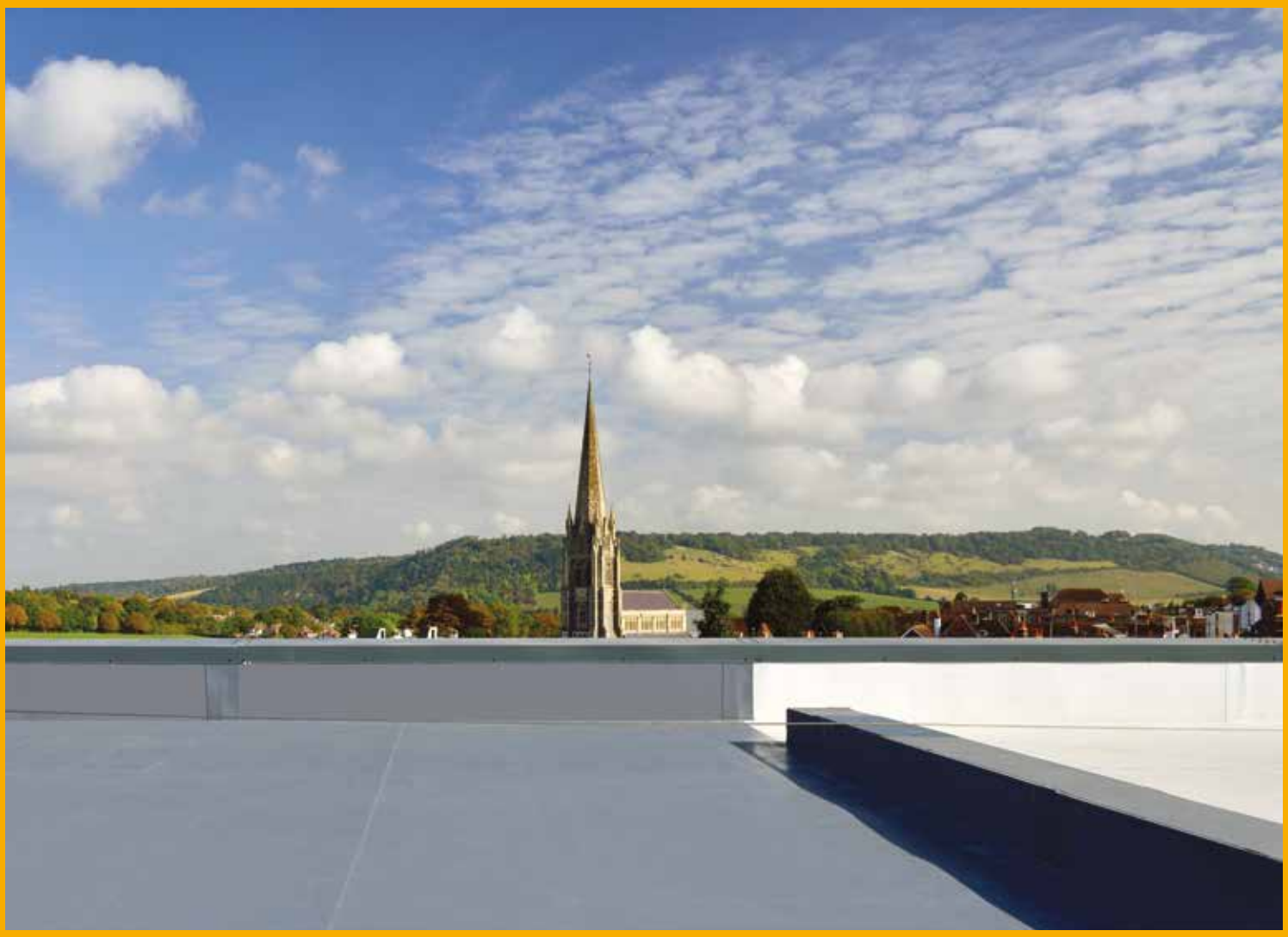
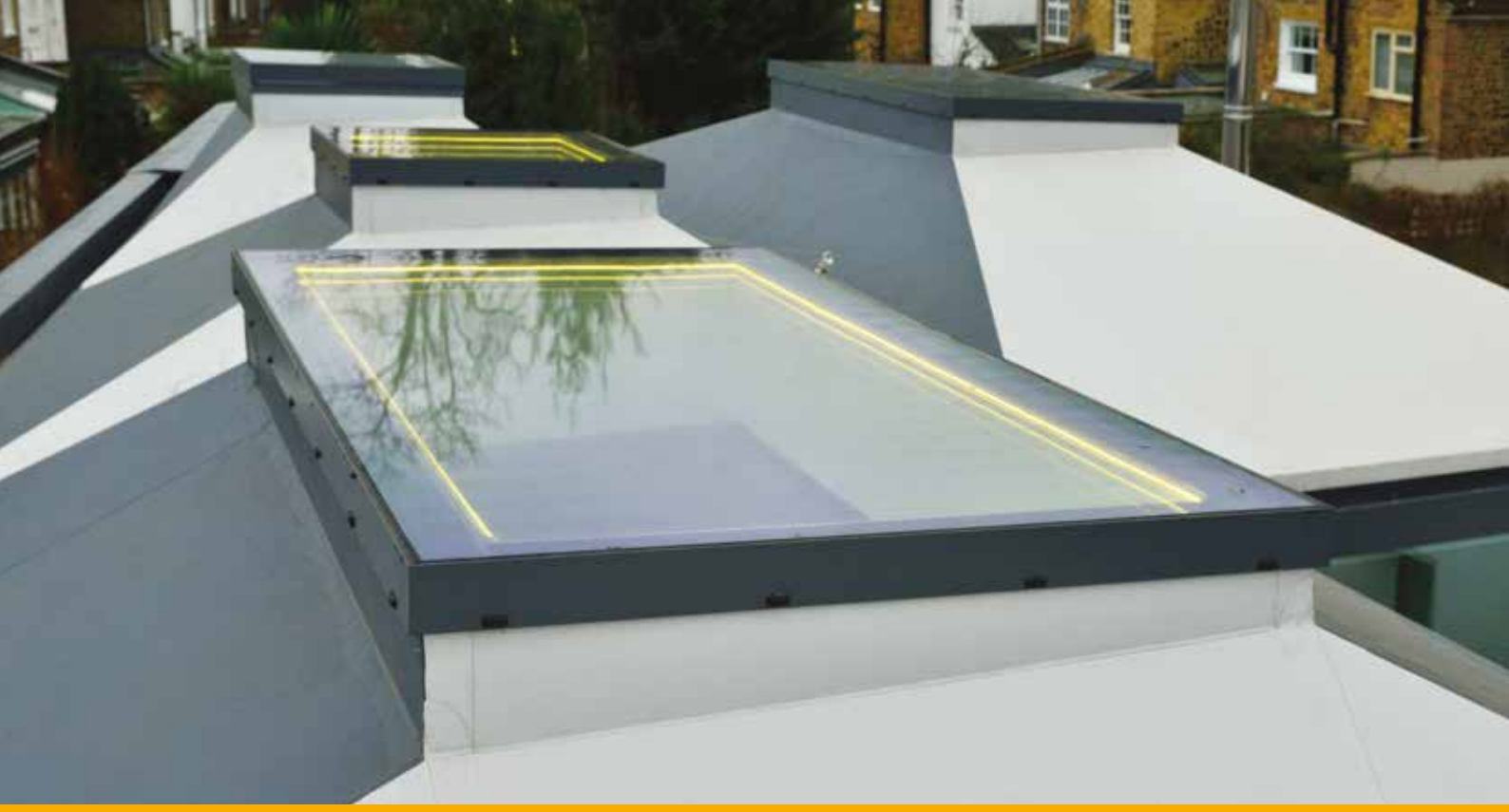


ROOFING

Sika-Trocal® - The Flexible Design Choice

Sika-Trocal®



The Sika-Trocal® Concept

Introduced to the UK in 1972 under the brand name Trocal, the Sika-Trocal® Concept has been at the forefront of the single ply roofing industry. In the 1970s the company was amongst the first to achieve a British Board of Agrément (BBA) Certificate for single ply membranes. Updated numerous times since, that document is still used to satisfy the requirements of the Building Regulations today.

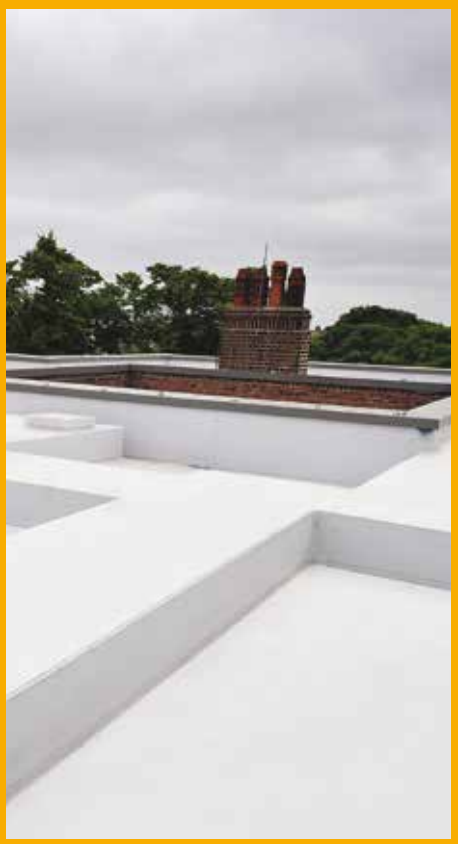
The Sika-Trocal® Concept utilises lightweight, flexible and easy to install single ply membranes to provide a range of new and refurbishment roofing systems that are ideally suited to today's environmentally conscious fast track construction programmes.

Comprising a range of single ply membranes that can be attached in a number of ways, the Sika-Trocal® Concept is suitable for most forms of flat, pitched, curved or even vertical roof surfaces. Central to the Sika-Trocal® Concept is the Type S membrane, first manufactured in Germany in 1962. Sika-Trocal® roofing membranes have now been used in every type of environment throughout the world.

In the 1980s, the company introduced Field Engineers, a service team that not only train the Sika-Trocal® Licensed Contractors, but are also responsible for signing off completed projects for guarantee.

In the 1990s, Sika-Trocal's oldest client, Tesco, carried out air leakage testing on its warehouses and stores, most of which were mechanically attached. The results achieved were better than the building airtightness levels required at that time. Sika-Trocal® roofs have been routinely tested over the past 20 years, with results regularly achieving better than Building Regulations standards.

The new millennium saw the integration of Trocal into the Sika Group, a CHF 5.75 billion turnover supplier of materials to the construction industry, active in more than 97 countries. This allowed Sika-Trocal® to proudly claim its place as part of the largest single ply roofing manufacturer in the world, with four factories in Europe, two in the People's Republic of China and one in the USA.



NBS BIM · SPRA Single Ply Roofing Association · UK GREEN BUILDING COUNCIL · BBA APPROVAL INSPECTION TESTING CERTIFICATION · NBS bre

Design and Specification

For every single ply roofing system, a number of factors – including wind uplift, thermal and structural movement – must be considered at the design stage, to ensure the roof delivers optimum performance. When designed and installed correctly, Sika-Trocal® roof waterproofing will provide flexibility of design, construction and programming for new-build and renovation projects.

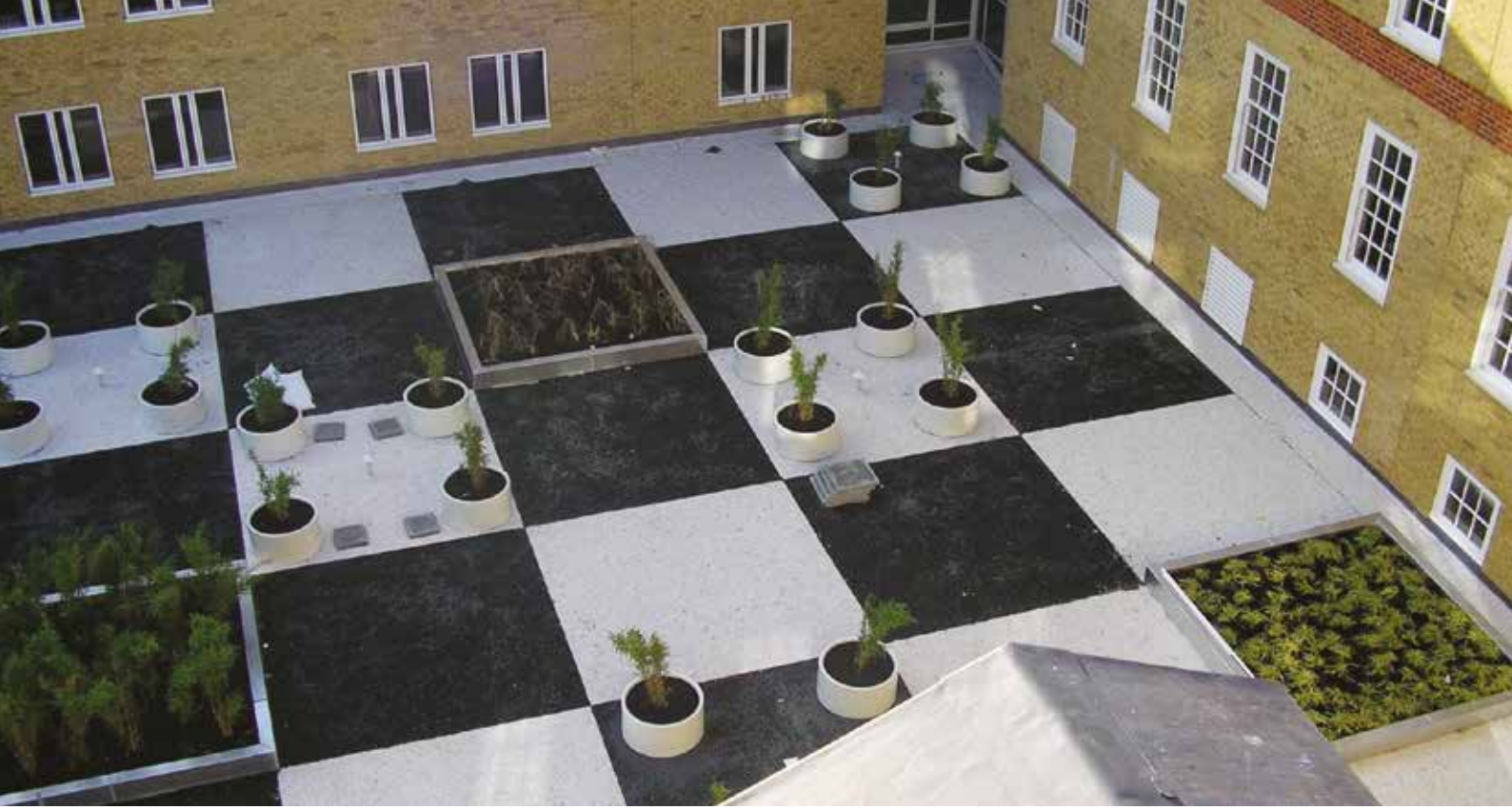
Design considerations:

- Wind uplift forces will put the roof membrane under suction pressure, and the attachment system needs to be designed to resist these forces.
- Movement and stress between the individual components of the roof build-up will be induced from the structure, temperature cycling, shrinkage and settlement.
- Increasing insulation levels will isolate the waterproofing from the heat sink effect of the deck, creating severe temperature cycling, ranging from -20°C up to +80°C. Sika-Trocal® membranes are designed to continue to work within these temperature ranges for many years, without detrimental effect to the performance.
- Roof waterproofing needs to be flexible yet strong. It must also be able to resist the cyclic structural loadings, movement, temperature fluctuations, UV exposure and bacterial attack, depending on whether it is exposed or buried, whilst retaining its integrity even at vulnerable points such as upstands and penetrations. With Sika-Trocal® materials, this is never in doubt.
- The majority of single ply roofing projects are installed utilising mechanical fixings as the method of restraint against wind uplift forces, as is the case with Sika-Trocal® Type S.

The wide range of Sika-Trocal® roofing systems enables the specifier to produce clear, concise specifications for new and refurbishment applications. By using the Sika-Trocal® NBS format, specifications can be written for almost any shaped roof, including flat, sloped, vertical, curved, waveform or domed, and incorporating commonly used substrates, such as metal deck, concrete and timber.

Sika-Trocal® Type S, SGK and SGmA membranes have a BBA life expectancy exceeding 35 years*

*Independently assessed by the British Board of Agrément (BBA) to last in excess of 35 years, in their opinion.



SikaSpec

SikaSpec is the fast, accurate and efficient way to create and store specifications for Sika-Trocal® single ply roofing products. Providing users with considerable time savings, SikaSpec is supported with ongoing development, to ensure it meets any changes in building regulations and legislation.

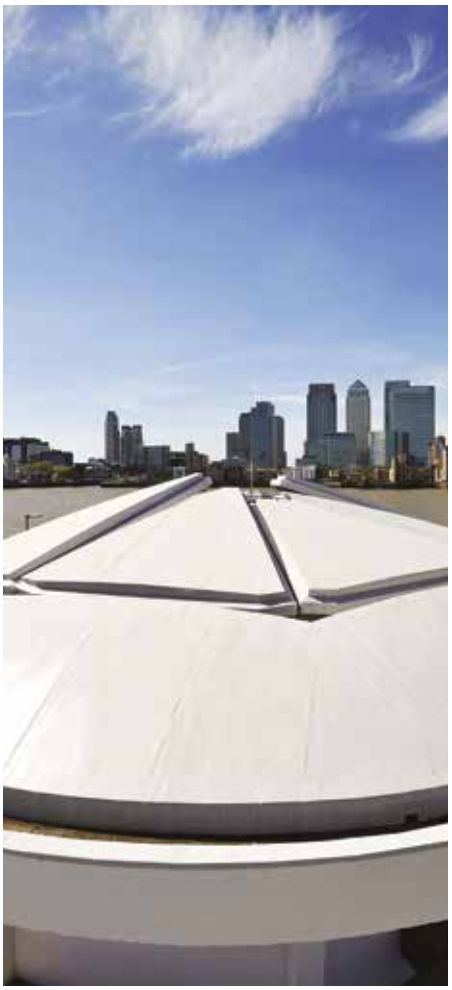
SikaSpec provides a quick and easy way to create specifications online. Once registered, users can then create, store, duplicate, modify, and e-mail specifications to single or multiple recipients. With the option to choose NBS specification format, SikaSpec guides you, through to ensure you make the right choices.

By following a simple eight step process on each element of the roof construction, a wide range of options can be specified. SikaSpec also allows the user to specify up to three different roof areas on the same building, which are all saved in the user's own account and can be repeatedly accessed and modified.

Where roofing components are not supplied by Sika, a generic solution can be specified, or the user can select a preferred equal or approved supplier. At the end of the process, the user receives an electronic Sika specification document, and an NBS specification document, if required.

www.sikaspec.co.uk

Contact the Technical Department for your requirements, or help with SikaSpec, on 01707 358500



Sustainability

Sustainability is a consideration in everything that Sika-Trocal® does, from design and manufacturing, to recycling. A member of The Green Building Council, Sika supports a sustainable built environment that minimises negative environmental impacts, while maximising benefits for people everywhere.

Durability

Sika-Trocal® membranes provide long-lasting lasting waterproofing protection, and can also positively contribute towards BREEAM ratings.

The British Board of Agrément Certification provides a statement of durability for the products covered. In the case of the Sika-Trocal® Type S family of membranes, which have been used in the UK since 1972, the BBA have recognised their demonstrated longevity. Consequently, the BBA have given the Sika-Trocal® Type S, SG, SGK and SGmA a stated life expectancy 'in excess of 35 years'.

Solar reflectivity

The environmental benefits of solar reflective materials and colours are well known and understood in the roofing industry. Sika-Trocal® membranes can be manufactured in highly reflective white, which gives a Solar Reflectance Index (SRI) of 111%, reduces the urban heat island effect, and reduces the cooling energy consumption requirements on a building.

BREEAM

Single ply roofing systems, such as those manufactured by Sika-Trocal®, achieve up to an A+ Green Guide rating when used in a warm roof construction. These ratings are available on the BRE Green Guide to Specification website.

Although these ratings form the basis of the construction material issue for BREEAM assessments, there are numerous other areas where the Sika-Trocal® roofing systems can contribute towards a BREEAM assessment.

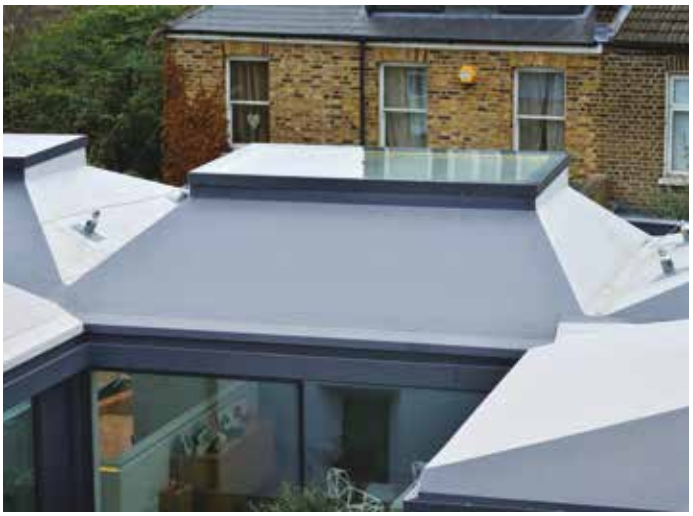
For more information, or for a copy of our BREEAM Information Pack, please contact the technical team on 01707 358500.

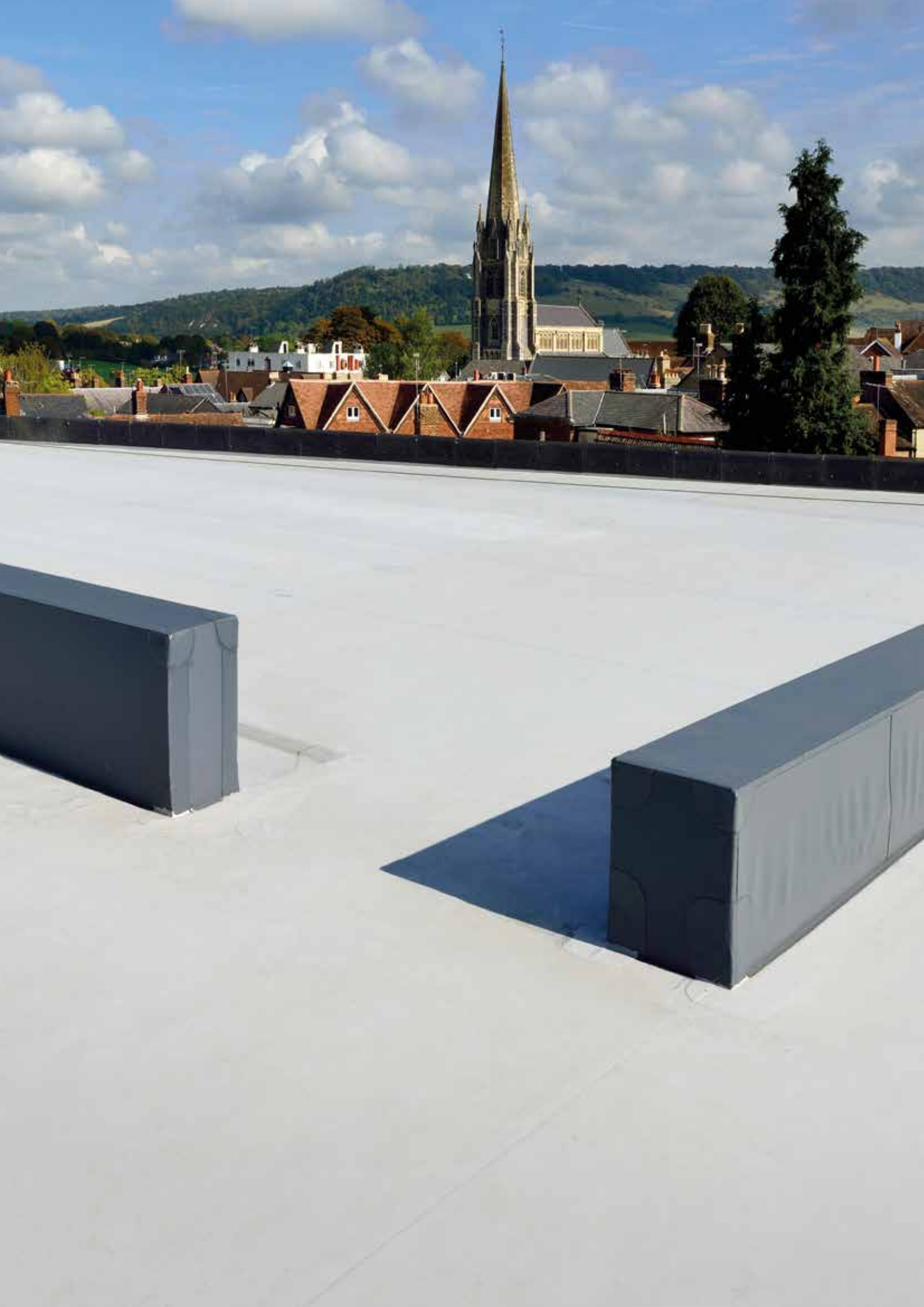
Environmental Product Declarations (EPDs)

EPDs are a statement of facts. Sika-Trocal® understands the importance of EPDs to the roofing industry and, as such, has worked with the BRE to produce independently verified, manufacturer specific EPDs for our single ply roofing membranes.

These documents help to provide a fully rounded view of the environmental impacts of the Sika-Trocal® products, and can provide a points uplift in a BREEAM assessment.

For more information please contact the Technical Department on 01707 358500.





Mechanically fixed membranes
TYPE S

A mechanically fastened roof is generally quick and economical to install and, because of its lightness in weight, will often enable savings to be made on the supporting structure. With the Sika-Trocal® Disc System offering a speedy installation, a majority of Sika-Trocal® installations are mechanically fastened.

The Sika-Trocal® Disc System consists of an 80mm diameter flat plate, manufactured from Sika-Trocal® laminated metal, and a fastener suitable for the substrate. When compared to other conventional systems, the Sika-Trocal® Disc System uses a single fastener and plate combination to mechanically attach the thermal insulation and membrane to the roof, saving the expense of two attachment systems.

Once the Disc System has been installed, the Sika-Trocal® membrane is simply unrolled over the substrate, and the discs welded to the underside of the waterproofing. Individual membrane rolls are overlapped by a minimum of 50mm and welded together to create a watertight roof.

The latest revision of Part L of The Building Regulations demands that the thermal bridging, created by the use of all-metal fasteners be minimised and/or reduced. To meet this demand, the fasteners used to restrain the Sika-Trocal® membrane should be a combination of plastic tube and metallic fastener elements, appropriate to the application.

Sika-Trocal® provides its Licensed Contractors with access to Internet based calculation software, enabling them to work out the optimum number of fasteners required to secure the roof against wind loads on a project by project basis, avoiding 'rules of thumb' or guess work.

Adhered membranes
TYPE SGK

An adhered membrane can be considered for new builds and for refurbishment applications where the existing surface is sound and remains firmly attached to the substrate. When mechanical fastening or a ballasted membrane is not suitable, the adhered Type SGK membrane can offer a viable alternative solution.

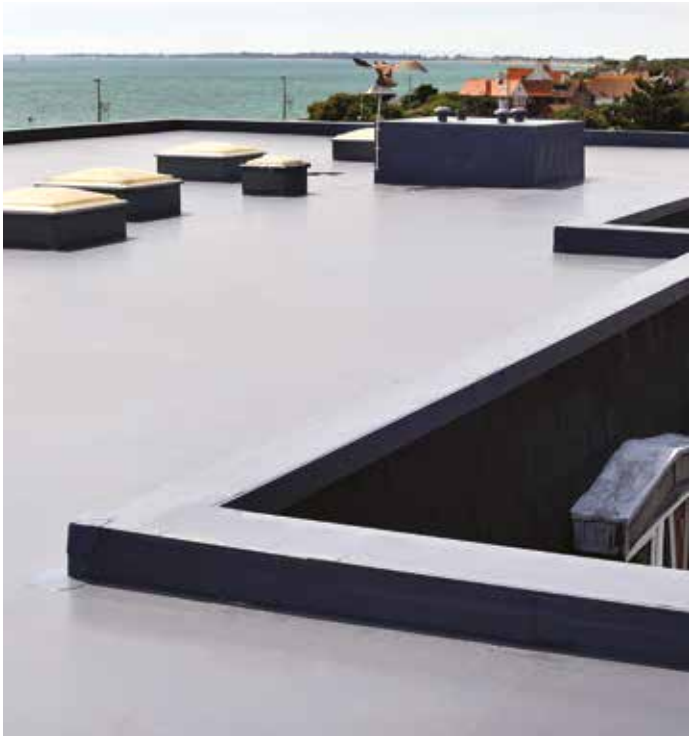
This type of roof is not intended to be heavily trafficked or subjected to public or leisure usage. Adhered membranes are typically installed in swimming pools and laundry rooms, where the high humidity requires the use of high cost stainless steel fasteners, and during renovation of existing failed roofs, concrete decks and where fasteners should not be visible internally.

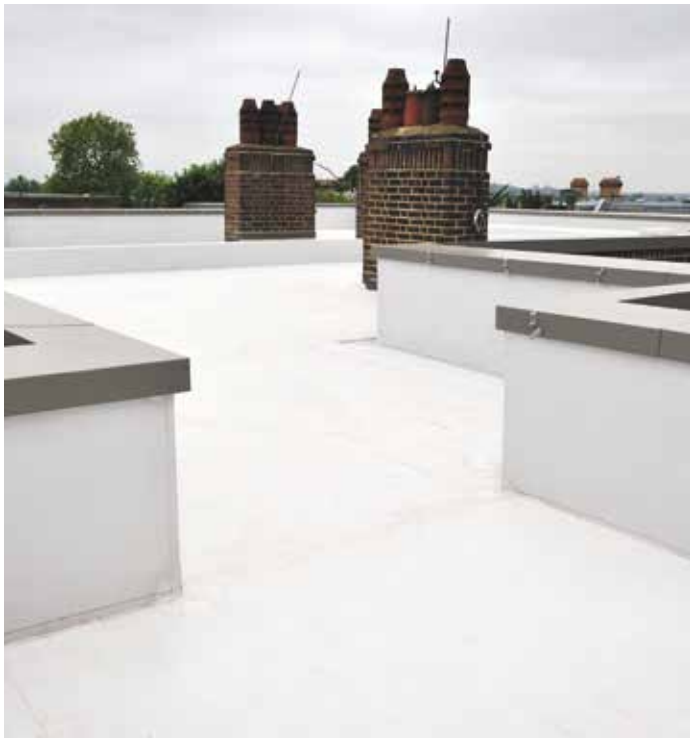
The substrate requirements for use with adhered membranes are different to those of the other attachment methods, notably the selection of insulation boards and preparation and treatment of any existing roof surfaces. All specifications need to be agreed with Sika-Trocal® before commencing installation.

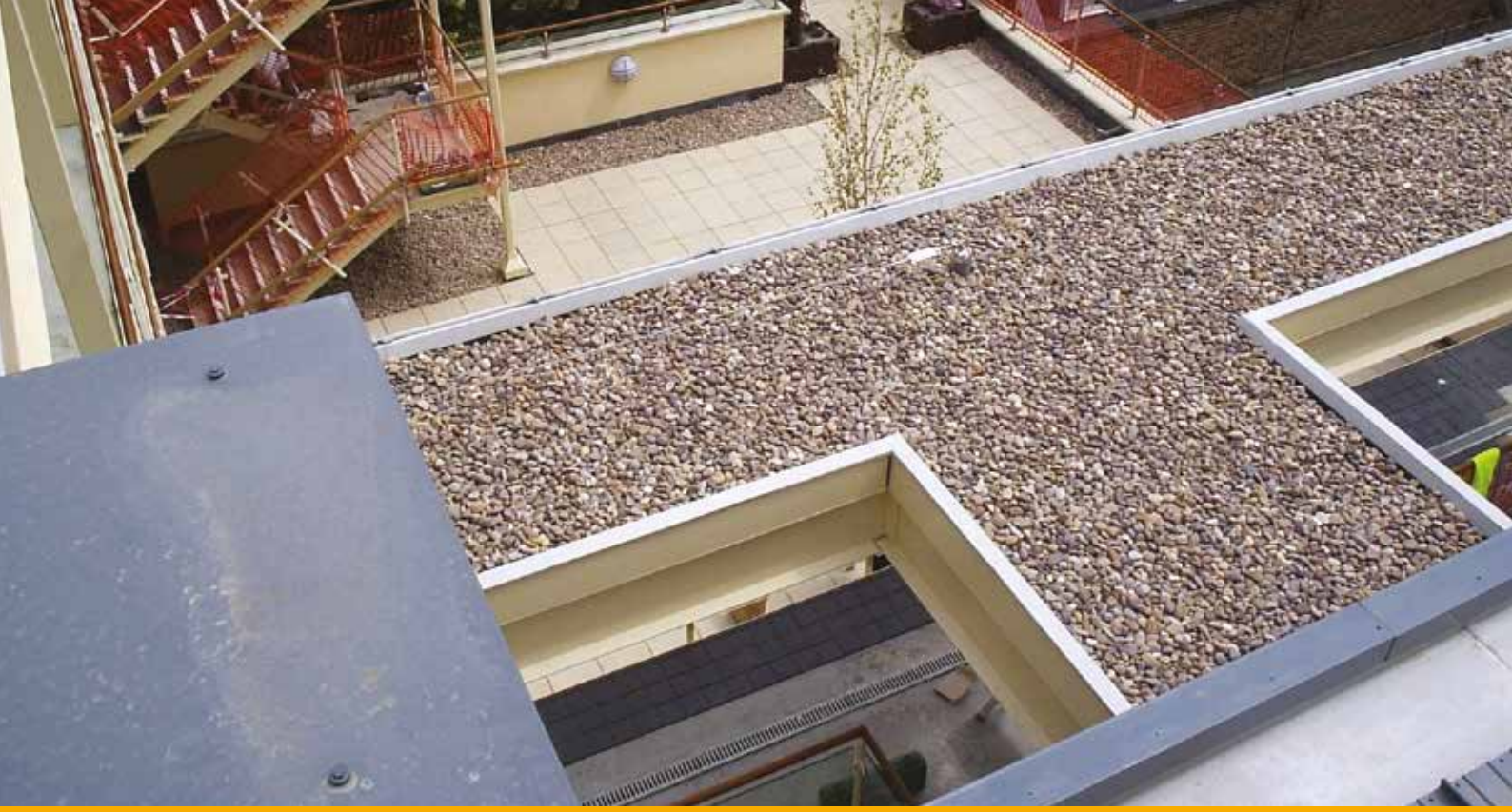
The Sika-Trocal® adhered system uses Type SGK membrane, which has an integral polyester fleece backing that helps mask the appearance of insulation board or timber deck joints. In adhered applications, Sika-Trocal® SGK is bonded to the substrate using a polyurethane based adhesive to secure it against wind uplift forces.

Where thermal insulation is used, it is important that suitable insulation boards are used to ensure compatibility between the adhesive, the face and the insulant core. When bonding to an existing substrate, the quality and suitability of the substrate is critical to the success of this system, and the weakest lamination in any build up must always be considered.

Any substrate receiving an adhered membrane should be smooth, and free of sharp objects like chippings and proud screw heads; the membrane should be able to achieve intimate contact with the substrate.







Ballasted roofs

TYPE SGmA

A ballasted roofing system will normally be surfaced with gravel or pavers and with the membrane laid above the insulation. In some cases, the membrane may be located under the insulation in an 'inverted' roof. However, inverted roofs will require an insulant that is specifically designed for exposure to moisture, such as Extruded Polystyrene (XPS).

Sika-Trocal® Type SGmA membrane is loose laid over the substrate and fastened at the perimeters and around penetrations prior to the installation of the ballasting material, typically round washed stone, pavers or roof greening.

A ballasted roof will provide a higher degree of sound reduction and, if covered with a minimum 50mm depth of gravel ballast on the protection sheet, is deemed to achieve an FAA fire rating.

Roof greening systems are generally categorised as Intensive, Extensive or Biodiverse, depending on the type of planting used and the level of amenity required.

Intensive systems are heavy and utilise high maintenance greenery, such as shrubs, bushes and trees.

Extensive systems use lightweight growing mediums and sedum to provide a meadow-like finish, requiring minimal maintenance. A Biodiverse system is generally specified to replicate the natural habitat of specific flora and fauna.

Accessories and ancillary products

Sika-Trocal® provide a range of accessories and complementary ancillary products to ensure the aesthetic, access and technical demands of a project are met. Where Sika-Trocal® does not supply a component in the roofing system, the company sets performance standards for those components. This helps specifiers with the generation of a specification, and Licensed Contractors select from a range of suitable quality products.

Adhesives

Sika-Trocal® manufactures a range of adhesives for bonding various substrates. These include Sika-Trocal® C300, Sika-Trocal® C200, Sika-Trocal® C733, SikaBond® AT-Universal and SikaBond® AT-Metal.

Fasteners

Sika-Trocal® supplies a range of high quality fasteners for the roofing system.

Pre-formed details

To complement the speed of installation of the unique Sika-Trocal® Disc system, and the highly efficient welding method, a number of pre-formed details are available. These include Sika-Trocal® laminated metal, and external and internal PVC corners – each bringing the benefits of off-site fabrication to the job site.

Protection sheets

When installing ballasted roofing systems, green roofing systems or casting concrete pads on Sika-Trocal® membranes, a protection sheet must be installed to protect the membrane.

Sika-Trocal® offers a variety of protection sheets. If these are not suitable, any alternative protection sheet must be checked for compatibility with the Sika-Trocal® membrane and the layers above it, as well as its ability to provide the required level of drainage, where appropriate.

Sealants

Sika-Trocal® roofing systems are engineered to eliminate the need for sealant to create a waterproof seal. This process aims to reduce future maintenance requirements, as exposed sealants typically have a service life of 10 years.

If sealants are used, their compatibility must be checked with the Sika Roofing Technical Department to ensure their use will not be detrimental to the performance of the Sika-Trocal® membrane. This is particularly relevant when other products such as patent glazing or rainscreen systems are interfacing with the membrane.

Insulation

Sika-Trocal® offers, a range of cost effective insulation boards, suitable for use in several applications. This ensures the insulation boards have been successfully tested for compatibility with other Sika-Trocal® components, and can meet a range of thermal, fire and acoustic requirements.

Separation layers

Sika-Trocal® SBV, S-Felt T and S-Felt A are levelling and/or separation layers which have been designed to protect Sika-Trocal® membranes from abrasion from beneath, abrasion from above, or incompatible products, subject to specification.

Other accessories we now offer

The Sika-Trocal® range of roofing systems are complemented by a wide variety of accessories and ancillary products that ensure optimum compatibility and single source responsibility.

Sika-Trocal® provides intelligent solutions, using the most advanced technologies, service and unique expertise. From the Sika-Trocal® disc system, to insulation, adhesives and sealants, the company provides complete flat roofing solutions that meet the latest independent tests, standards and regulations.

"Comprehensive material guarantee available for all accessories supplied by Sika-Trocal®".

Guarantees

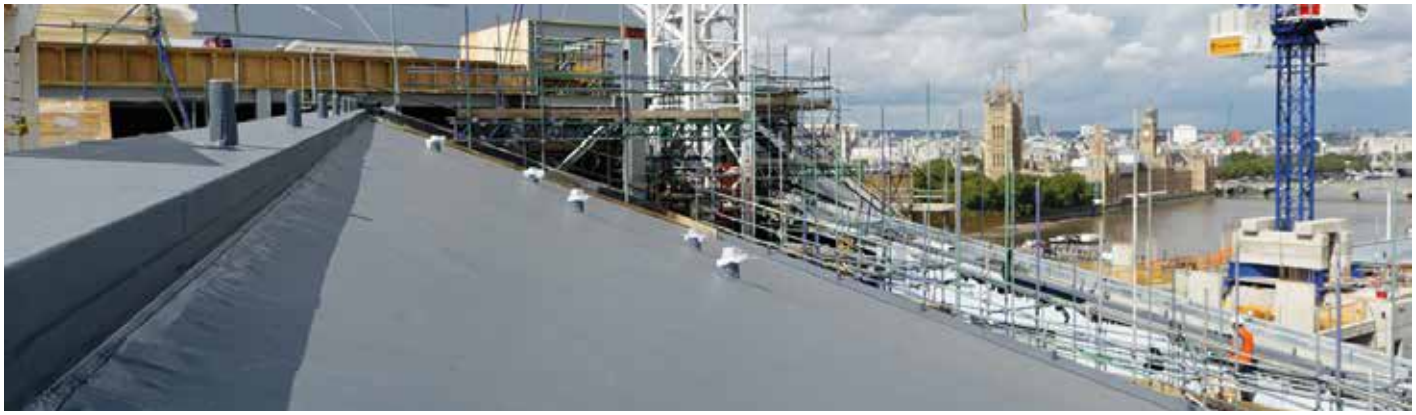
Guarantees come in all shapes and sizes, often with the detail hidden in the small print. Sika-Trocal® product guarantees cover 12, 15, 20 and 25 year durations, subject to roofing system and membrane type, each with clear terms and conditions and maintenance requirements.

Application	Membrane Thickness 1.2mm	Membrane Thickness 1.5mm	Membrane Thickness 1.8mm*	Membrane Thickness 2.0mm
Mechanically Fastened	–	12 YEARS £ · 15 YEARS ££	–	– · 20 YEARS £££ · 25 YEARS ££££
Adhered	12 YEARS £	– · 15 YEARS ££	20 YEARS £££	– – –
Ballasted	–	12 YEARS £ –	–	15 YEARS ££ · 20 YEARS £££ –
Green Roof	–	12 YEARS £ –	–	15 YEARS ££ · 20 YEARS £££ –

* Subject to approval and availability

Case studies

Park Plaza Riverbank:



Project Name: Park Plaza Riverbank

Product: Sika-Trocal® S and SGmA

Size: 2,115m²

Solution: Located on the south bank of the River Thames, Park Plaza Riverbank welcomes guests from all over the world. For an eight-storey extension, that adds 184 new rooms and a private penthouse with terraces, a high performance and flexible waterproofing system was required for eight new roof areas of different sizes, shapes and pitches.

With a fast and reliable installation key to achieving the strict 18 week deadline, the mechanically fixed Sika-Trocal® S and SGmA systems proved to be the optimum roofing solution, offering a smooth and rapid application, excellent flexibility and crisp, simple detailing.

Completed over a four month summer period, but with the wettest August on record, the innovative, fast and high quality application of Type S and SGmA single ply membranes from Sika-Trocal® ensured that the Park Plaza Riverbank was on track for its 2016 completion date.

"After careful planning and co-ordination, we used a cantilevered scaffold off the building and an abseil system to create safe access to the various roof areas. Many flat roof membranes are too complex and so not installable using an abseil, but the Sika-Trocal® system offered us a speedy installation that saw the first two roofs installed in under two weeks – much quicker than the 25 days predicted.

Due to the complexity of the roofs and with health and safety absolutely paramount, it was imperative that the roofs were correctly designed and secured to resist wind loads, ensuring outstanding performance and longevity."

Tom Peach, Contracts Manager, ICS Roofing

Silver Bay Holiday Village:

Project Name: Silver Bay Holiday Village

Product: Sika-Trocal® SGK

Size: 900m²

Solution: At a new £1.6 million leisure complex in Silver Bay Holiday Village, off the north-west coast of Wales, a high quality waterproofing system was required that would be aesthetically sympathetic to the locally sourced stone walls and European Larch cladding. Sika-Trocal® SGK waterproofing membrane in slate grey was specified to provide a stunning modern finish across four separate roof elements.

Utilising the straightforward and efficient application of the fully-adhered Type SGK roofing membrane, the installation was completed in just six weeks. With surface falls formed towards the hidden guttering and water shoot pipes, the SGK membrane helped to deliver a stunning and visually seamless roof that was completed with fully fixed flashings.

Ronald McDonald House:

Project Name: Ronald McDonald House

Product: Sika-Trocal® SGmA and S

Size: 600m²

Solution: In Scotland, the Ronald McDonald House Charities' (RMHC) new-build facility at South Glasgow Hospital Campus replaced the existing Royal Hospital for Sick Children in Yorkhill. The new building comprises three white brick traditional forms with slate pitched roofs, with each connected to the other by glazed openings as part of a bright and welcoming aesthetic.

For the main roof area, approximately 500m² of Sika-Trocal® SGmA was installed, as part of a complete green roof system comprising vapour control layer, PIR insulation, Sika-Trocal® SGmA waterproof covering, Sika-Trocal® SBv protection and separation layer, drainage layer and vegetation. Offering exceptional waterproofing and durability, 100m² of Type S single ply membrane was also installed over a series of window pods.

Case studies

Fossil:

Project Name: Fossil

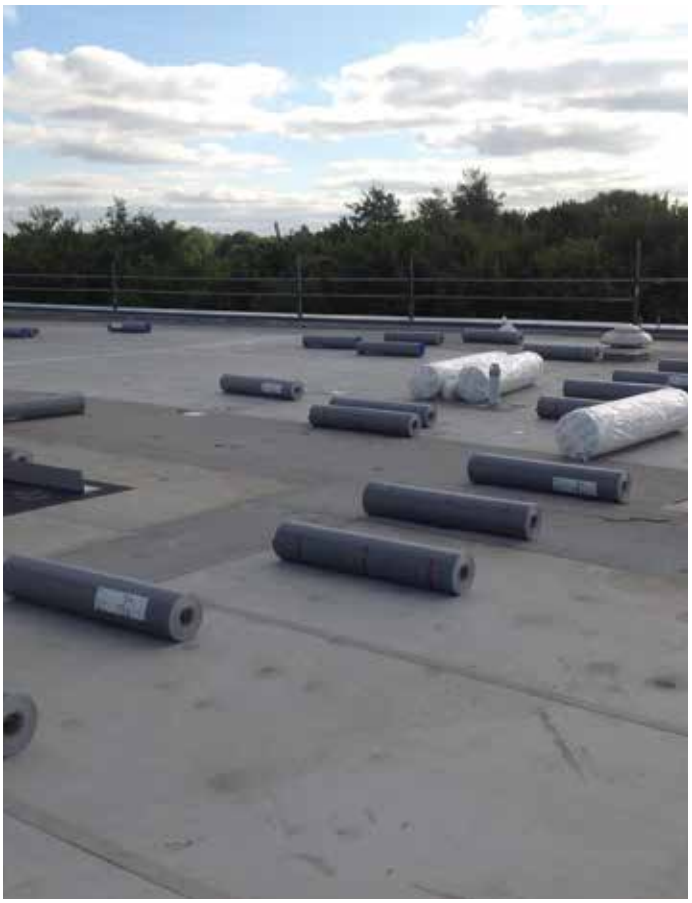
Product: Sika-Trocal® S

Size: 1,200m²

Solution: Fashion retailer, Fossil (UK) Limited, began the refurbishment of its UK headquarters in Milton Keynes following the discovery of corrosion to the powder-coating on the clad parapets. Samples of the roof were removed and tested for flexibility and weathertightness, with the original membrane proving to be in optimum working order.

Originally installed in 1981, the Trocal-S 1.5mm mechanically-fixed system remained in perfect functional condition. However, Fossil opted to have a new Sika-Trocal® S 1.5mm system installed directly on top of the existing membrane.

For the new system's application, Fossil once again appointed Sika-Trocal® licensed roofing contractor, Telclad Limited to carry out the works – the same company that completed the original installation. With the existing system demonstrating very similar flexibility and constitution performance to the brand new membrane, this helped Sika-Trocal® to have the lifespan of its Type S and SG materials extended up to 35 years by the BBA.



"As samples of the removed Trocal-S material showed very little difference in flexibility and constitution to the brand new membrane, these are now used on a regular basis to reinforce the product's quality and longevity with clients and specifiers.

We know technology is constantly evolving and it's important that architects are aware of the benefits of single ply membranes. Now with the BBA certification being increased to 35 years, the confidence specifiers have shown in using this excellent product has been officially recognised."

Leon Horobin, Area Technical Manager for Sika-Trocal®

Pollokshields:

Project Name: Pollokshields

Product: Sika-Trocal® S

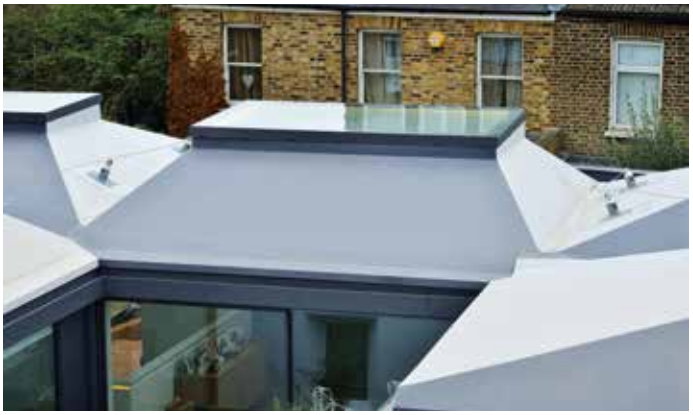
Size: 600m²

Solution: At the new-build Pollokshields Doctor's Surgery in Glasgow, a reliable and high performance waterproofing membrane was required. For the new building's 600m² flat roof, split into two levels, a waterproofing membrane was required that would deliver a safer and more efficient application.

Suitable for mechanically fastened roofs in both new build and refurbishment applications, Sika-Trocal® Type S is generally the most rapid and economic system to install. The roofing system was securely fixed in place using SFS intec's new heat induction welding tool, combined with a chalk marker indication system for speed and efficiency.

Together with an efficient installation, that ensured an improved seal, the Type S waterproofing membrane will deliver excellent performance at the doctor's surgery for many years to come.

Hammersmith:



Project Name: Hammersmith

Product: Sika-Trocal® S

Size: 200m²

Solution: A new-build four bedroom family house in Hammersmith, London was built with a unique roofing solution to accommodate restrictions on the use of exterior windows in the perimeter wall. Due to the complex pyramid design, a neat finish around the edges was crucial.

To enhance the architects' design and emphasise the pyramid shape of the roof, Sika Trocal supplied its Type S membrane in both light grey and slate grey. With aesthetics an important consideration for the complex pyramid design, the specification of Trocal Metal helped to reduce membrane overlaps and provide a neat finish around the edges.

A specialist team of up to three applicators worked on the complex residential project over a period of five weeks – ensuring the new-build project was completed on time and to the satisfaction of both the architect and client.

SIKA FULL RANGE SOLUTIONS FOR CONSTRUCTION:

WATERPROOFING

CONCRETE

REFURBISHMENT

MERCHANT

SEALING AND BONDING

FLOORING

ROOFING

INDUSTRY

FOR MORE INFORMATION:

WHO WE ARE

Sika Limited and Sika Ireland Limited are part of the global Sika Group, specialising in the manufacture and supply of chemical based products. Sika have a leading position in the development and production of systems and products for bonding, sealing, damping, reinforcing, and protecting in the building sector and the motor vehicle industry. Sika has subsidiaries in 97 countries around the world and manufactures in over 190 factories. With over 17,000 employees Sika generates annual sales of CHF 5.75 billion (£4.69bn). We are also committed to providing quality, service, safety and environmental care.

In the UK and Ireland, we provide market-leading solutions for concrete, waterproofing, roofing, flooring, refurbishment, sealing & bonding, and industry, and have manufacturing sites in Welwyn Garden City, Preston, Leeds and Dublin with more than 700 employees and a turnover of more than £220 million.

bsi. ISO 9001 Quality Management FM 12504

bsi. ISO 14001 Environmental Management EMS 45308

bsi. OHSAS 18001 Occupational Health and Safety Management OHS 585274

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Sika-Trocal®

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