



WATERPROOFING SIKA SOLUTIONS FOR CONCRETE BASEMENTS

BUILDING TRUST





ADVANTAGES OF OUR SOLUTIONS

Basements and below ground civil engineering structures protected with Sika waterproofing solutions have increased living comfort and wider possibilities for use, plus the total cost of ownership is reduced and the durability is increased for the entire service life of the project.

Our fully integrated and compatible system solutions are sustainably produced and well proven in practice for many decades all over the world, plus they are fully tested and certified to all leading national and international standards. This gives owners, their project specifiers and contractors the security of clearly defined performance characteristics for all of Sika's waterproofing solutions for their specific requirements.

CONTENT

4	Waterproofing Solutions
6	Below Ground Structures – Exposure and Stress
8	Owner’s Project Requirements
11	Basement Waterproofing – Concept and Strategy
12	Waterproofing Technologies
14	Excavation and Construction Procedures
16	Sika Waterproof Mortars and Bituminous Coatings
18	Sika White Box Concept and Watertight Concrete Systems
20	Liquid applied, Reactive Polymeric Membranes
22	Fully Bonded Flexible Sheet Membrane Systems
24	Compartmentalized Membrane Systems with Integrated Control and Injection Back-up
26	Basement Waterproofing Solutions
28	Repair and Refurbishment Solutions
30	Sika – The Global Leader in Structural Waterproofing

WATERPROOFING SOLUTIONS

WATERPROOFING SYSTEMS for below ground structures are faced with more stringent requirements regarding durability, exposure and stress conditions, construction method and sequence, ease of application and total cost management. In addition, sustainable system solutions are becoming more important in order to save natural resources, energy and water, plus reduction of CO₂ etc. As the global leader in providing structural waterproofing solutions, Sika has the most complete and comprehensive range of products and systems that are designed and can be adapted to meet the specific needs and requirements of owners, architects, engineers and contractors on site.



RESIDENTIAL BUILDINGS

Basement waterproofing solutions for storage rooms, wellness and fitness areas or movie theatres in residential buildings.



COMMERCIAL OFFICE BUILDINGS

Basement waterproofing solutions for strong rooms, computer rooms or storage rooms in commercial office buildings.



ARCHIVES/LIBRARIES

Completely dry basement waterproofing solutions for humid sensitive archive rooms in libraries.



UNDERGROUND PARKING AREA

Basement waterproofing solutions for different grades of watertight underground parking areas.

Basement or any below-ground structure that is formed by a base slab, walls and a top slab, is partially or fully exposed to the surrounding soil and groundwater, resulting in specific exposure and stress from the prevailing permanent or temporary environmental conditions. Today new building owners generally request a service life of 50 years or more, and for structures such as tunnels up to 120 years. Any lack of watertightness severely reduces the long-term durability of a building or other below-ground structure and badly affect its planned use as water ingress will result in physical attack and deterioration of the concrete. This leads to expensive structural repair works, damage or loss of interior finishes and goods, operational downtime, or serious impact on the internal environment from damp and condensation.

The selection of the appropriate waterproofing method, the project specific design of the chosen waterproofing system and its correct installation on site are key elements in minimizing the Total Cost of Ownership. A waterproofing system typically amounts to less than 1% of the total core construction cost, yet the selection of a high quality waterproofing solution can easily save this amount or more, in future maintenance and repair costs over the service life of the structure.

Sika provides full range of technologies and systems used for below ground waterproofing. This includes highly flexible membrane systems, liquid applied polymeric membranes, watertight concrete admixtures, joint waterproofing systems, waterproofing mortars and coatings, as well as injection sealing grouts. All of these solutions are designed to be used together to meet the specific needs and requirements of owners, architects, engineers and contractors on site.

Sika's expertise is combined with more than 100 years of experience from all around the world, in providing successful waterproofing solutions for building basements and below ground civil engineering structures, such as tunnels and water retaining structures. Sika waterproofing experts are able to support our customers throughout their projects, from initially determining the best waterproofing concept, through detailed design and detailing, to on-site support for successful installation and completion. This also includes extensive remedial solutions for waterproofing existing structures.



METRO STATIONS

Specific waterproofing solutions for metro stations build in open-cut construction method.



SERVICE ROOMS

Basement waterproofing solutions for various plant rooms and underground power stations.



RETAIL UNITS AND WAREHOUSES

Complete dry waterproofing solutions to protect goods against humidity in retail units and warehouses.



LEISURE FACILITIES

Basement waterproofing solutions for below ground leisure facilities and indoor swimming pools and other sport rooms.

BELOW GROUND STRUCTURES – EXPOSURE AND STRESS



TYPE OF EXPOSURE AND STRESS

Below ground structures can be subject to many different exposure conditions including:

- Different levels of water exposure and pressure (e.g. damp soil, percolating water or water under hydrostatic pressure, and open water)
- Aggressive ground water containing chemicals (commonly sulphates and chlorides in solution)
- Unequal static forces (due to load, settlement, or uplift, etc.)
- Dynamic forces (e.g. from settlement, earthquake, explosion, etc.)
- Temperature variations (frost during the night/winter, heat during the day/summer)
- Gases in the ground (e.g. Methane and Radon)
- Aggressive biological influences (plant roots/growth, fungal or bacterial attack)



EXPOSURE IMPACT ON BELOW GROUND STRUCTURES

These different types of exposure may adversely influence the use, watertightness and durability of a basement structure, resulting in a reduced service life of the entire structure.

Exposure	Impact on structure
Water ingress	→ Damage to structure, finishes, contents and the internal environment (condensation and mould growth etc.), loss of thermal insulation, corrosion of steel reinforcement
Aggressive chemicals	→ Concrete damage (due to sulphate attack), corrosion of steel reinforcement (due to chloride attack)
Unequal static forces	→ Structural cracking
Dynamic forces	→ Structural cracking
Temperature variations	→ Condensation, scaling or cracking of concrete
Gas penetration	→ Gas penetration and exposure for occupants
Fungal/bacterial attack	→ Damage to the waterproofing system, finishes or contents

OWNER'S PROJECT REQUIREMENTS

To define the appropriate waterproofing strategy and type of system for a specific project, it is important to consider not only the ground conditions but also the project requirements of the owner: Functionality and future use, the service life and the total cost of ownership.

Owners requirements

1 Functionality
(Use, grade of watertightness)

2 Service Life / Durability

3 Total Cost of Ownership
(incl. maintenance cost)

1 DEGREE OF WATERTIGHTNESS REQUIRED

The future use defines the degree of watertightness and protection of a structure. The British standards describes in BS 8102-2009 different level of watertightness which can be combined with additional protection requirements.

GRADE 1

Basic utility

Some seepage and damp areas tolerable*

* Dependent on use



- Underground car parks
- Plant rooms
- Workshops

GRADE 2

Better utility

No water penetration, some damp areas tolerable*, ventilation may be required

* Dependent on use



- Underground car parks
- Storage areas
- Plant rooms
- Workshops

GRADE 3

Habitable

No water penetration acceptable, ventilation and dehumidification are required



- Ventilated residential units and offices
- Restaurants and commercial areas
- Leisure facilities

ADDITIONAL REQUIREMENTS (FORMERLY GRADE 4)

As Grade 3 plus:

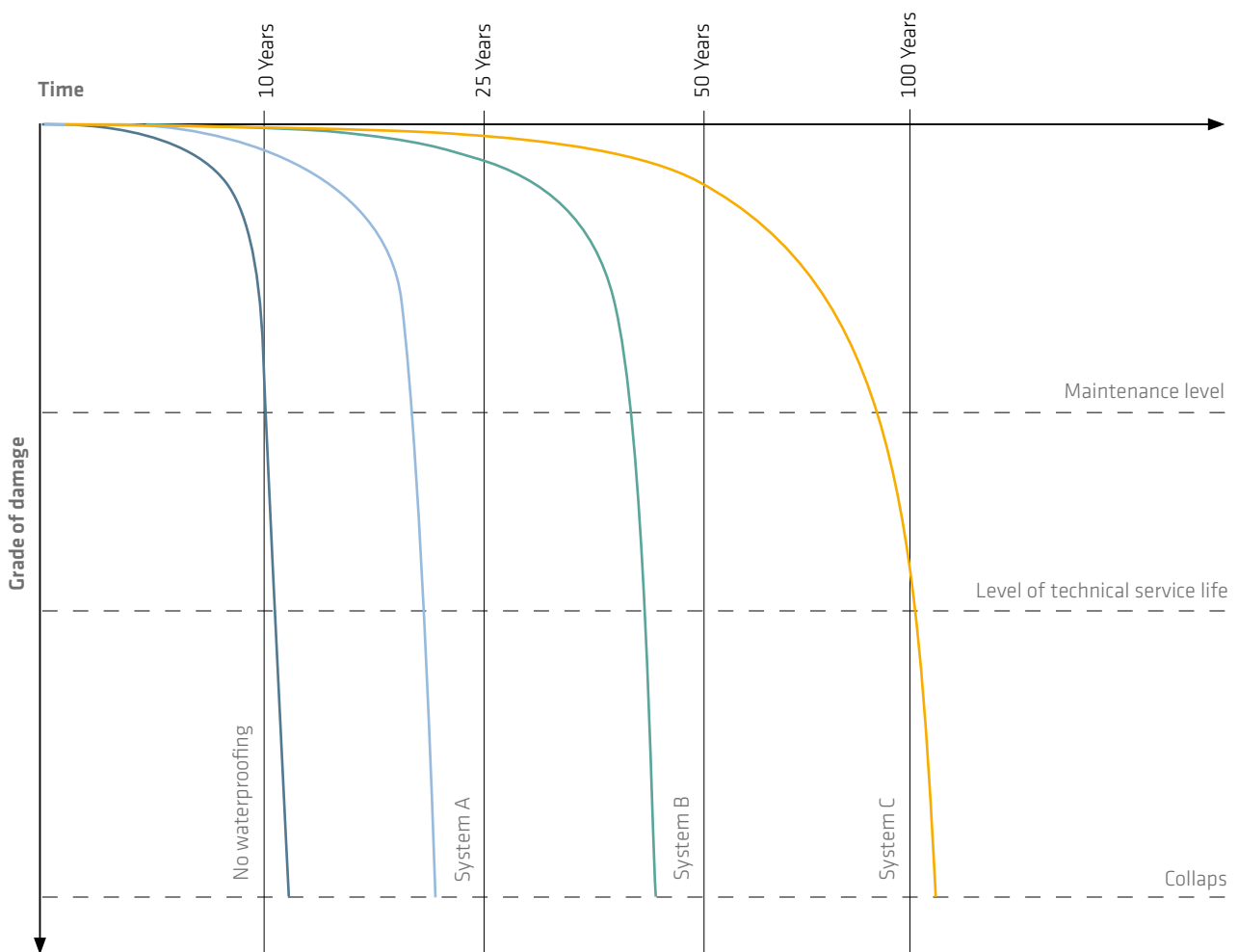
- No water vapour penetration
- Totally dry environment
- Protection against chemical attacks
- Gas barrier
- etc.



- Residential areas
- Computer rooms
- Archives
- Special purpose facilities and areas

2 SERVICE LIFE / DURABILITY

The required service life of individual concrete structure is mainly affected by water ingress and depends on the protection performance and longevity of selected waterproofing system. The graphic below shows the service life/durability of a structure depending on the grade of waterproofing system.



No Waterproofing: structure directly exposed to ground water without any waterproofing system.

System A: structure protected with low grade waterproofing system.

System B: Structure protected with a medium grade waterproofing system.

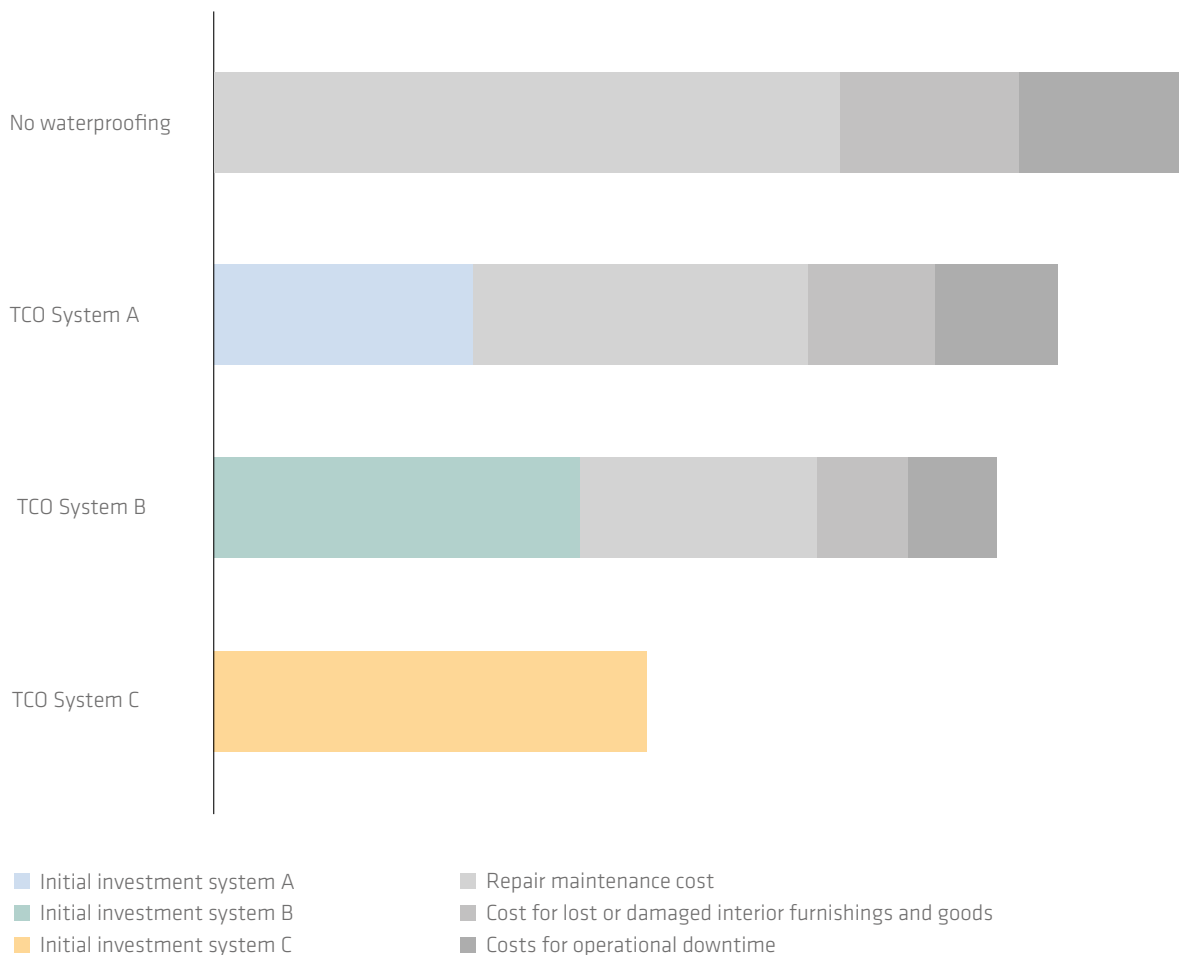
System C: Structure protected with a high grade waterproofing system.

OWNER'S PROJECT REQUIREMENTS

3 TOTAL COST OF OWNERSHIP

The total cost of ownership (TCO) for the owner and investor includes all of the building costs for the entire service life of the structure, including the initial investment, the cost of any loss or damage to interior furnishings and goods etc. due to water ingress, the cost of any repair and maintenance, plus the cost of any downtime during any such works.

The graphic below illustrates the total cost of ownership for a specific project (e.g. typical commercial building) with a required service life of at least 50 years.



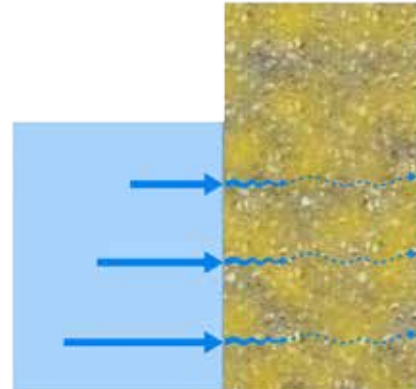
BASEMENT WATERPROOFING – CONCEPT AND STRATEGY

In general there are 3 different waterproofing concepts which can take all of the relevant project requirements into consideration:

INTEGRAL WATERPROOFING SYSTEM

A waterproofing system integrated into the concrete structure. Liquid water penetration is stopped by the structure itself and cannot entirely pass through into the basement. Typical products are admixtures for watertight concrete combined with appropriate joint sealing systems for connection, construction and movement joints.

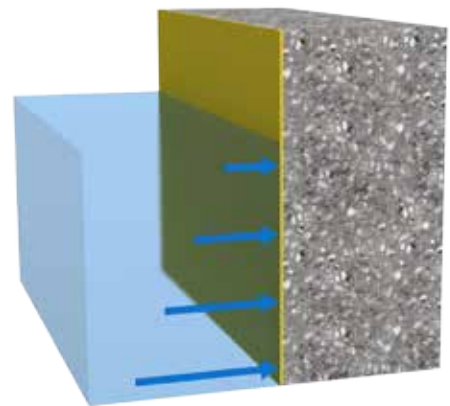
- Grade of watertightness: Grades 1–3
- Application: New construction
- Protection provided: Waterproofing
- Durability: Very high durability (for non-aggressive ground water)



EXTERNAL WATERPROOFING SYSTEM

A waterproofing barrier applied on the external surfaces that are exposed to ground water (positive side). The structure is protected against water ingress and also against any aggressive substances or influences. For some materials such as post applied waterproofing mortars and coatings, access to the external surfaces is required for application after concreting.

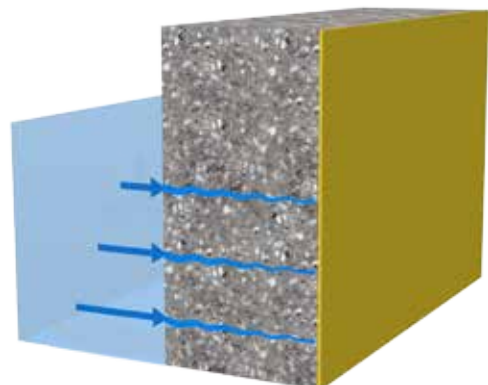
- Grade of watertightness: Grades 1–3 plus additional requirements
- Application: New construction
- Protection provided: Waterproofing & concrete protection
- Durability: Low to high durability



INTERNALLY APPLIED WATERPROOFING SYSTEM

A waterproof barrier is applied on the internal surfaces of the structure (negative side). These systems do not prevent damage to the structure from water ingress, nor concrete damage due to aggressive chemicals. Generally these systems are applied as coatings or sheet membrane linings, and is only recommended for refurbishment works in example where access to the directly exposed surfaces is not possible.

- Grade of watertightness: Grades 1–3
- Application: Generally for refurbishment only
- Protection provided: Waterproofing
- Durability: limited durability (as the structure is unprotected)



WATERPROOFING TECHNOLOGIES



1 Waterproofing mortars and renderings



4 Liquid applied reactive membranes (PUR/PUA)



2 Sika White Box concept/Watertight concrete



5 Fully bonded sheet membranes

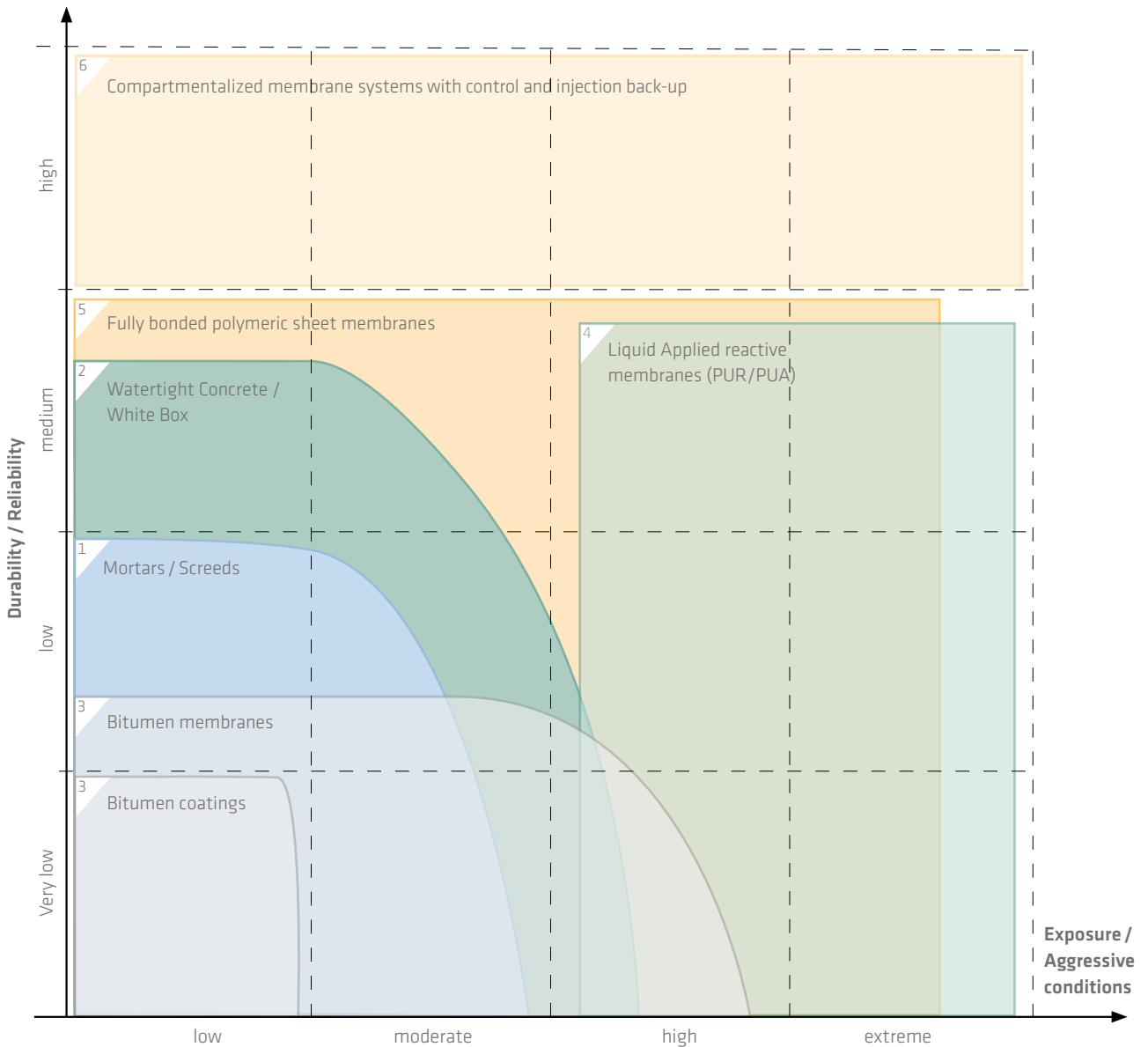


3 Bitumen coatings and membranes



6 Compartmentalized sheet membrane systems

The performance of each different waterproofing technology can generally be positioned as follows:



Durability / Reliability

Very low: <10 years/water ingress not really controlled.
 Low: 10 - 20 years/water ingress limited.
 Medium: 25 - 50 years/water ingress very limited.
 High: >50 years/water ingress complete under control.

Exposure / Aggressive conditions

Low: water pressure 0 - 5 m/no settlement, no aggressive ground water.
 Moderate: water pressure 5 - 10 m/no aggressive ground water, cracks <0.2 mm.
 High: water pressure 10 - 20 m/aggressive ground water, settlement.
 Extreme: water pressure >20 m/very aggressive ground water, earthquake, gas penetration.

EXCAVATION AND CONSTRUCTION PROCEDURES

The type and depth of excavation and construction procedure also affects the selection and installation of the waterproofing system, e.g. for some externally applied waterproofing systems, working space is required. Therefore this has to be taken into consideration at an early stage of the design phase in order to plan sufficient excavation and any temporary works required such as shoring etc.. Waterproofing systems and their use with typical excavation requirements / construction methods are shown below.

OPEN CUT EXCAVATION

WITH SLOPING SIDES

Description:

This basic excavation method using sloping sides allows an easy bottom-up construction method and has no impact on the selection or installation of the waterproofing system.

Waterproofing systems:

Integral waterproofing systems:

- Sika White Box / Watertight Concrete System

Externally applied waterproofing systems:

- Compartmentalized membrane systems
- Pre- and post-applied fully bonded sheet membranes
- Liquid applied membranes
- Waterproofing mortars and coatings (in combination with drainage systems)



WITH RETAINING WALLS

Description:

Open cut excavation using temporary shoring/ retaining walls does not influence the selection or installation of the waterproofing system when enough space (>1.0 m) can be provided between the retaining wall and the structure.

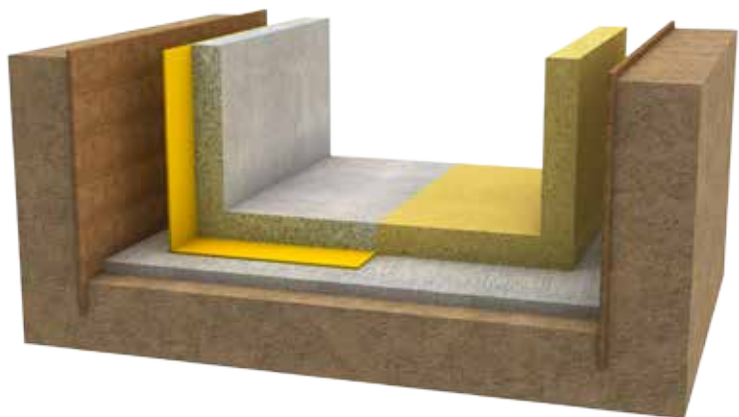
Waterproofing systems:

Integral waterproofing systems:

- Sika White Box / Watertight Concrete System

Externally applied waterproofing systems:

- Compartmentalized membrane systems
- Pre- and post-applied fully bonded sheet membranes
- Liquid applied membranes
- Waterproofing mortars and coatings (in combination with drainage systems)



CONSTRUCTION WITH PILED / DIAPHRAGM WALLS

CONSTRUCTION INSIDE PILE WALLS

Description:

Pile walls or diaphragm walls limit the selection of the waterproofing system due to limited space and access. This is because the structure is normally built directly against this wall. Post- and externally applied, bonded waterproofing systems can therefore not be used for these structures.

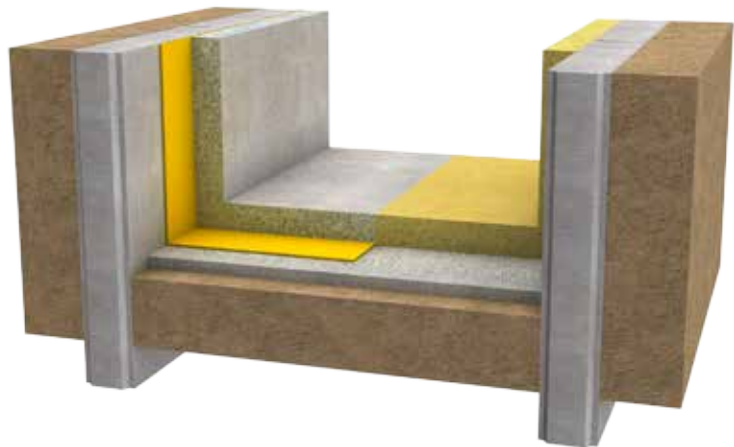
Waterproofing systems:

Integral waterproofing systems:

- Sika White Box / Watertight Concrete System

Externally applied waterproofing systems (base slab):

- Compartmentalized membrane systems
- Pre-applied fully bonded sheet membranes



PILE WALLS FORMING PART OF THE STRUCTURE

Description:

This method can be used for bottom-up as well as top-down construction. Unlike other methods, diaphragm walls are also used to form part of the new structure. Waterproofing of the connections and intersections between base slab / walls are key. Externally applied waterproofing can only be used below the base slab.

Waterproofing systems:

Integral waterproofing systems:

- Sika White Box / Watertight Concrete System

Externally applied waterproofing systems (base slab):

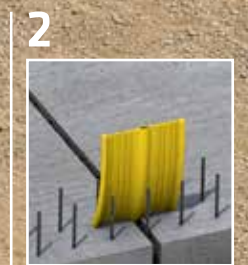
- Compartmentalized membrane systems
- Pre-applied fully bonded sheet membranes



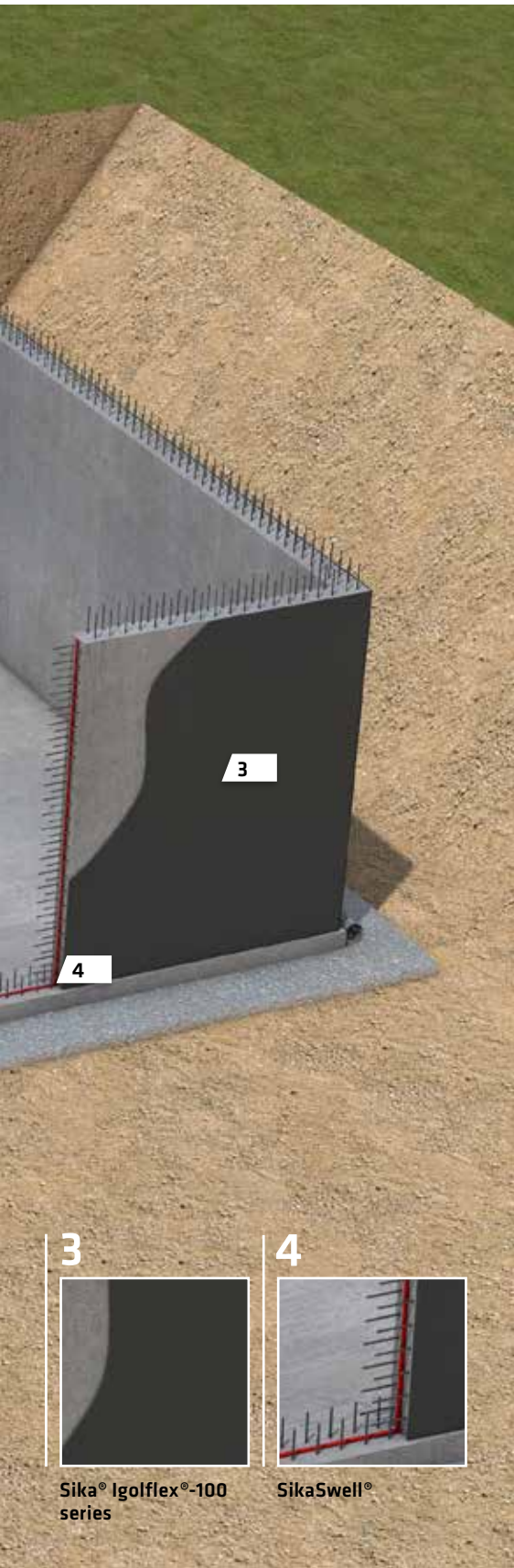
SIKA WATERPROOF MORTARS AND BITUMINOUS COATINGS



SikaTop® Seal-107
SikaSeal®-250
Migrating



Sika® Waterbar



EXTERNALLY APPLIED SYSTEMS WITH OR WITHOUT CRACK-BRIDGING ABILITIES

Sika waterproof mortars and bitumen based coatings are rigid or semi-flexible waterproofing products. They are supplied as ready to use solutions for many basements to seal against damp soil, seepage and percolating water. They must be pre-applied on suitable substrates under new structural concrete slabs and are generally post-applied externally on new walls. They must be used in combination with appropriate joint waterproofing systems for the connection, construction and movement joints. Good external drainage with a permanent dewatering system is also necessary; normally using drainage pipes placed at or below the level of the base slabs to prevent any build-up of water pressure.

USE

- As a waterproofing system for Grades 1 to 2
- To protect structures against percolating water
- For limited ground conditions (no settlement, less aggressive environments, low water pressure)

MAIN ADVANTAGE

- Cost efficient solution (Material + Application)
- Ready to use & easy to apply
- Provide additional concrete protection

TYPICAL PROJECTS

- Domestic applications
- Residential buildings
- Industrial buildings

SIKA PRODUCTS AND SYSTEM SOLUTIONS

SikaTop® Seal-107	2-component, polymer modified, rigid cementitious waterproofing mortar, internally and externally applied for full surface waterproofing and tanking.
--------------------------	---

SikaSeal®-250 Migrating	1-component, rigid and cement based active crystalline waterproofing slurry for internal and external applications on concrete.
--------------------------------	---

Sika® Igolflex®-100 series	One component, rigid, solvent-free, polystyrene-filled bitumen based coatings for use against water ingress and in contact with ground water (positive water pressure side).
-----------------------------------	--

Sika® Igolflex®-200 series	Two component, flexible, solvent-free, fibre-filled bitumen based coatings, for use against water ingress and in contact with ground water (positive water pressure side).
-----------------------------------	--

Complementary products for joint sealing and waterproofing:

Sika® Waterbars	Internally or externally applied joint waterstops, based on PVC or TPO, for sealing construction and movement joints.
------------------------	---

SikaSwell® Sealants and Profiles	Range of hydrophilic profiles and gun applied sealants, designed for the sealing and waterproofing of construction joints and penetrations (e.g. pipe entries).
---	---

3



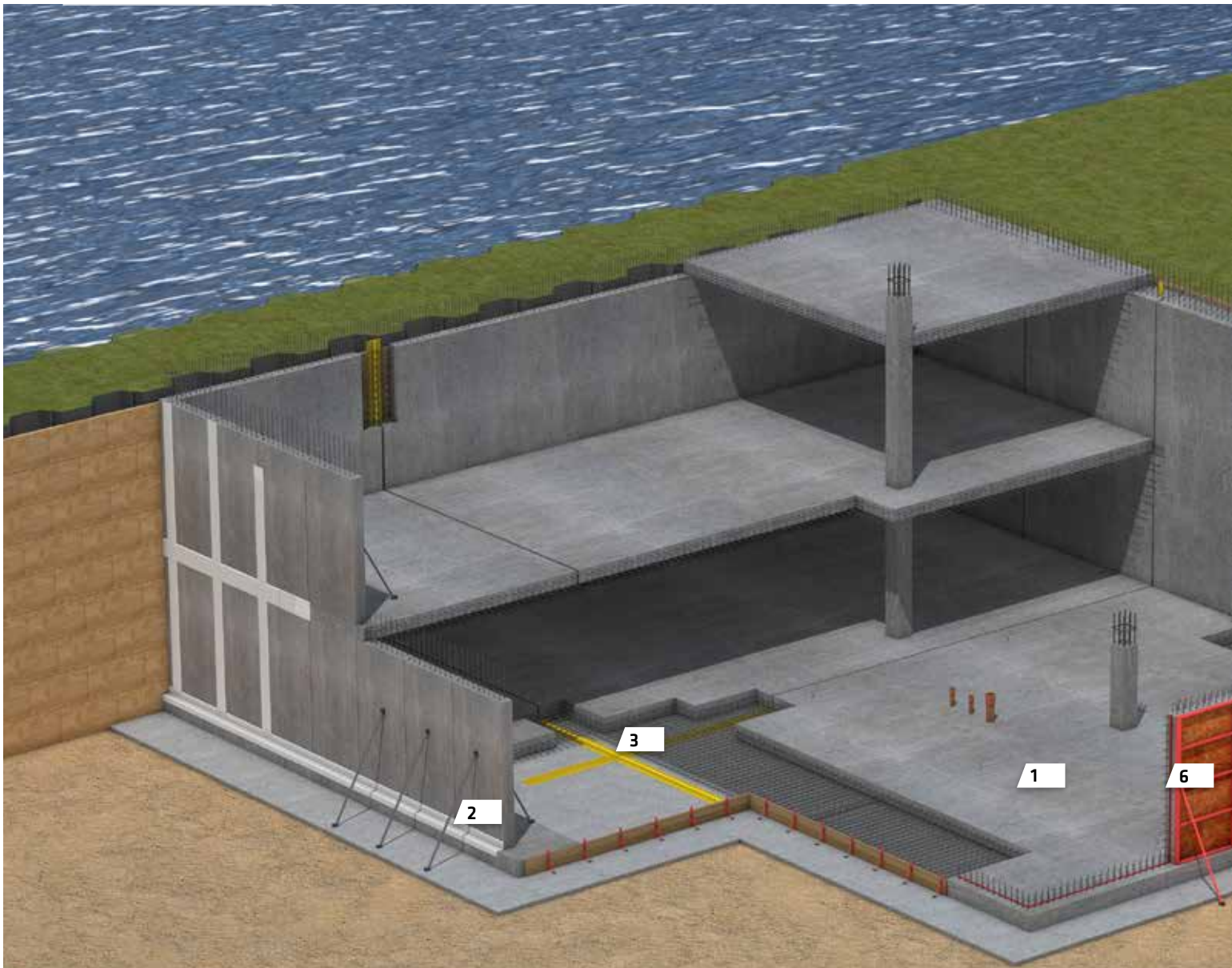
Sika® Igolflex®-100 series

4



SikaSwell®

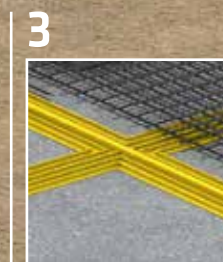
SIKA WHITE BOX CONCEPT AND WATERTIGHT CONCRETE SYSTEMS



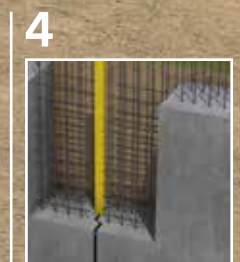
1
Sika ViscoCrete®
Sika® WT-100/-200



2
Sikadur-Combiflex® SG



3
Sika® Waterbar
Tricosal® Waterbar



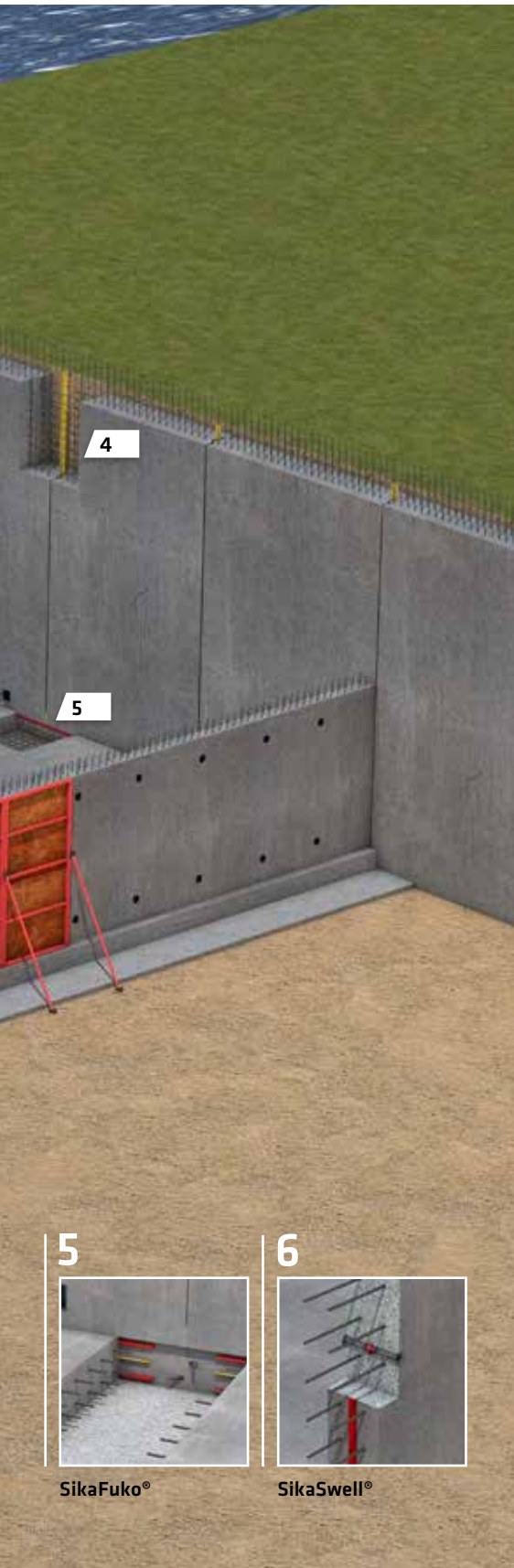
4
Sika® Waterbar

6

1

3

2



INTEGRAL, RIGID AND COST EFFICIENT SYSTEMS

The “Sika White Box Concept” involves optimum structural design and reinforcement together with an integral rigid waterproofing solution. This consists of a waterproof concrete combined with appropriate joint sealing systems for any necessary construction and movement joints. To produce concrete that is impermeable to water, special admixtures including superplasticizers and pore-blocking or crystalline agents have to be used, in order to also ensure optimum consistence, flow and ease of compaction in a dense matrix with minimal voids. For sealing the joints, many different Sika solutions can be used including hydrophilic sealants / profiles, waterbars in various material qualities, injection hoses or sealing tapes, dependent on the type and location of the joint and its requirements.

USE

- As the waterproofing solution for Grades 1 – 3
- For non-moving structures and less aggressive environments (without additional concrete protection)

MAIN ADVANTAGE

- Cost effective solution (Material + Application)
- Very durable waterproofing system
- Reduced working procedures on site

TYPICAL PROJECTS

- Underground car parks
- Commercial developments
- Residential buildings
- Industrial facilities

SIKA PRODUCTS AND SYSTEM SOLUTIONS

SikaPlast® / Sika ViscoCrete®

Mid and high range water reducing admixtures for significant reduction of water/cement ratio and improving workability.

Sika® WT-100 / -200

Water resisting admixtures based on hydrophobic, pore blocking and cristalined technology used to reduce permeability of concrete.

Sika® Control

Shrinkage reducing admixture to limit crack formation throughout the hardening phase.

SikaFume® range

Additives based on pozzolanic silica fume that is used to reduce the hardened pore volume and permeability of the concrete.

Sika® Waterbars

Internal or external applied waterstops based on PVC or TPO for construction and movement joints.

SikaSwell® Sealants and Profiles

Range of hydrophilic profiles and gun applied sealants, designed for the sealing and waterproofing of construction joints and penetrations (e.g. pipe entries).

SikaFuko® Injection Hoses

Injection hoses for construction joints that can be used for sealing by injection and re-injection in the event of future movement etc.

Sikadur-Combiflex® SG System

High performance, over-banding sealing tape system for post-sealing and waterproofing of construction and movement joints.

Tricosal® Waterbars

Internal and external applied waterstops and flanging systems based on rubber for heavy duty joint waterproofing.

5



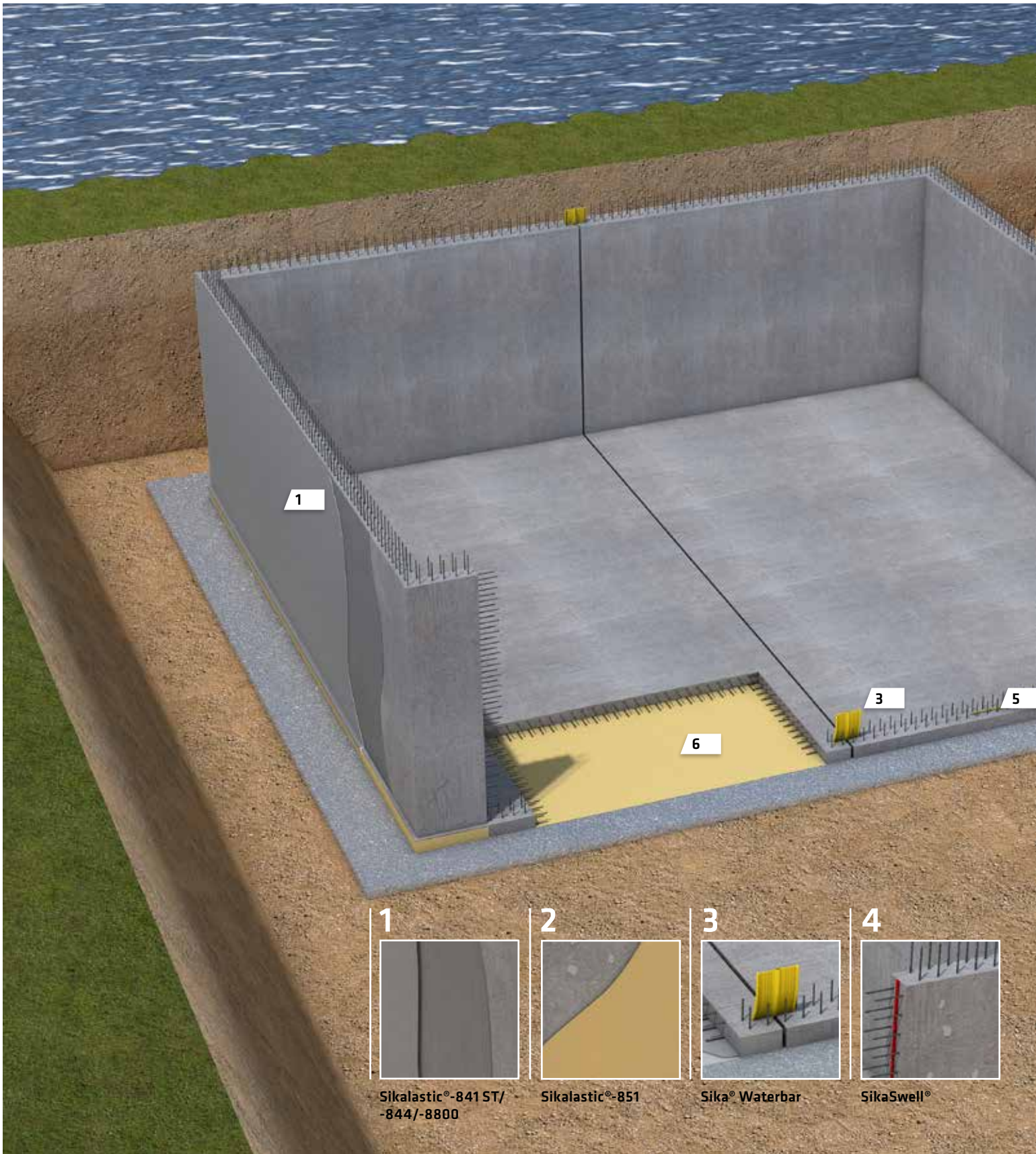
SikaFuko®

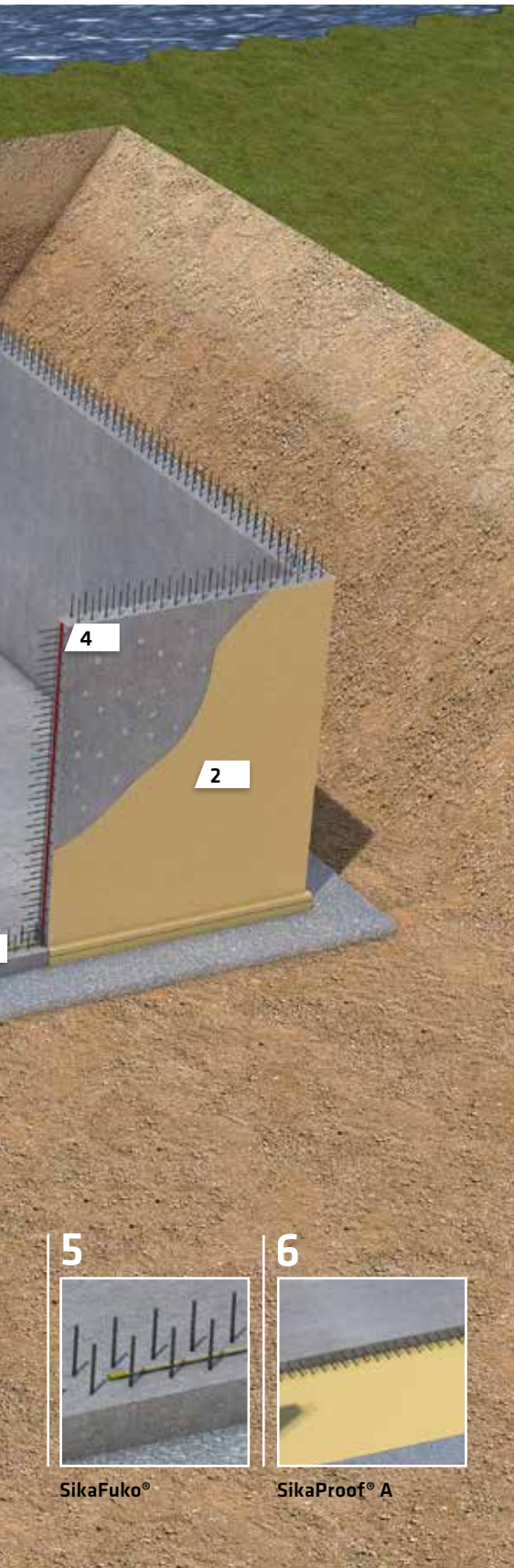
6



SikaSwell®

LIQUID APPLIED, REACTIVE POLYMERIC MEMBRANES





FAST TO APPLY, CRACK-BRIDGING, POLYURETHANE AND POLYUREA BASED LIQUID MEMBRANES

Sika liquid applied membranes (LAM) are highly elastic and flexible polymeric systems, usually based on polyurea resins with excellent technical properties for high performance applications. These materials are applied on prepared / primed external concrete surfaces by hand or spray and they can provide excellent solutions for complex detailing.

Liquid applied membranes will also prevent any lateral water underflow in the event of local damage.

USE

- As the waterproofing solution for Grades 1 – 3+
- For additional protection to concrete structures against aggressive influences such as chlorides, sulphates or biological attack

MAIN ADVANTAGE

- High crack-bridging ability
- High chemical and abrasion resistance
- Easy to apply, especially around complex details

TYPICAL PROJECTS

- Underground car parks
- Commercial developments
- Residential buildings
- Industrial facilities
- Civil engineering structures (e.g. open-cut tunnels)

SIKA PRODUCTS AND SYSTEM SOLUTIONS

Sikalastic®-851	Highly flexible, crack bridging, fast curing, 2-component polyurethane/polyurea based liquid applied membranes for vertical and horizontal areas.
Sikalastic®-841 ST/-844/-8800	Highly flexible, very fast curing, pure polyurea based, liquid applied membranes with very good chemical resistance for both, vertical and horizontal areas.
Complementary products for Joint Sealing and Waterproofing:	
Sika® Waterbar	Externally fixed, cast-in-place waterstops based on PVC or FPO for sealing and waterproofing construction and movement joints.
SikaFuko® Injection hoses	Injection hoses for construction joints and other details, with or without swelling strips, which can be used for sealing by injection and re-injection in the event of future movement etc.
SikaSwell® Sealants and Profiles	Range of hydrophilic profiles and gun applied sealants, designed for the sealing and waterproofing of construction joints and penetrations (e.g. pipe entries).
Sikadur-Combiflex® SG System	High performance, over-banding sealing tape system for post-sealing and waterproofing of construction and movement joints.
SikaProof® A	Pre- and cold applied sheet waterproofing membrane system for application below base slab.



SikaFuko®



SikaProof® A

FULLY BONDED FLEXIBLE SHEET MEMBRANE SYSTEMS



2

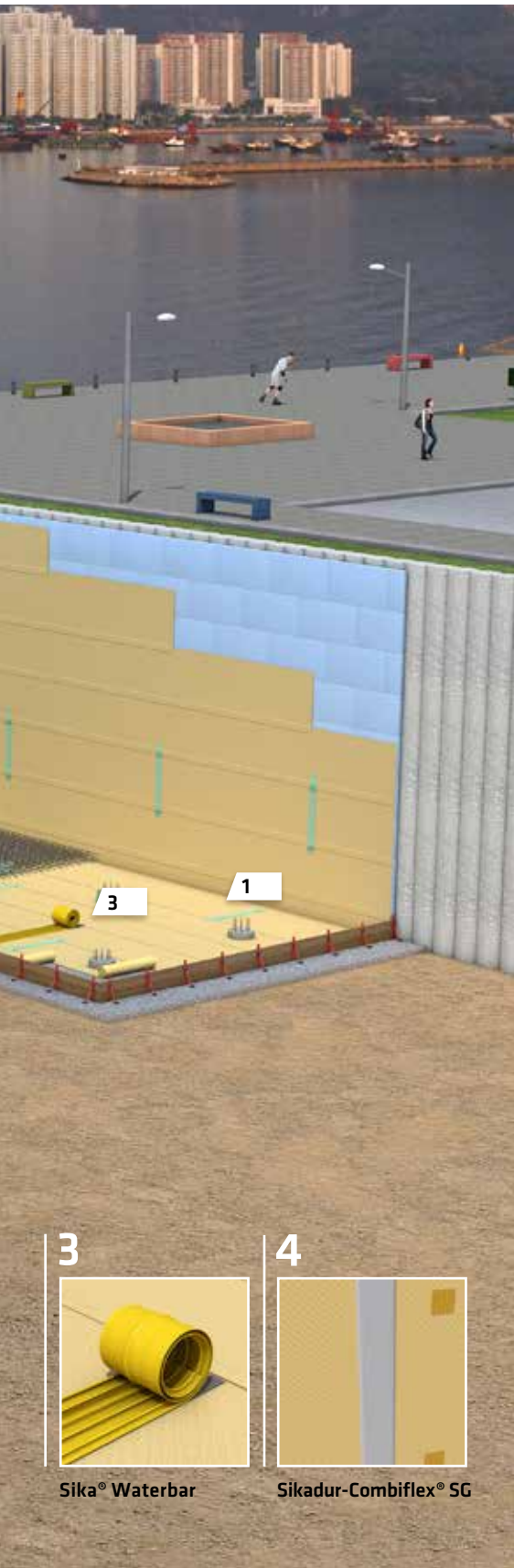
4



SikaProof® A



SikaProof® P



SIKA'S UNIQUE, PRE-APPLIED, FULLY BONDED AND CRACK-BRIDGING MEMBRANE SYSTEM

SikaProof®, the fully bonded and highly flexible FPO sheet waterproofing membrane systems can permanently prevent any lateral water underflow between the waterproofing and the structural concrete in the event of local damage, even when this has occurred below the base slab.

The SikaProof® fully bonded sheet waterproofing membrane systems are simple and easy to use, making them fast and secure to install on site. The overlaps, butt joints and details are all connected and sealed very simply by bonding them together with sealing tapes or self-adhered strips. There are no complicated welding procedures and no special equipment is required on site.

USE

- As the waterproofing solution for Grades 1 – 3+
- For aggressive ground conditions (ground water and soil, Radon gas etc.)

MAIN ADVANTAGE

- Cost effective solution (Material + Application)
- High durability
- No lateral water underflow
- High flexibility and crack-bridging ability
- Approved detailings

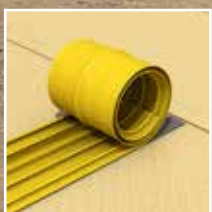
TYPICAL PROJECTS

- All types of concrete basements (residential, commercial etc.)
- Industrial facilities
- Pre-cast structures

SIKA PRODUCTS AND SYSTEM SOLUTIONS

SikaProof® A	Pre- and cold applied sheet waterproofing membrane system for application below base slabs, plus on single and double-faced formwork cast walls.
SikaProof® P	Post-applied sheet waterproofing membrane system, specially designed for roof slabs and double-faced formwork cast walls.
Complementary products for joint sealing and waterproofing:	
Sika® Waterbar	Externally fixed, cast-in-place waterstops based on PVC or TPO for sealing and waterproofing construction and movement joints.
Sikadur-Combiflex® SG System	Over-banding sealing tape system for post-sealing and waterproofing of construction and movement joints, around penetrations and for connections.
SikaSwell® Sealants and Profiles	Range of hydrophilic profiles and gun applied sealants, designed for sealing and waterproofing of construction joints and penetrations.(e.g. pipe entries).
SikaFuko® Injection hoses	Injection hoses for construction joints and other details, with or without swelling strips, which can be used for sealing by injection and re-injection in the event of future movement etc.

3



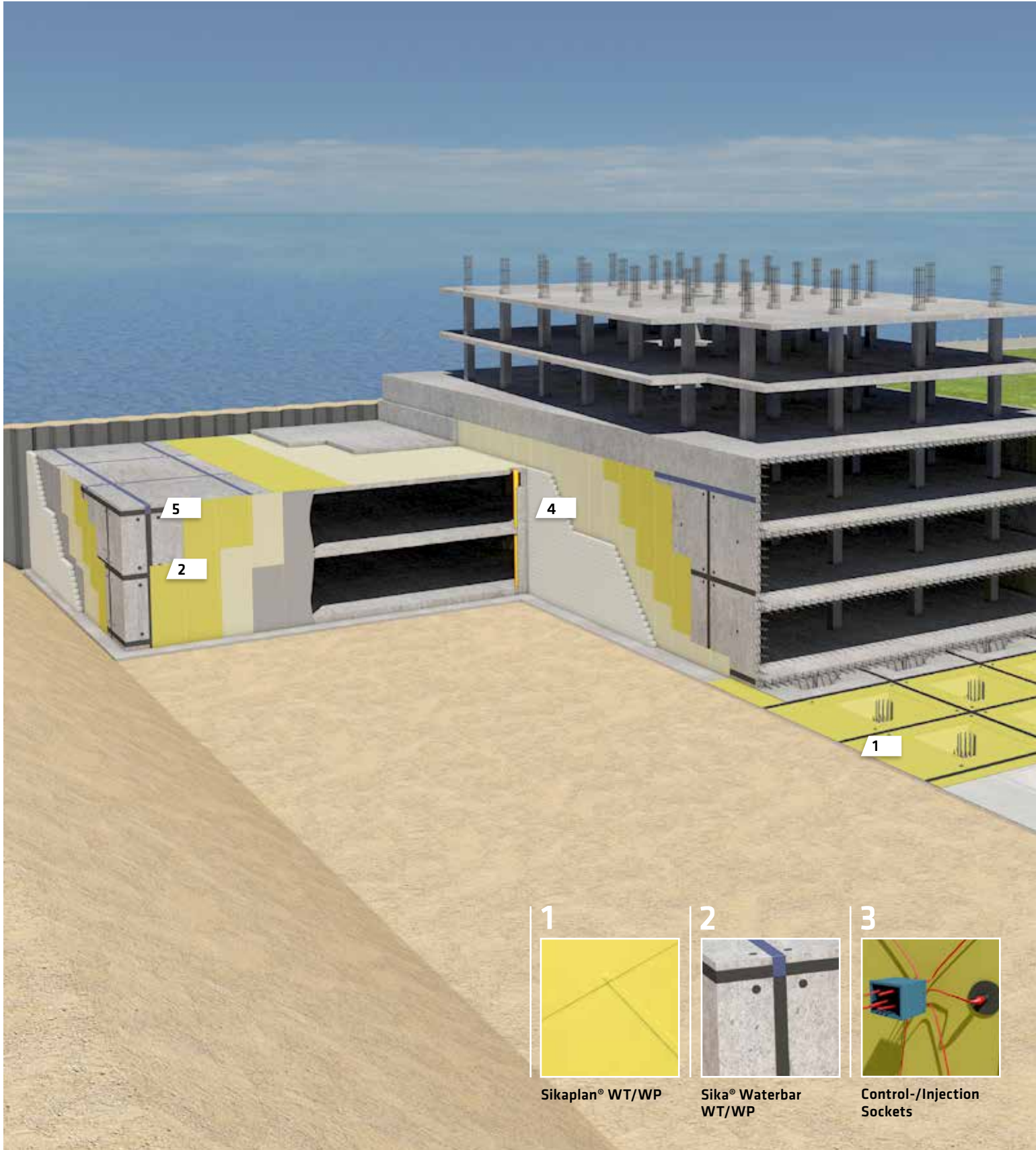
Sika® Waterbar

4



Sikadur-Combiflex® SG

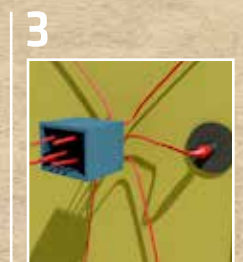
COMPARTMENTALIZED MEMBRANE SYSTEMS WITH INTEGRATED CONTROL AND INJECTION BACK-UP



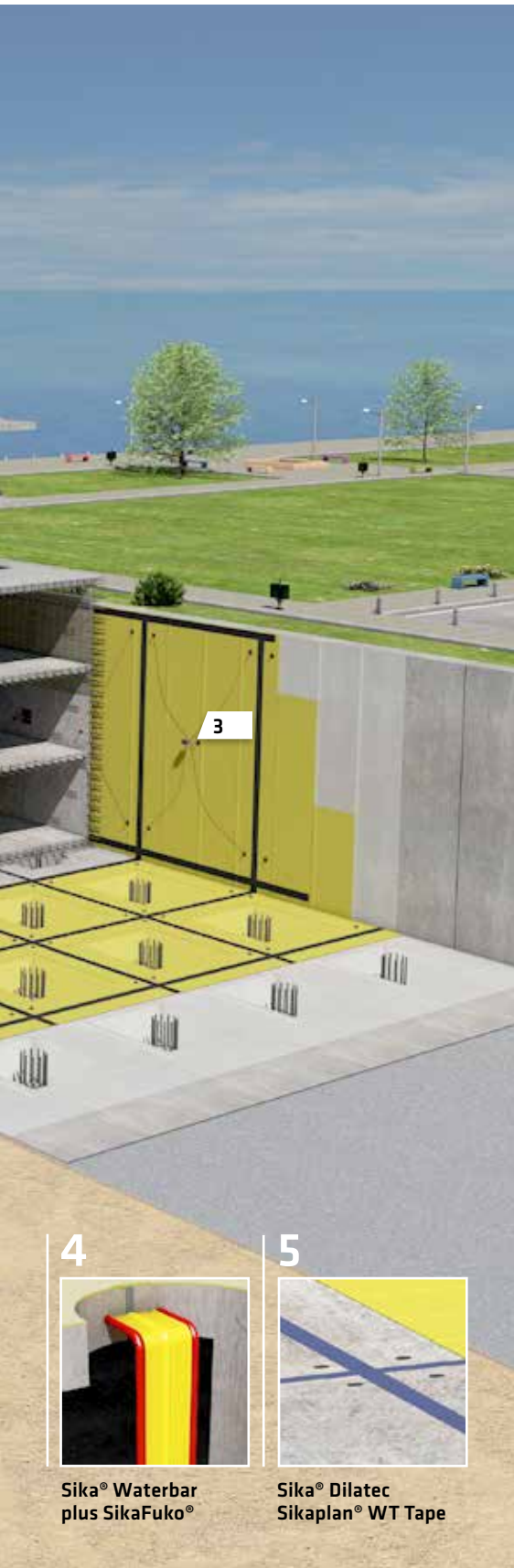
Sikaplan® WT/WP



Sika® Waterbar
WT/WP



Control-/Injection
Sockets



HIGH PERFORMANCE, CRACK-BRIDGING AND FULLY CONTROLLED

Highly flexible waterproofing systems using Sikaplan PVC based or FPO based sheet waterproofing membranes are installed externally and cover the entire basement structure in contact with the ground. The waterproofing layer is divided into 'compartments' with a network of cast in place compatible waterstops that are welded to the membrane. This allows very significant reduction of risk as in the event of any leaks (i.e. from damage to the membrane), the position of the leak is easy to locate by the control and injection sockets and remedial action (i.e. injection) can be taken to ensure continued watertightness and concrete protection of the system at any time during its service life.

USE

- As waterproofing solutions for Grades 1 – 3+
- For high demands and harsh ground conditions
- Protection against radon or methane gas
- For structures in aggressive groundwater like coastal areas

MAIN ADVANTAGE

- Watertightness is controlled and secured at any time
- Highly crack bridging
- Easily repaired in case of leaks due to direct access of compartment
- Secure full protection of concrete

TYPICAL PROJECTS

- Underground car parks
- All types of buildings residential, commercial, Public etc.)
- Industrial facilities
- Containment areas
- Civil engineering structures (e.g. Metro stations)

SIKA PRODUCTS AND SYSTEM SOLUTIONS

Sikaplan® WP 1100 series	Homogeneous and plasticized PVC sheet waterproofing membranes and gas-tight barriers for general use, loose laid with the membrane overlaps connected by heat welding.
Sikaplan® WT 1200 series	FPO sheet waterproofing membranes and gas-tight barriers for use against aggressive groundwater, loose laid with the membrane overlaps connected by heat welding.
Sika® Waterbar WP/WT	Cast-in-place external waterstops, based on PVC or FPO, connected with similar based sheet waterproofing membranes by heat welding, for compartmentalized waterproofing systems.
Control- and Injection Sockets	Preformed pieces based on PVC or FPO, connected with flexible injection pipes to allow access to compartments for the control of watertightness and injection in the event of leaks.
Complementary sealing system solutions:	
Sikaplan® WT Tape 200	Adhesive sealing tape based on FPO, compatible with Sikaplan WT sheet membranes for waterproofing the terminations of post-applied compartment systems.
Sika® Dilatec E/ER	Adhesive sealing tapes based on plasticized PVC, compatible to Sikaplan WP sheet membranes for waterproofing terminations of post applied compartment systems.

Sika® Waterbar plus SikaFuko®

Sika® Dilatec Sikaplan® WT Tape

BASEMENT WATERPROOFING SOLUTIONS

An overview and selection guide for new constructions

SikaTop® / SikaSeal® / Sika® Igolflex®



Sika White Box



Technology / Type of system

Mortars & Coatings

Watertight Concrete

Waterproofing Concept / Strategy

Externally applied

Integral

Grade of watertightness

Grades 1–2

Grades 1–3

Concrete protection

Limited

Low

Water resistance level

- Seepage / percolating water
- Rising capillary water

- High hydrostatic pressure
- Seepage / percolating water
- Rising capillary water

Performance characteristics

Crack-bridging: n.a.
 Water vapour tightness: +
 Chemical resistance: +
 Gas barrier: +
 Durability: +

Crack-bridging: n.a.
 Water vapour tightness: +
 Chemical resistance: +
 Gas barrier: +
 Durability: +++

Safety level / Reliability

Low

Low to medium

Excavation method

Only open excavation

Open excavation and piled walls

Repair in the event of leaks

By crack or area injection

By local injection of limited areas.
 Damage is easy to locate

Conditions of application

- Controlled conditions required (temperature, water, humidity)
- Substrate preparation required

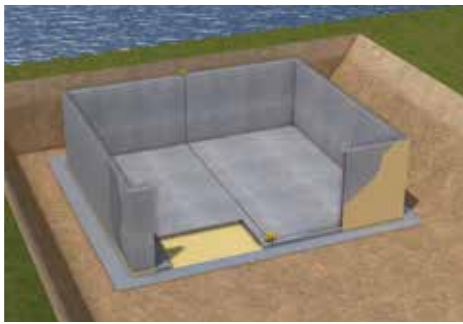
- Limited to suitable temperatures for concreting works.
- No substrate preparation required

Advantages

- Very cost effective
- Simple & fast to apply

- Very cost effective
- No protection required (walls)
- Simple & fast construction
- High durability

Sikalastic®



Liquid Applied Membranes

Externally applied

Grades 1–3 plus additional requirements

Very high

- Medium hydrostatic pressure
- Seepage / percolating water
- Rising capillary water

Crack-bridging: ++
 Water vapour tightness: +++
 Chemical resistance: ++
 Gas barrier: ++
 Durability: +

Medium

Only open excavation

By crack injection

- Controlled conditions required (temperature, water, humidity)
- Substrate preparation required

- High performance
- Easy detailing solutions
- High durability

SikaProof®



Fully bonded Sheet Membrane

Externally applied

Grades 1–3 plus additional requirements

High

- High hydrostatic pressure
- Seepage / percolating water
- Rising capillary water

Crack-bridging: ++
 Water vapour tightness: ++
 Chemical resistance: ++
 Gas barrier: ++
 Durability: ++

Medium to high

Open excavation and piled walls

By crack injection

- Controlled conditions required (temperature, water, humidity).
- Substrate preparation required
- Limited exposure time before concreting
- Membrane to be cleaned before concreting

- Highly efficient
- High performance
- Easy to apply
- Low risk
- High durability

Sikaplan®



Compartmentalized Membrane System with integrated control- and Injection back-up

Externally applied

Grades 1–3 plus additional requirements

Very high

- Very high hydrostatic pressure
- Seepage / percolating water
- Rising capillary water

Crack-bridging: +++
 Water vapour tightness: +++
 Chemical resistance: +++
 Gas barrier: +++
 Durability: +++

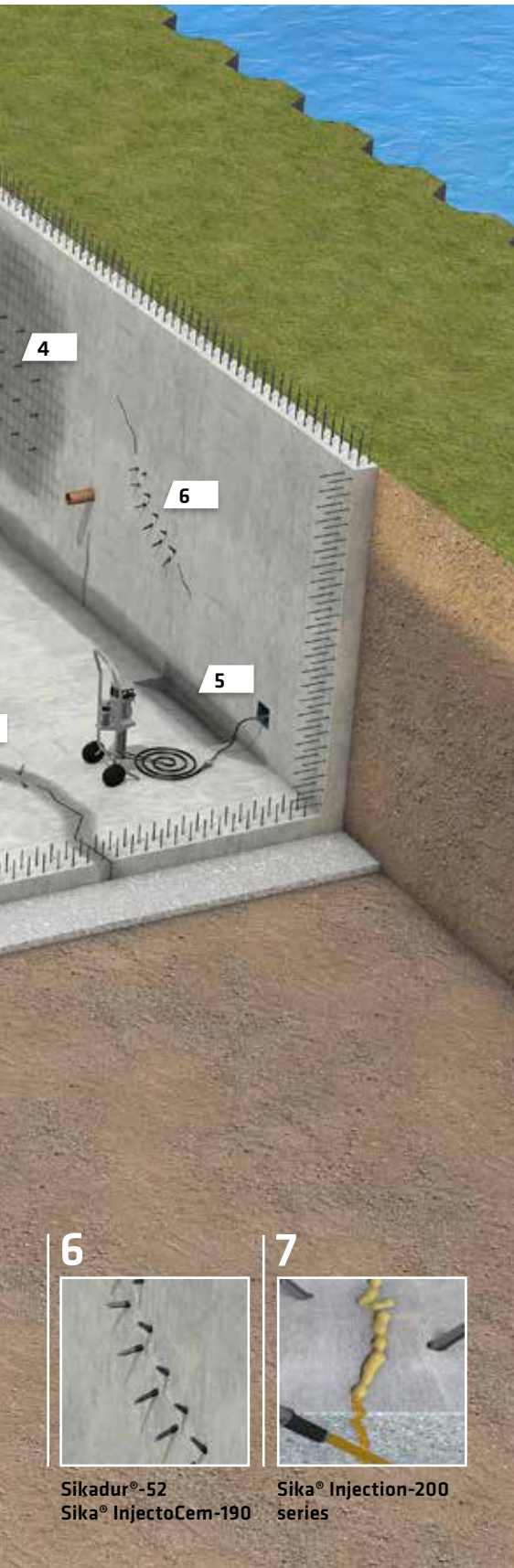
Very high

Open excavation and piled walls

By injection of leaking compartments through integrated back-up system. Easy to control and locate due to control sockets or active control system. Re-injection possible.

- Substrate preparation required

- High waterproofing security
- Very high performance
- Simple and fast to repair
- High durability / reliability
- Integrated system redundancy



SIKA INJECTION SOLUTIONS FOR REPAIR AND REFURBISHMENT WORKS

In situations with water ingress due to localised damage of the waterproofing system, appropriate repairs to seal the leaking areas have to be undertaken. These can often only be done by injection, because of inadequate access to the waterproofing system itself in most basements and below ground structures.

According to the type of damage / leakage (i.e. through joints, cracks or honey-combed areas, etc.) and the waterproofing requirements, the right materials have to be used. Successful and durable repairs by injection are ensured by the combination of Sika's expert diagnosis, using Sika materials and recommended equipment, plus Sika trained installers.

USE

Sealing and repairing of:

- Cracks
- All types of joints
- Sikaplan compartments
- Sealing of leaking areas by curtain injections

MAIN ADVANTAGE

- No excavation necessary
- Localised repair works
- Durable repairs

TYPICAL PROJECTS

- Suitable for all types of basements and civil engineering projects including structural waterproofing

SIKA PRODUCTS AND SYSTEM SOLUTIONS

Sika® Injection-100 series	Flexible, solvent-free, fast foaming polyurethane (PUR) foam for temporary water-stopping of high water intrusions through cracks, joints and cavities in concrete.
Sika® Injection-200 series	Elastic, solvent-free PUR-Injection resin for permanent sealing of dry, damp or water-bearing cracks and joints in concrete.
Sika® Injection-300 series	Elastic, very low viscosity polyacrylic injection resin for permanent sealing of water-bearing cracks, voids and joints in concrete. It is also used for the repair of damaged waterproofing membrane compartments and injection of SikaFuko injection hoses.
Sika® Injection-400 series Sikadur®-52	High-strength, solvent-free, low viscosity epoxy resin for structural bonding and sealing of cracks, including in damp conditions.
Sika® InjectoCem-190	2-component, cement based injection material with corrosion inhibitors for the sealing and strengthening of cracks and cavities in concrete. Can also be used for the injection sealing of construction joints through SikaFuko injection hoses.

6



Sikadur®-52
Sika® InjectoCem-190

7



Sika® Injection-200
series

SIKA – THE GLOBAL LEADER IN STRUCTURAL WATERPROOFING

SIKA PROVIDES A WIDE RANGE of alternative waterproofing solutions for different requirements in new basement construction and refurbishment. With more than 100 years of experience in Structural Waterproofing, Sika is the reliable partner for all of the parties involved on every project. Innovative Sika waterproofing solutions that include both rigid and flexible waterproofing systems, create Added Value for our customers every day, and are a key driver of our global success and one of the key reasons why Sika is the clear number 1 in Structural Waterproofing. With a local presence all around the world, now in more than in 80 countries, Sika is ideally positioned to support our customers everywhere – right from the initial project design and detailing, through to successful installation and completion on site.

DESIGN SUPPORT



- Selection of appropriate concept and system solutions
- Concrete mix design and control
- Engineering details, custom solutions
- Cost/Performance/Life cycle analysis

SPECIFICATION SUPPORT



- Specifications, Method Statements and Bills of Quantities
- Detail drawings including CAD
- Watertight guarantee concepts

SITE SUPPORT

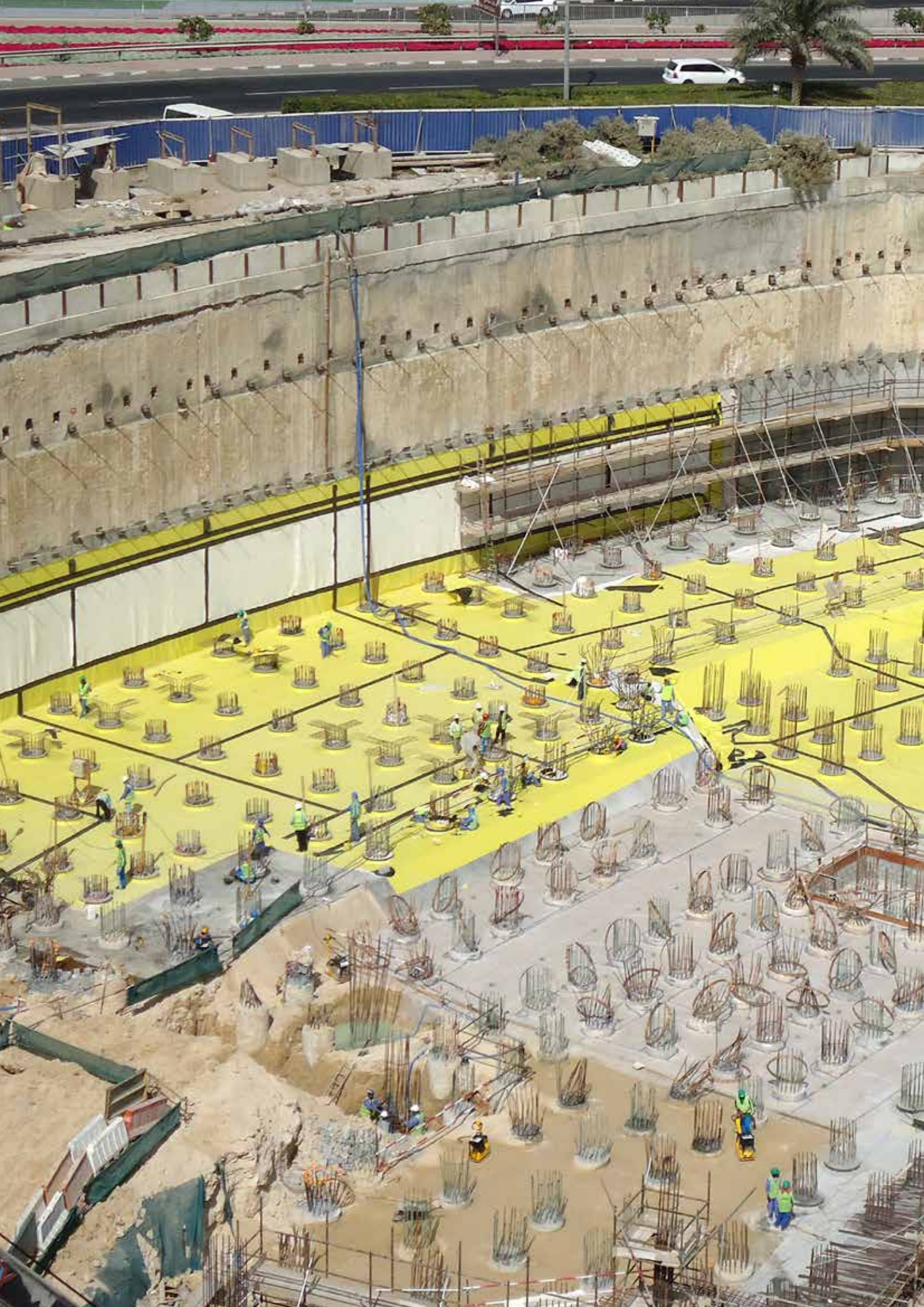


- Concrete laboratories (incl. mobile units)
- Application training on site
- Troubleshooting
- Quality Control procedures

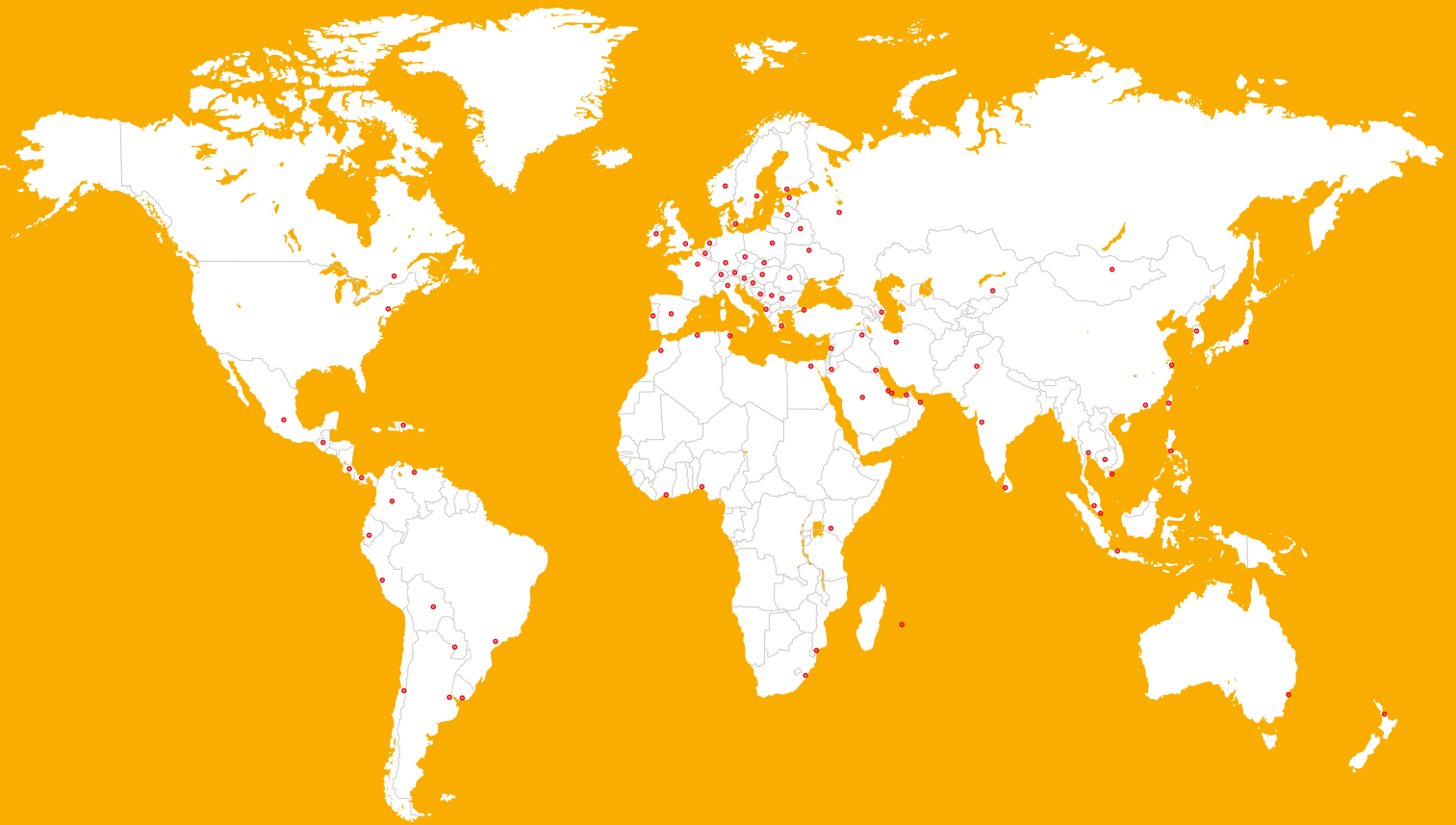
MAINTENANCE SUPPORT



- Maintenance Manuals
- Refurbishment systems
- Repair and refurbishment documentation
- Site Inspection and refurbishment proposals



GLOBAL BUT LOCAL PARTNERSHIP



FOR MORE WATERPROOFING INFORMATION:



WE ARE SIKA

Sika is a specialty chemicals company with 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's product lines feature concrete admixtures, mortars, sealants and adhesives, structural strengthening systems, flooring as well as roofing and waterproofing systems.

Our most current General Sales Conditions shall apply.
Please consult the Data Sheet prior to any use and processing.



SIKA SERVICES AG
Tüffenwies 16
CH-8048 Zürich
Switzerland

Contact
Phone +41 58 436 40 40
Fax +41 58 436 41 50
www.sika.com

BUILDING TRUST

