Sika® Solutions for Watertight Concrete

100 years of waterproofing expertise and experience

Sika are a global company with an enviable reputation for innovation, quality and experience. This has led to a market leading position in many construction fields, in particular, waterproofing of buildings and structures. Our complete range of below ground waterproofing solutions includes:

Sika® Watertight Concrete System - BS8102:2009 (Type B construction)

SikaProof® - fully bonded external membrane (Type A construction)

Sika® CD System - cavity drainage system (Type C construction)

Sika are a market leader in concrete admixture technology. Combining this with our expertise in waterproofing has led to the development and evolution of the Sika® Watertight Concrete System, now the most widely used system of its type in the UK. The Sika® Watertight Concrete System provides waterproofing for:

- basements
- lift pits
- retaining walls
- concrete façades

as well as for keeping water in swimming pools.

The benefits of the Sika® Watertight Concrete System are clear:

Time saved at design and construction stages as the need for external membranes with their complex detailing and installation is eliminated.

Cost effective in comparison with membranes and other systems. Delivers maximum usable area to the occupier.

Quality backed by Sika warranty, BBA certificate and a 50 years track record.

Peace of mind for the client, specifier, contractor and end of user of the building. So confident are we in the performance of Sika® Watertight Concrete System that we offer a 15 year warranty.

Project reference

PHOTOGRAPH ABOVE (Copyright FIFA)

Project: FIFA Building, Zurich

Architect: Tilla Theus und Partner AG, Zürich

Engineer: Ribi & Blum AG and Romanshorn Andrin Urech & Partner

The Sika® Watertight Concrete System was used to construct the six level basement of this extraordinary building which houses conference facilities, archives, main auditorium, technical support rooms and a car park. The Sika® Watertight Concrete System was chosen for its proven track record as well as offering demonstrable time and cost savings versus external tanking systems. All construction joints and other details such as service entries through the concrete were sealed using the SikaSwell® joint protection system.

Concrete technology

The Sika® Watertight Concrete System has constantly evolved over the last 50 years to incorporate the latest admixture technology. The system is robust in service and simple to produce, giving confidence to all those involved in the project.

The effectiveness of the system has been proven both by its use in countless projects and through testing by independent bodies such as the British Board of Agrément.

Sustainability and cost optimisation

The design of concrete is more than just a technical issue. The sourcing of sustainable raw materials which are also cost effective is essential in today's market and central to the Sika philosophy.

The use of the Sika® Watertight Concrete System is not only cost effective, but when used in lieu of secondary waterproofing systems eliminates the use of oil based and other synthetic products such as membranes, greatly reduces waste on site, reduces vehicle movements to site and is 100% recyclable.

Project reference

PHOTOGRAPH ABOVE

Project: Royal Shakespeare Theatre, Stratford-upon-Avon

Architect: Bennetts Associates Architects

Engineer: Buro Happold

The grade II* listed Royal Shakespeare Theatre in Stratford-upon-Avon has undergone a highly successful transformation that greatly enhances the live theatre experience of the audience. As part of the refurbishment, the Sika® Watertight Concrete System was used during the construction of the 7m deep stage basement which is used to create a scenic spectacle on the new main stage.

The principles of achieving watertight concrete

Even good quality concrete will allow the passage of water through it as a function of capillarity, as the volume of capillary pores in concrete is proportional to the water/cement ratio.

Incorporating Sika® Watertight Concrete admixtures reduces the w/c ratio whilst producing a highly workable concrete to aid placing and compaction. The remaining capillary pores are blocked using the hydrophobic material contained within the Watertight Concrete admixture.

Concrete early age and ultimate strength as well as durability are enhanced.

The Sika® Watertight Concrete System should be obtained from a ready-mixed concrete supplier with a recognised third party accreditation such as BSI or QSRMC.

Project reference

PHOTOGRAPH ABOVE

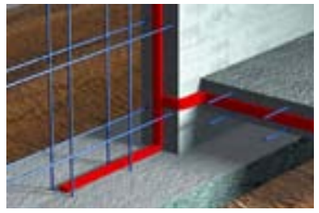
Project: BDP Studios, Manchester

Architect: Building Design Partnership (BDP)

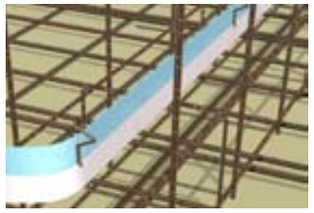
The Sika® Watertight Concrete System was chosen to ensure a dry basement for the stunning new BDP (Building Design Partnership) studios, situated at 11 Ducie Street on the Piccadilly Basin in Manchester. Built right on the water's edge, it was a requirement that the basement should conform to BS 8102 Grade 3, giving a controlled environment capable of storing archives, sensitive materials and computers.

Joints and detailing

As well as the concrete technology, it is important to consider how to deal with construction joint protection and any other details that may arise on a project.



SikaSwell® A profiles are sealing profiles which swell in contact with water. SikaSwell® S2 is used to adhere all SikaSwell A profiles.



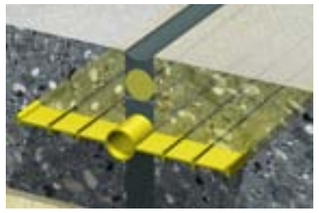
Sika® Tricosal Metal Waterbar is a galvanised sheet with a layer of composite film on one side. The special coating bonds closely and permanently to the concrete to provide a watertight seal.

SikaFuko® are injectable hoses for sealing and possibly resealing construction joints in watertight structures against water ingress. To seal the joint SikaFuko® can be injected with suitable Sika injection materials.

Movement joints

A range of movement joints are available from traditional PVC waterstops to elastomeric sealing strips (Sikadur®-Combiflex® SG). Please consult your local Sika representative to discuss the right solution for your project.

The Sikadur®-Combiflex® SG system is a high performance joint and crack sealing system for construction joints, expansion (movement) joints and cracks. The system allows variable and high levels of movement in one or more directions, whilst maintaining a high quality watertight seal.



Sika® Waterbars are flexible waterstops based on plasticised PVC and are used to waterproof expansion (movement) joints.

Project reference

PHOTOGRAPH ABOVE

Project: Castle Quay Development, St Hellier, Jersey

Architect: Eric K Kuhne Associates

Engineer: Walsh Associates

The Sika® Watertight Concrete System was a key ingredient in the building of a prestigious new £68 million development constructed by Dandara, on abandoned industrial land, right on the St Hellier waterfront in Jersey.

Sika® Metal Waterbar was used in construction joints in the slab as well as the kicker/wall junction. The SikaSwell® joint protection system was used in all other areas.

Waterstop selection guide

	SikaSwell® A Profiles	Sika® Tricosal Metal Waterbar	SikaFuko® Injection Hose System
Construction Joints	++	+++	+++
Movement Joints	N/A	N/A	N/A
Service Entries	+++	N/A	N/A
Ease of Installation	+++	++	++

KEY

+++ Very Good ++ Good + Limited

Design

The Sika® Watertight Concrete System complies with BS8102:2009 Type B construction protection category. It is suitable for, and has been used extensively to meet the criteria for, all grades of protection as defined by BS8102:2009 Code of Practice for Protection of Below Ground Structures Against Water from the Ground.

Sika welcome involvement in a project at the earliest opportunity. Using our experience and expertise we can bring significant benefits to the project.

Specifiers and contractors have easy access to standard CAD drawings, specification clauses and technical help through our local representatives and our website.

Detailing such as construction joints, pour sequences, aspect ratios, service entries and re-entrant corners should be discussed with your Sika representative.

BS8102:2009 suggests consideration be given to the use of dual systems. For example, Type B plus Type A protection where the assessed risks are deemed to be high or the consequences of a failure to achieve the required internal environment are too high. Sika are able to offer a complete solution in these circumstances.

Grade 1
Performance

Some seepage and damp patches tolerable dependant on intended use (min section thickness: 175mm)

Typical usage

- workshops
- underground parking garages
- plant rooms (excluding electrical equipment)

Grade 2
Performance

No water penetration acceptable, damp areas tolerable (min section thickness: 175mm)

Typical usage

- storage areas
- underground parking garages
- plant rooms and workshops

Grade 3
Performance

No water penetration acceptable. Ventilation, dehumidification or air conditioning necessary appropriate to intended use (min section thickness: 175mm)

Typical usage

- ventilated residential areas, offices, restaurants, archives
- leisure centres

Project reference

PHOTOGRAPH ABOVE
Project: Survivex, Aberdeen
Engineer: W A Fairhust & Partners

The Sika® Watertight Concrete System was used to keep water both in and out of the new Survivex headquarters in Dyce, Aberdeen, gateway to the North Sea oil fields. This state of the art offshore training facility boasts a modern, professional training environment featuring two purpose built pools, equipped with helicopter underwater escape training apparatus. Built in an area with a high water table, it was essential that the pools' construction not only kept water in but also prevented water from the outside penetrating into the structure.

On site

Sika support the specifier and contractor from design through to completion.

As well as technical support, the provision of standard CAD drawings and other documentation, Sika personnel are on hand to advise and assist the ready-mix concrete producer and the contractor at every stage of the project. Sika technical staff will provide training to site personnel in order to familiarise them with the Sika products they will be using. They will visit the site regularly to ensure compliance with the specification.

- mix design approval
- pre-start meetings
- site training
- site attendance throughout
- inspection of work including joints
- final inspection
- warranty

Project reference

PHOTOGRAPH ABOVE

Project: Underground Mansion, Kensington

Architect: Jones Lamball Architects

The Sika® Watertight Concrete System enabled A P Arcon Construction to construct an exciting partly subterranean mansion, on a strip of previously vacant land between two existing buildings in Kensington. The main living, entertainment and swimming pool areas are underground.

Concrete practice

Good site practice is the key to ensuring the concrete technology from Sika and the correct structural design come together to achieve a watertight structure.

- planning of concrete pours
- formwork
- placement and compaction
- curing

Efficient curing of concrete is essential in any situation. It helps reduce the risk of cracking and enhances durability. A high quality spray on curing membrane such as Sikafloor®-ProSeal® is recommended. We would refer you to National Structural Concrete specification 4th edition (The Concrete Centre, Construct) with regard to advice on good concrete practice.

Project reference

PHOTOGRAPH ABOVE

Project: Ocean Point, Saunton Sands

Architect: Anthony Rickett Architects

Engineer: Clarkebond

The Sika® Watertight Concrete System was used in the construction of Ocean Point, a prestigious development of 16 luxury apartments, completed for Coast Group at Saunton Sands in Devon. Situated in a stunning location on the South West Coast Path, directly overlooking Saunton Sands, Ocean Point has a steep hill to the rear, with the inherent problem of draining water penetrating the semi-basement areas.

Sika Worldwide

Sika - Your Local Partner with a Global Presence

The information, and, in particular, the recommendations relating to the application and end use of Sika® products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users should always refer to the most recent issue of the Product Data Sheet for the product concerned, copies of which will be supplied on request.

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