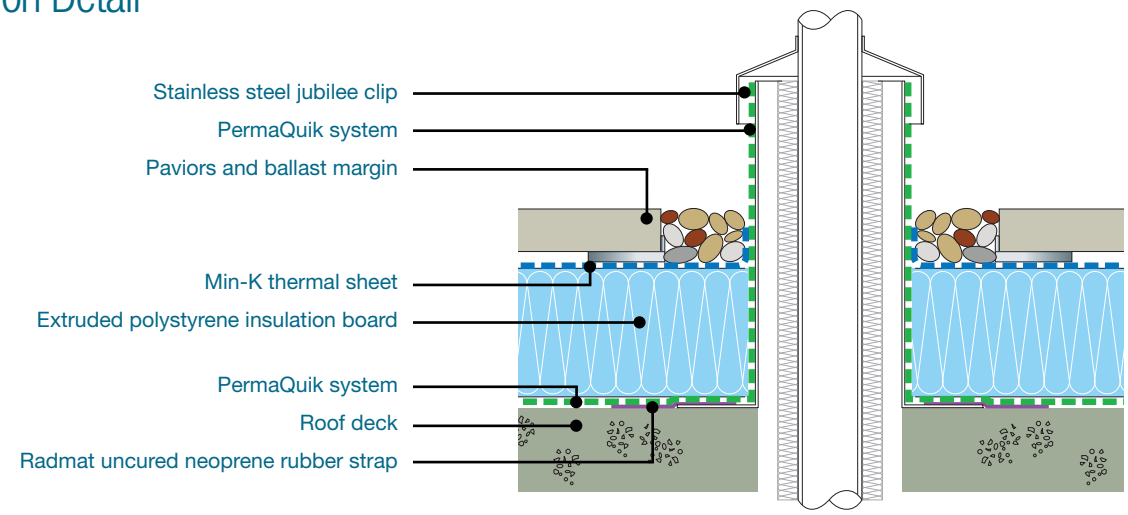
Pitch Pocket Details



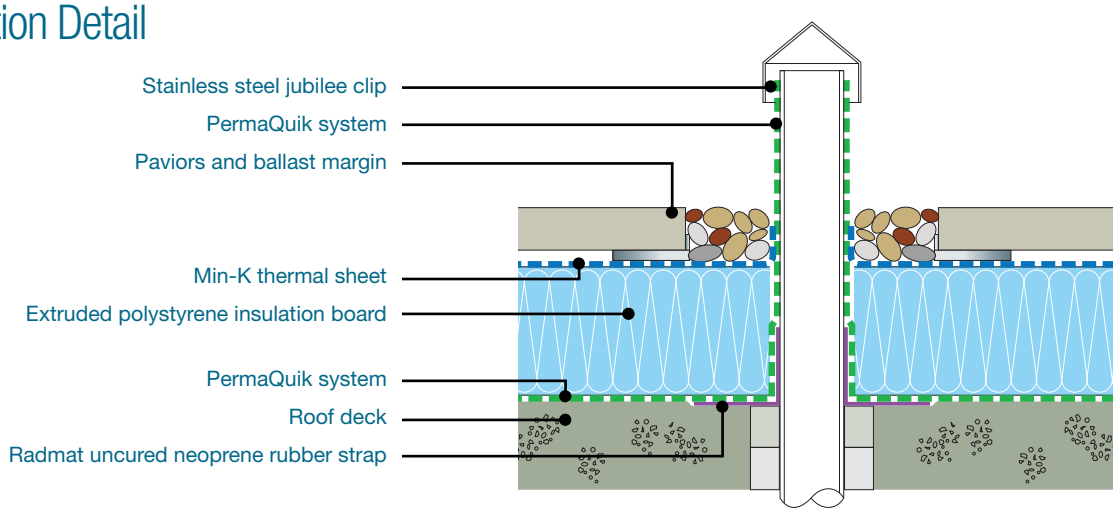
Plinth Detail



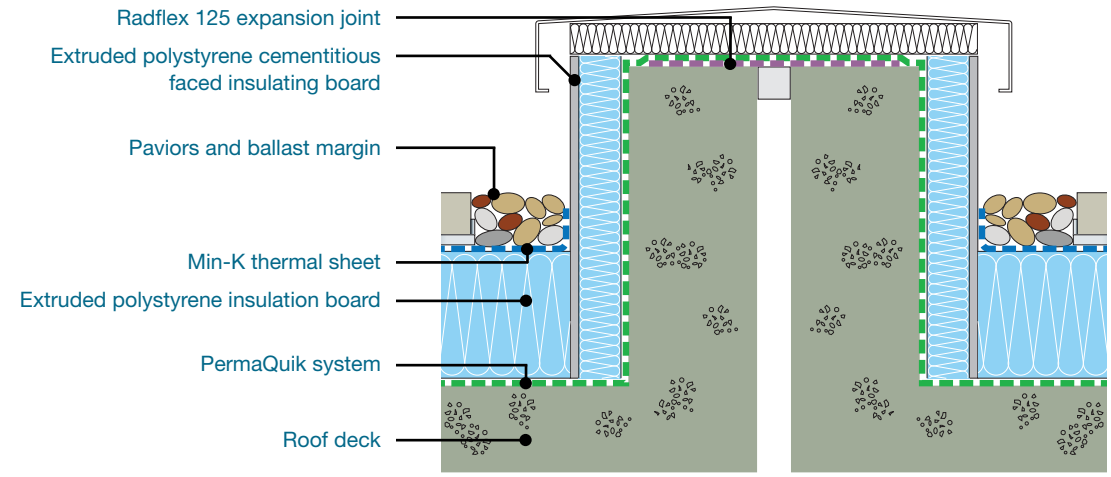
Hot Pipe Penetration Detail



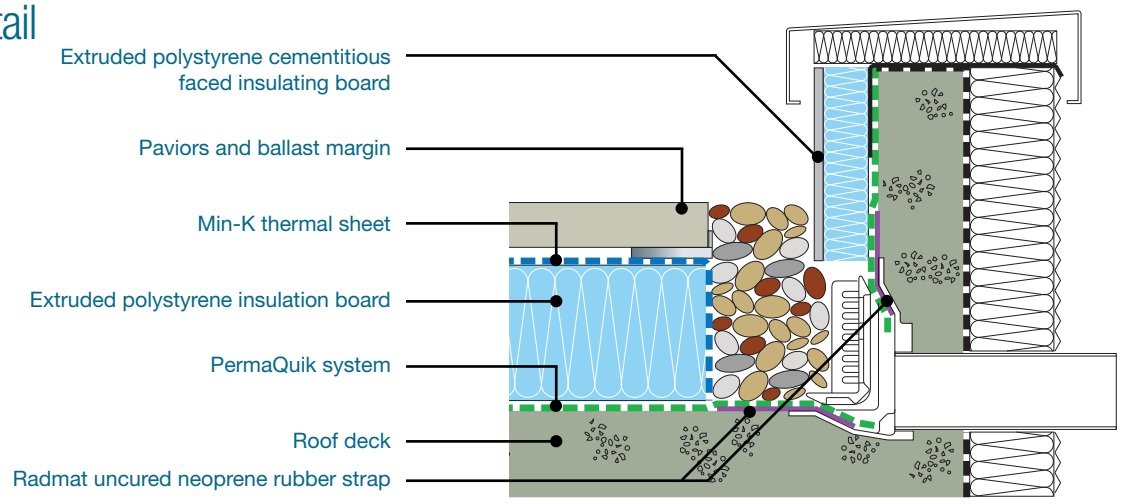
Cold Pipe Penetration Detail



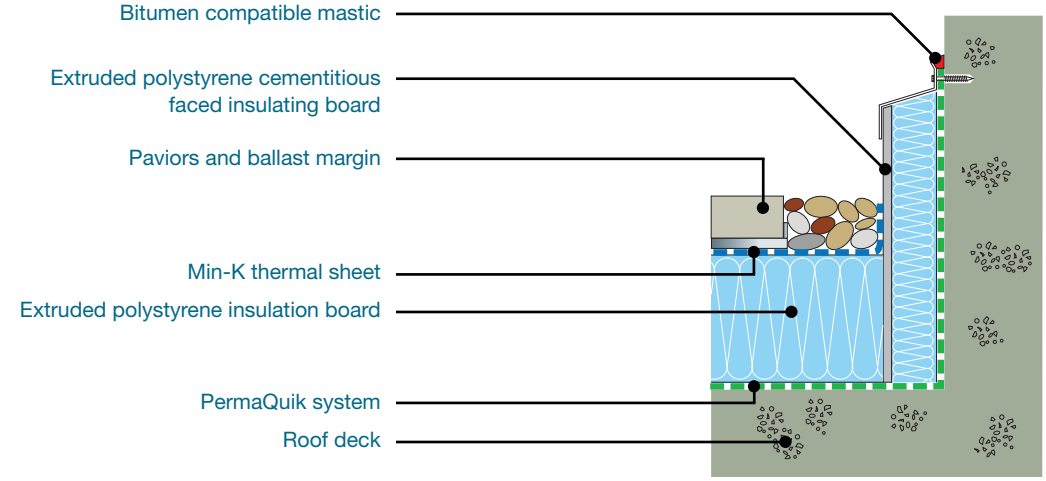
Kerb Expansion Joint



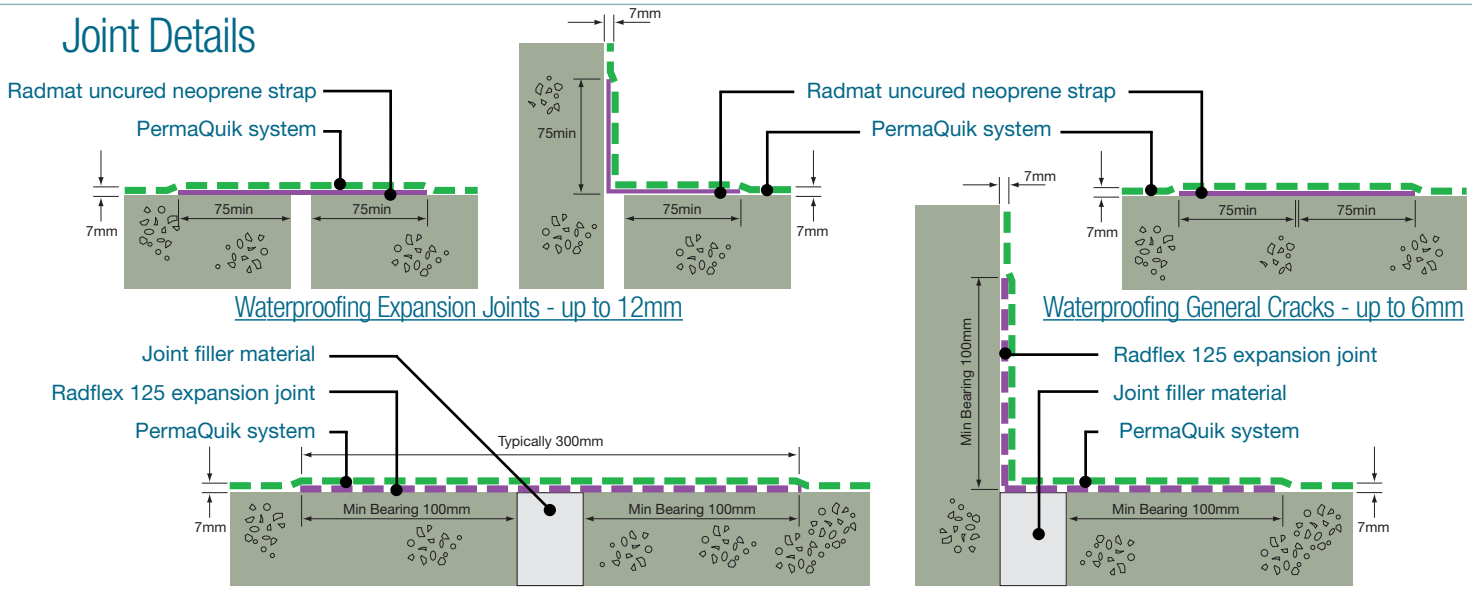
Parapet Outlet Detail



Insulated Upstand With Termination Bar



Joint Details

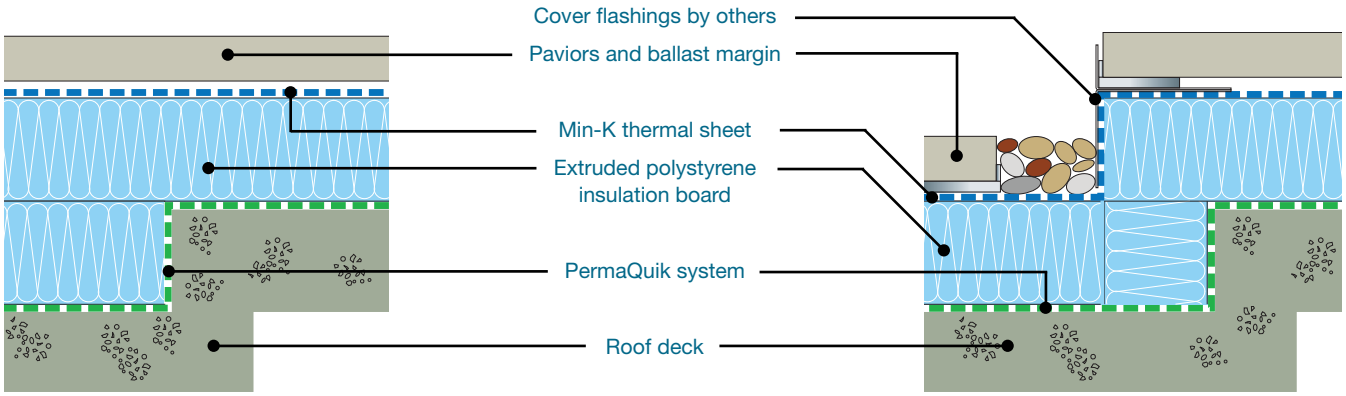


Waterproofing Expansion Joints - up to 12mm

Waterproofing General Cracks - up to 6mm

Waterproofing Expansion Joints - greater than 12mm

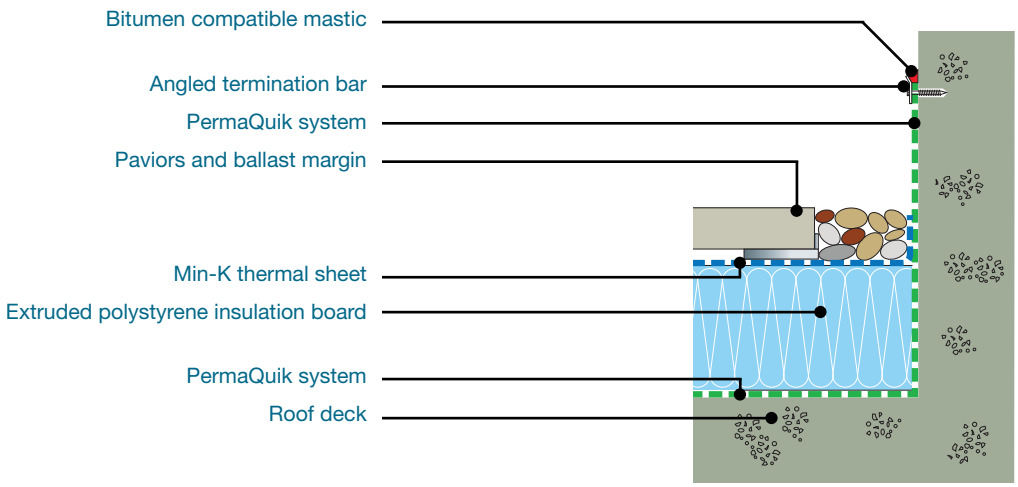
Level Change Details



Level Change Without Step

Level Change With Step

Un-Insulated Upstand With Termination Bar



COMPONENTS & ACCESSORIES

PermaQuik Monolithic Membrane PQ 6100

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.

PermaQuik Reinforcement Sheet PQ 2016

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.

PermaQuik Reinforcement Sheet PQ 2060

A 110mm wide, lightweight uncured neoprene rubber strip, malleable under gentle hand pressure, and used as flashing reinforcement to upstands, junctions between dissimilar materials and expansion joints.

Radmat Surface Conditioner

A bitumen primer that is spray-applied to concrete surfaces to improve the adhesion of PermaQuik monolithic membrane PQ 6100.

Radmat Standard Protection Sheet

A lightweight SBS modified bitumen membrane with a polyester core, used to protect the surface of the PermaQuik monolithic membrane PQ 6100. Allows early foot traffic access to the roof.

Radmat 1800 Protection Sheet

A light duty reinforced bitumen membrane used to temporarily protect the surface of the PermaQuik PQ 6100 membrane. Allows early foot traffic access to the roof.

Radmat Heavy Duty Protection Sheet

A robust SBS modified bitumen felt with a high tensile polyester core, used to protect the surface of the PermaQuik monolithic membrane PQ 6100. Allows early, heavy-duty foot traffic access to the roof.

Radmat Mineral Protection Sheet

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.

Radmat Min-K Thermal sheet

A water vapour permeable membrane installed over extruded polystyrene insulation that allows the overall depth to be reduced without loss of performance.

Radmat Root Protection Sheet

An adapted SBS modified elastomeric bitumen felt with chemical additives and a glass/polyester core incorporating an anti-root film, to prevent root penetration of the PermaQuik monolithic membrane PQ 6100 used in green roofs and brown biodiverse roofs.

Radmat D6 Geotextile Drainage Roll

A two-part, 6mm thick, prefabricated sheet drain consisting of a dimpled high-density polyethylene core covered on one side with a non-woven geotextile needle-punched polypropylene filter fabric. The fabric allows water to pass into the drain core while restricting the passage of fine particles, which may clog the core. The core allows the water to flow to the designated drainage exits.

Radmat D12 Geotextile Drainage Roll

A two-part, 12mm thick, prefabricated sheet drain consisting of a dimpled high-density polyethylene core covered on one side with a non-woven geotextile needle-punched polypropylene filter fabric. Performs the same function as D6, but has greater puncture resistance and tensile strength.

Radmat D25 Geotextile Drainage Roll

A two-part, 25mm thick, prefabricated sheet drain consisting of a dimpled high-density polyethylene core covered on one side with a non-woven geotextile needle-punched polypropylene filter fabric. Performs the same function as D12 and provides a substantially increased rate of water flow.

Radmat SLA Extruded Polystyrene Insulation Board

A CO_2 blown extruded polystyrene insulation board which is free in manufacture of HCFC and CFC and has an ozone depletion potential of zero and a global warming potential of less than 5.

Radmat SLX Extruded Polystyrene Insulation Board

An HFC blown extruded polystyrene insulation board which is free in manufacture of HCFC and CFC and has an ozone depletion potential of zero and a global warming potential of 1300.

Radmat LGX Extruded Polystyrene Insulation Board

A mortar grey cementitious topped HFC blown extruded polystyrene insulation board which is free in manufacture of HCFC and CFC and has an ozone depletion potential of zero and a global warming potential of 1300.

Radmat Proclad Green Extruded Polystyrene Insulation Board

A light or dark modified resin topped CO_2 blown extruded polystyrene insulation board which is free in manufacture of HCFC and CFC and has an ozone depletion potential of zero and a global warming potential of less than 5.

OTHER RADMAT SYSTEMS

Radmat has a range of systems that can be used in isolation or integrated with PermaQuik. Call 01293 537907 or visit www.radmat.com for more details and brochures.

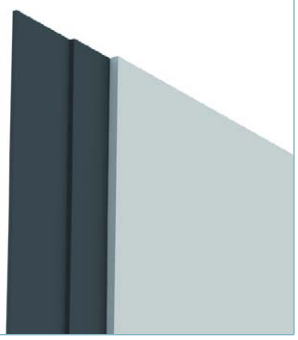
- TredWay - a fast, easy-lay modular paving system that is hardwearing, frost resistant and has excellent acoustic qualities.
- ParaFlex - a cold applied liquid resin waterproofing system that has unique fast-curing properties and can be laid at temperatures as low as -5°C.
- MedO - our green roof solution suitable for extensive, semi-intensive, intensive and biodiverse green roofing systems.
- NanoTherm - a unique insulant that uses nanotechnology to give the same U-value performance as other leading insulation products, at radically reduced thicknesses.

TredWay

ParaFlex

Call 01293 537907 for further details

NanoTherm



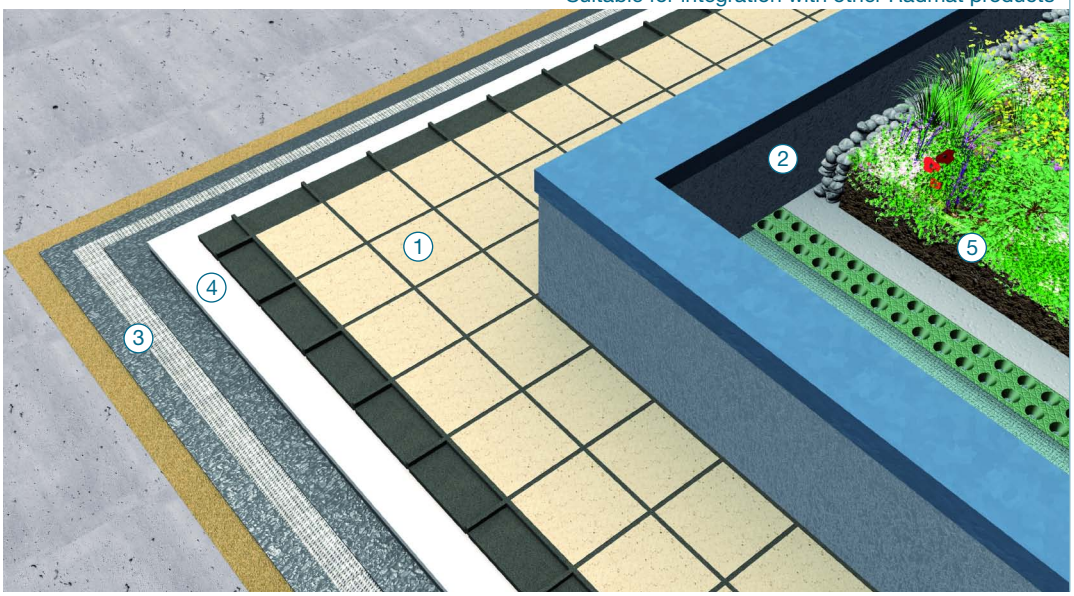
www.radmat.com

MedO

Suitable for integration with other Radmat products

Key

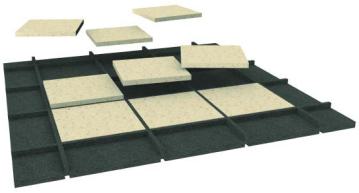
1. TredWay/Tredlite
2. PermaQuik
3. ParaFlex
4. NanoTherm
5. MedO



Also available from Radmat

TredWay

A fast easy-lay modular paving system that is hardwearing, frost resistant and has excellent acoustic qualities.

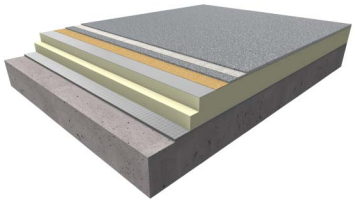


MedO

Green roof solution suitable for extensive, semi-intensive, intensive and biodiverse green roofing sytems.

ParaFlex

Cold applied liquid plastic system with unique fast-curing properties.



NanoTherm

A unique insulant that uses nanotechnology. The same U-value performance as other leading insulation products, at radically reduced thicknesses.

Radmat Building Products
Baron Hall
Horsham Road
Pease Pottage
West Sussex
RH11 9AW

Phone: 01293 537907
Fax: 01293 534384
techenquiries@radmat.com
www.radmat.com