WATERPROOFING
SIKA SOLUTIONS FOR NEW 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.

CONTENTS

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 CO_2 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.

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.

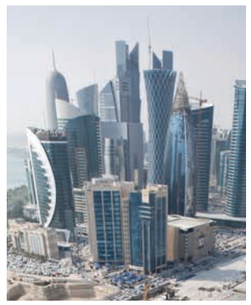
The selection of the appropriate waterproofing method, the project specific design of the chosen waterproofing system and its correct installation on site are key elements in minimizing the Total Cost of Ownership. A waterproofing system typically amounts to less than 1% of the total core constructions 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.

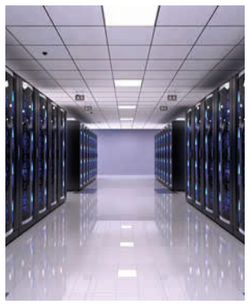
RESIDENTIAL BUILDINGS

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



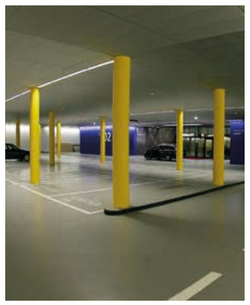
COMMERCIAL OFFICE BUILDINGS

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



DATA CENTERS / ARCHIVES / LIBRARIES

Completely dry basement waterproofing solutions for humid sensitive archive rooms in data centers, archives or libraries.



UNDERGROUND PARKING AREA

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

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.

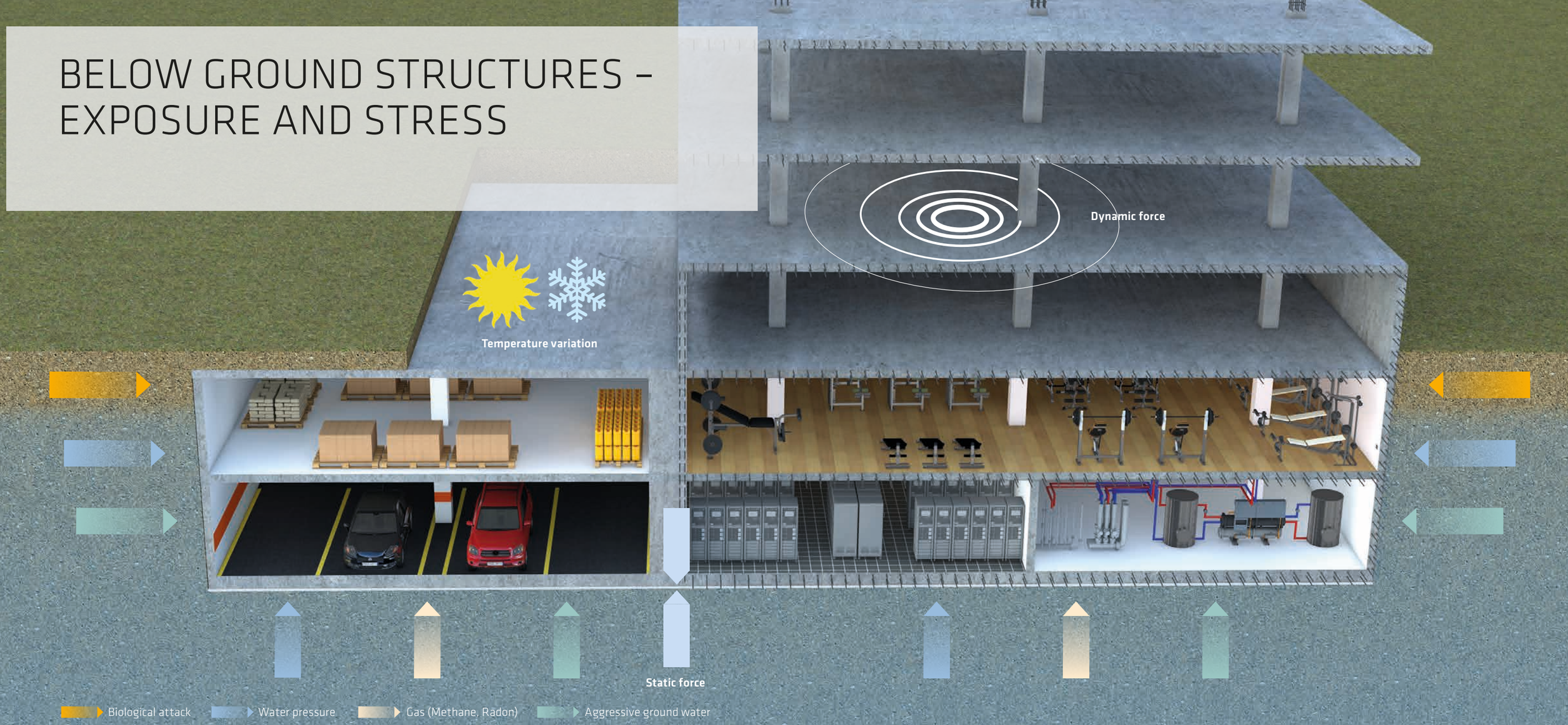
RETAIL UNITS AND WAREHOUSES

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

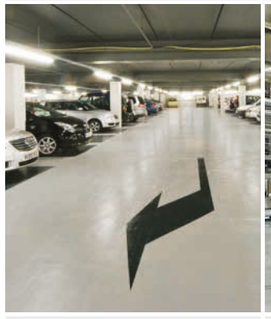
1 Functionality (Use, grade of watertightness)

2 Service Life / Durability

3 Total Cost of Ownership (incl. maintenance cost)

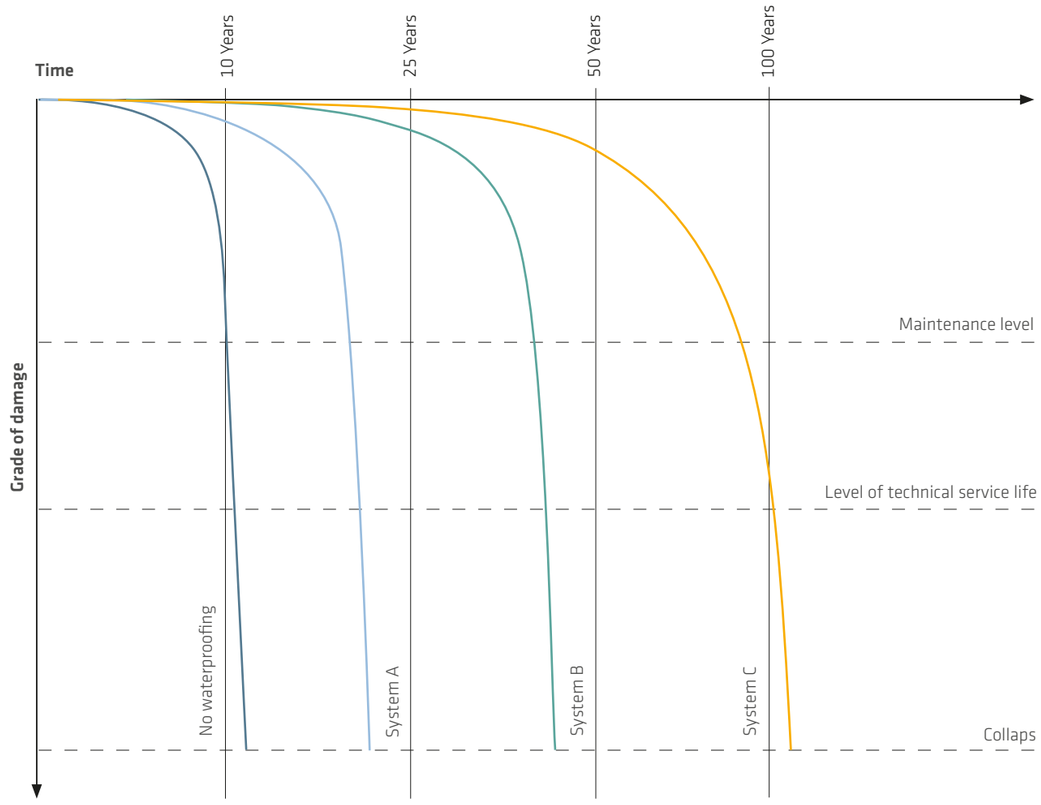
1 DEGREE OF WATERTIGHNESS REQUIRED

The future use defines the degree of watertightness and protection of a structure. The British standards describes in BS 8102-2022 different level of watertighness which can be combined with additional protection requirements.

Grade 1a	Grade 1b	Grade 2	Grade 3
Basic utility	**Better utility**	**Habitable**	**Special**
Some seepage and damp areas tolerable where this does not impact on the proposed use. Internal drainage systems might be necessary.	No seepage. Some damp areas tolerable.	No water penetration. Acceptable. Damp areas due to internal condensation are tolerable ventilation and dehumidification might be required.	No water ingress or damp areas is acceptable. Totally dry environment. Protection against chemical attacks. Gas barrier.
			
■ Car parking ■ Plant rooms (excluding electrical equipment) ■ Workshops	■ Underground car parks ■ Storage areas ■ Plant rooms ■ Workshops	■ Ventilated residential units and offices ■ Restaurants and commercial areas ■ Leisure facilities	■ Residential areas ■ Archives ■ Computer rooms ■ Special purpose facilities requiring controlled environments

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.

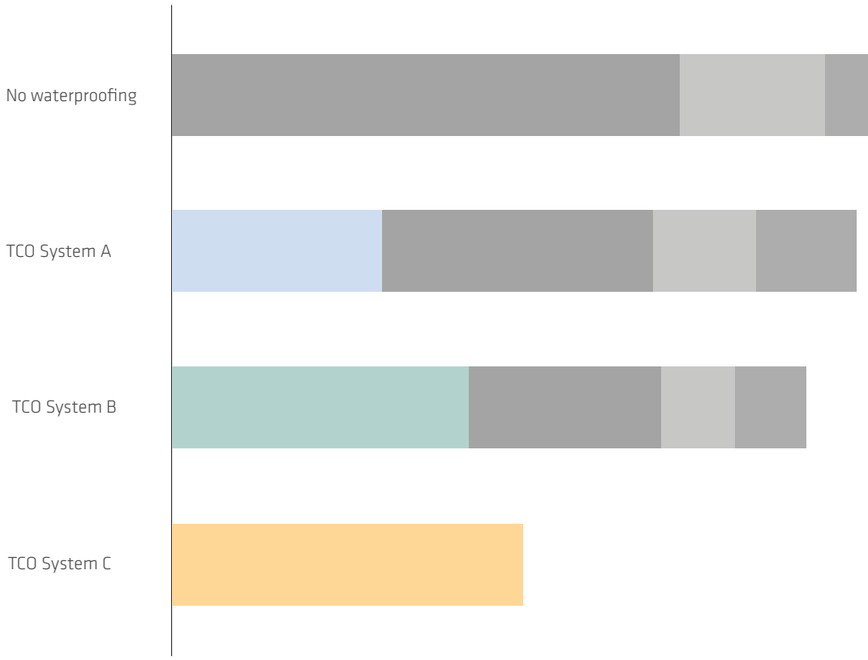
System C: Structure protected with a high grade waterproofing system.

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.



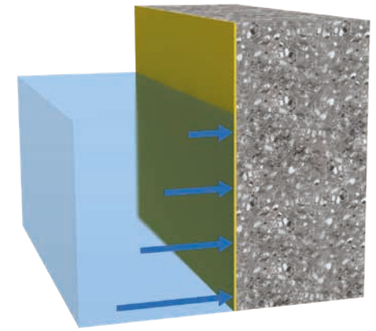
BASEMENT WATERPROOFING – CONCEPT AND STRATEGY

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

EXTERNAL WATERPROOFING SYSTEM

A waterproofing barrier applied on the external surfaces that are exposed to ground water (possitive 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.

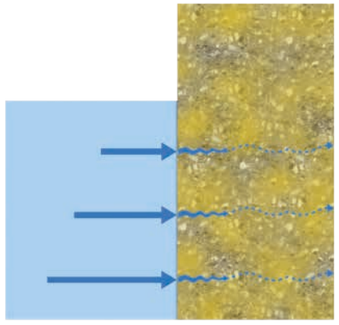
- Grade of watertightness: Grades 1–3 plus additional requirements
- Application: New construction
- Protection provided: Waterproofing & concrete protection
- Durability: Low to high durability (depending on the technology applied)



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.

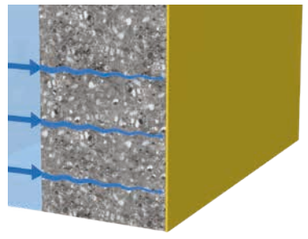
- Grade of watertightness: Grades 1–3
- Application: New construction
- Protection provided: Waterproofing
- Durability: Very high durability (for non-agressive ground water)



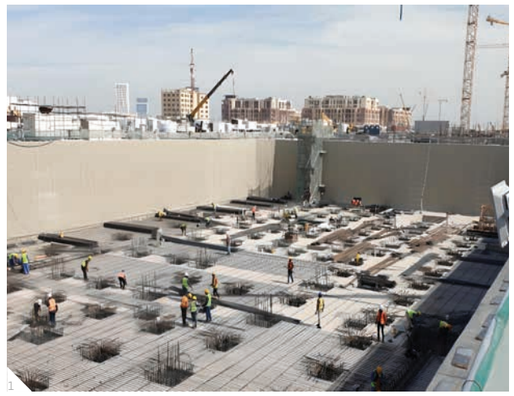
INTERNALLY APPLIED WATERPROOFING SYSTEM

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)

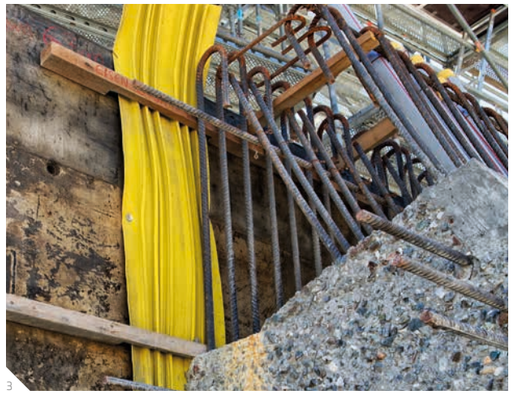


WATERPROOFING TECHNOLOGIES



Sikaproof® A+ dual bond technology FPO flexible membrane

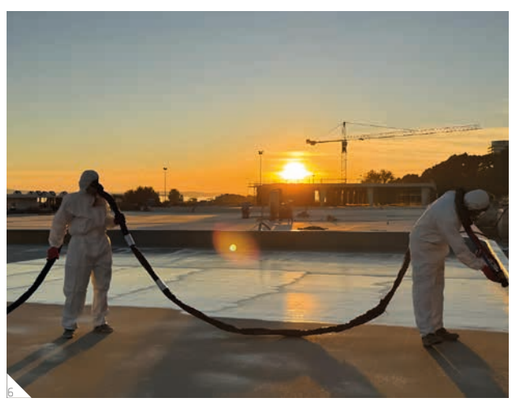
SikaShield® bitumen sheet membranes



Watertight concrete

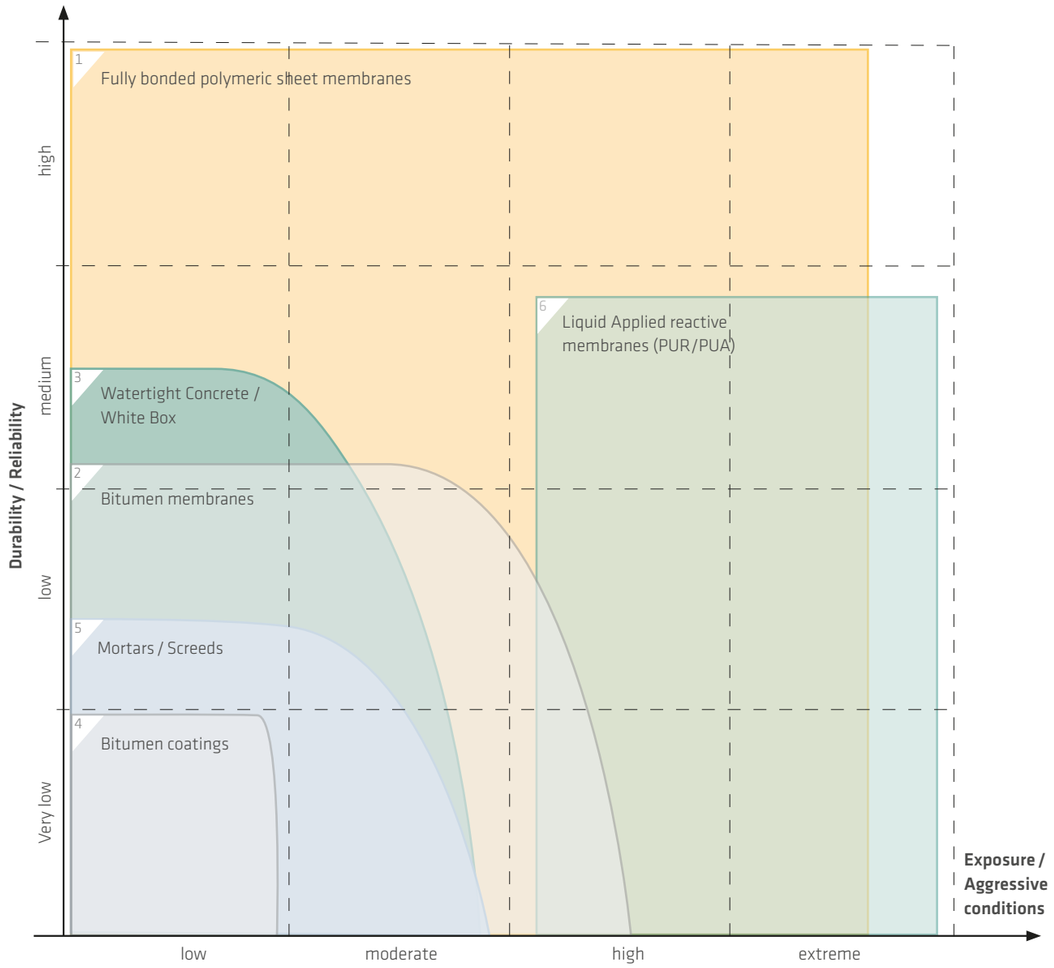
Sika Igolflex® liquid applied bitumen coatings

SikaTop® and Sikalastic® waterproofing mortars



Sikalastic® liquid applied reactive membranes (PUR/PUA)

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.

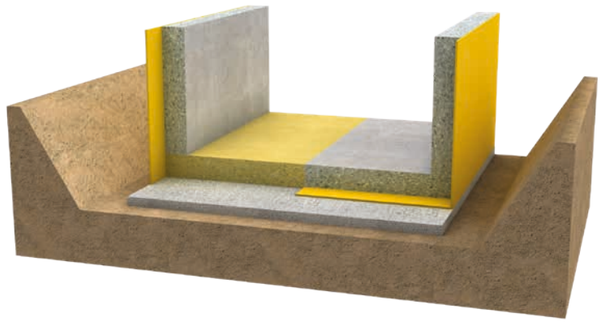
OPEN CUT EXCAVATION

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

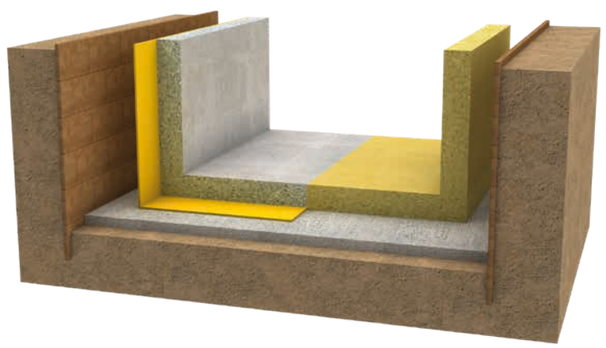


WITH RETAINING WALLS

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



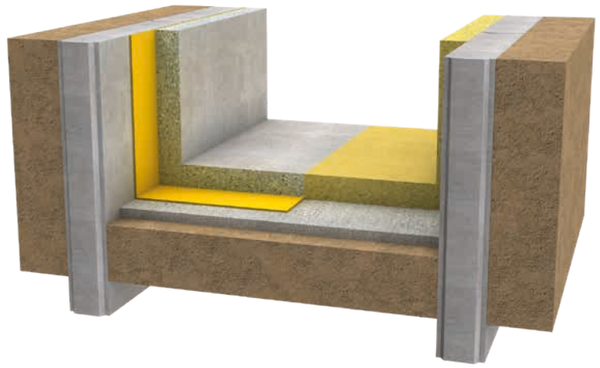
CONSTRUCTION WITH PILED / DIAPHRAGM WALLS

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
- Pre-applied fully bonded sheet membranes



PILE WALLS FORMING PART OF THE STRUCTURE

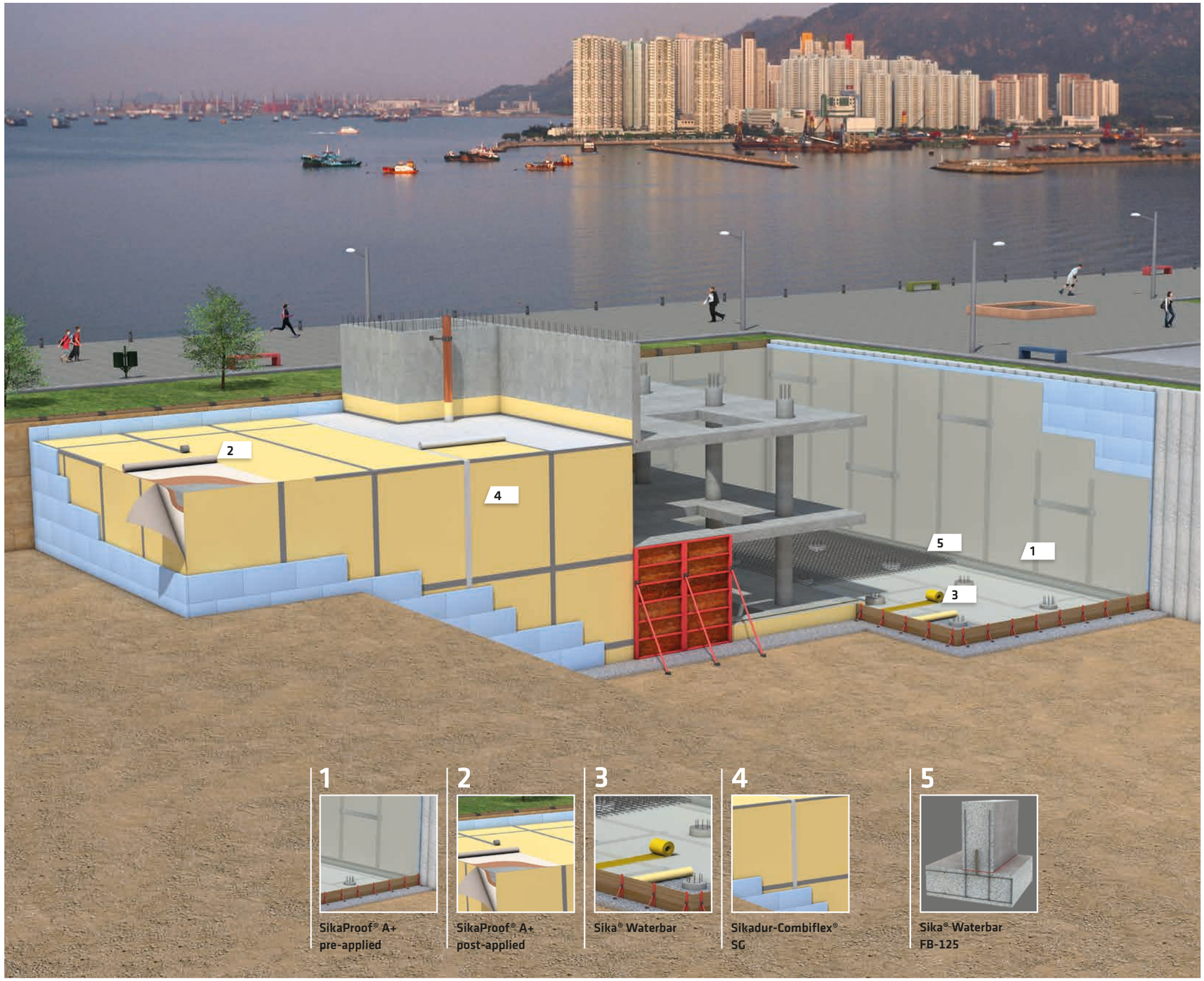
Description:
This method can be used for bottom-up as well as top-down construction. Unlike other methods, diaphragm walls are also used to form part of the new structure. Waterproofing of the connections and intersections between base slab / walls are key. Externally applied waterproofing can only be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

Waterproofing systems:
Integral waterproofing systems:
- Sika White Box / Watertight Concrete System

Externally applied waterproofing systems (base slab):
- Pre-applied fully bonded sheet membranes

SIKA YELLOW BOX CONCEPT

Fully bonded flexible sheet membrane systems



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

SikaProof® A+, 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® A+, 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.)
- For very high water table level conditions

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

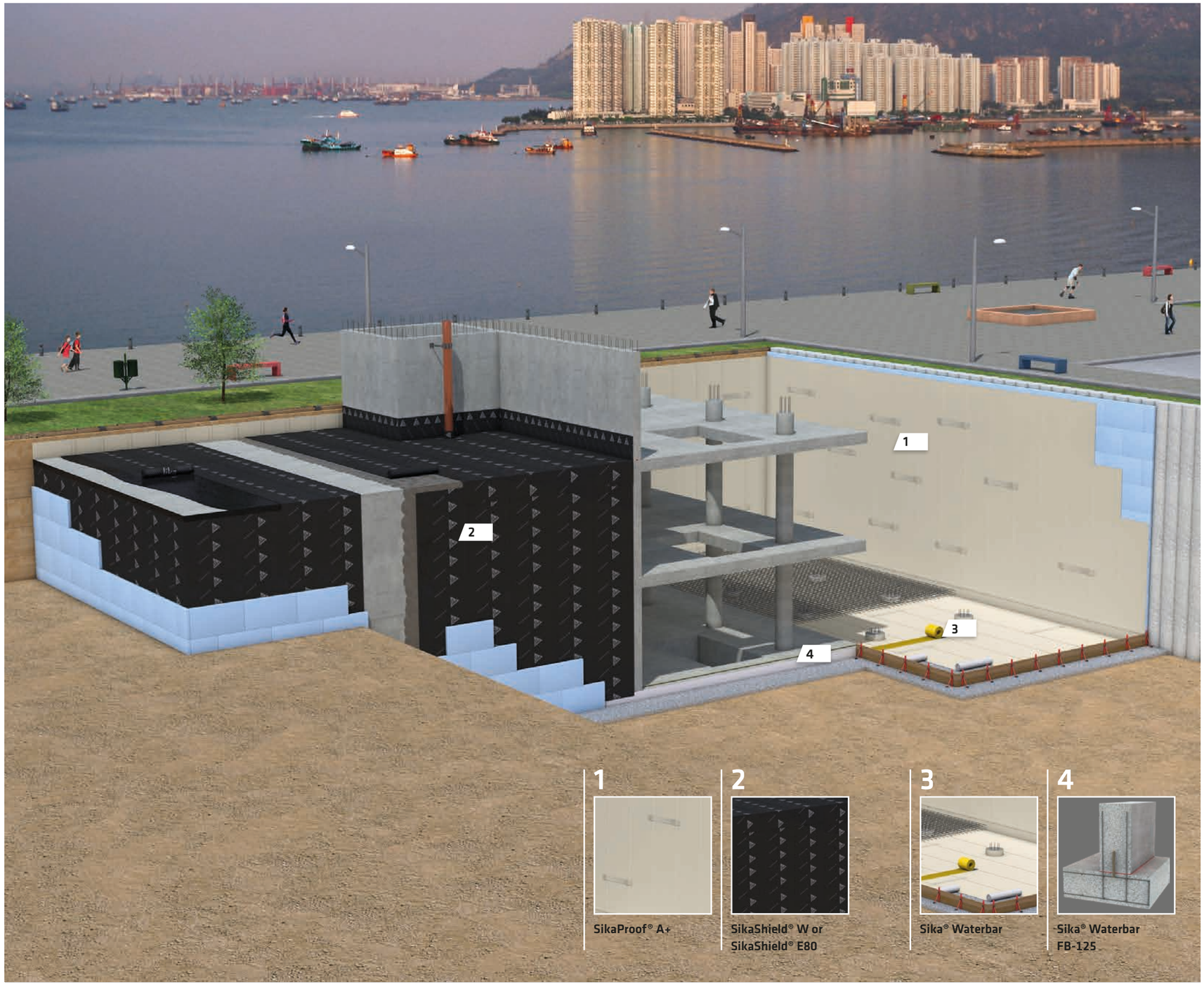
TYPICAL PROJECTS
- All types of concrete basements (residential, commercial etc.)
- Industrial facilities
- Pre-cast structures

SIKA PRODUCTS AND SYSTEM SOLUTIONS

SikaProof® A+	Pre- and post-applied sheet waterproofing membrane system for the whole basement.
SikaProof® Adhesive-02	2-part, cement-modified adhesive for use with the SikaProof® A+ waterproofing system.
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.
Sika® Waterbar FB-125	Flexible fully bonded hybrid waterstop (FPO based), for construction 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.

SIKA HYBRID BOX CONCEPT

Combination of fully bonded FPO and bituminous sheet membranes



COMBINATION OF SHEET MEMBRANE TECHNOLOGIES

The Hybrid Box concept is a fully bonded basement waterproofing system that combines SikaProof® pre-applied membrane below the base slab and on lost formwork with SikaShield® post-applied membranes (wet applied or self-adhesive) on existing concrete structure to provide a cost-effective solution for projects pressurized water and harmful gases.

USE

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

MAIN ADVANTAGE

- Fully bonded membranes
- Very cost effective
- Simple and fast to apply
- For pre- and post-application

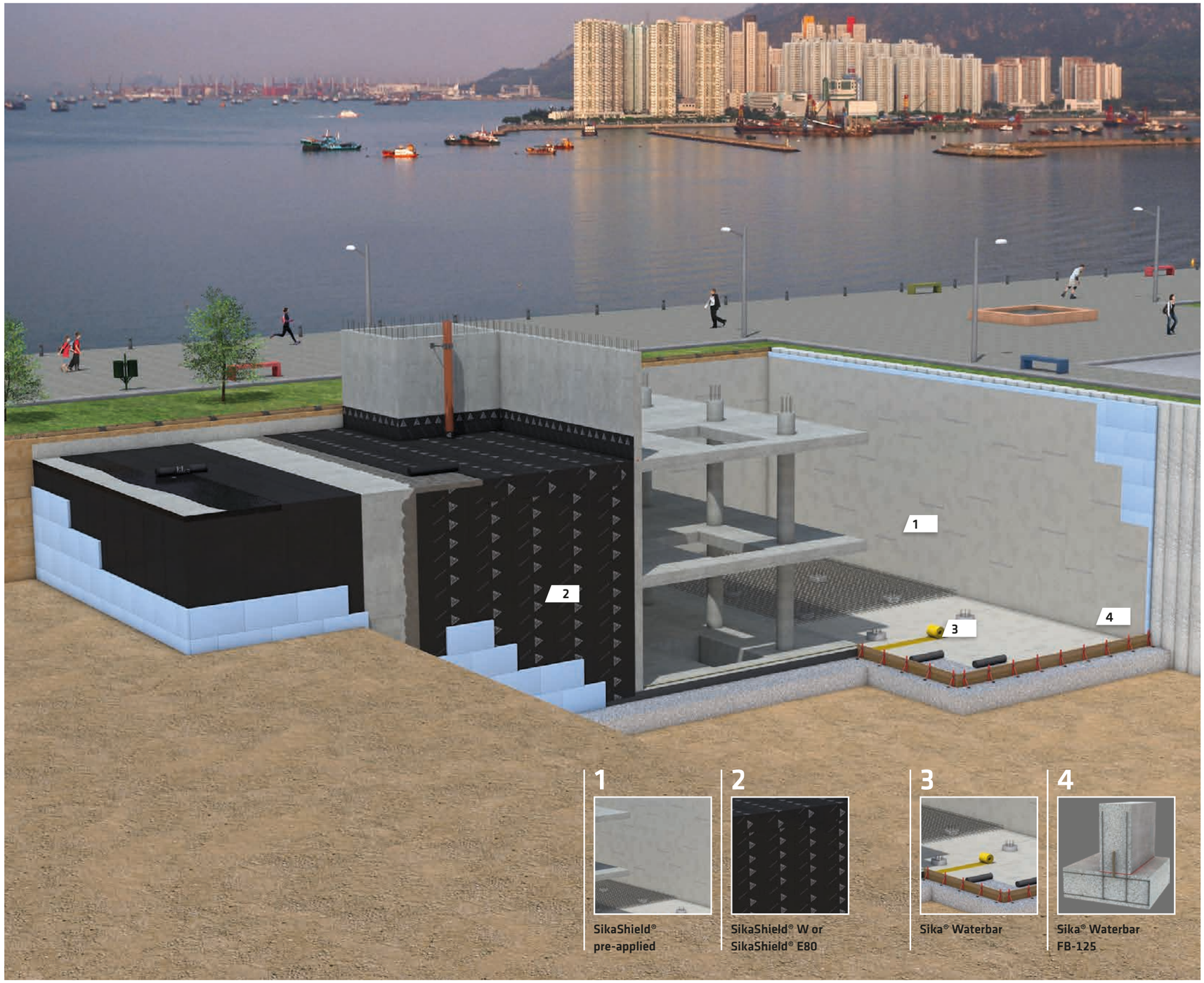
TYPICAL PROJECTS

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

SIKA PRODUCTS AND SYSTEM SOLUTIONS

SikaProof® A+	Pre- or post-applied sheet waterproofing membrane system for application below base slabs, plus on single- and double-faced formwork cast walls.
SikaShield® W	Bituminous membrane bonded to the concrete substrate with a special polymer modified cement adhesive.
SikaShield® E80	Self-adhesive, fully bonded, SBS-bituminous, 1.5 mm thickness, membrane for post-applied below ground waterproofing.
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.
Sika® Waterbar FB-125	Flexible fully bonded hybrid waterstop (FPO based), for construction 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.

SIKA BLACK BOX CONCEPT
BITUMINOUS SHEET MEMBRANES



FULLY BONDED BITUMINOUS MEMBRANES (PRE- AND POST-APPLIED)

The Black Box concept is a fully bonded basement waterproofing system that uses exclusively SikaShield® membranes (pre- and post-applied) to provide a cost-effective solution for projects with lower water pressure requirements.

USE
- As the waterproofing solution for Grades 1–2
- For aggressive ground conditions (ground water and soil, Radon gas etc.)
- For medium water table level conditions

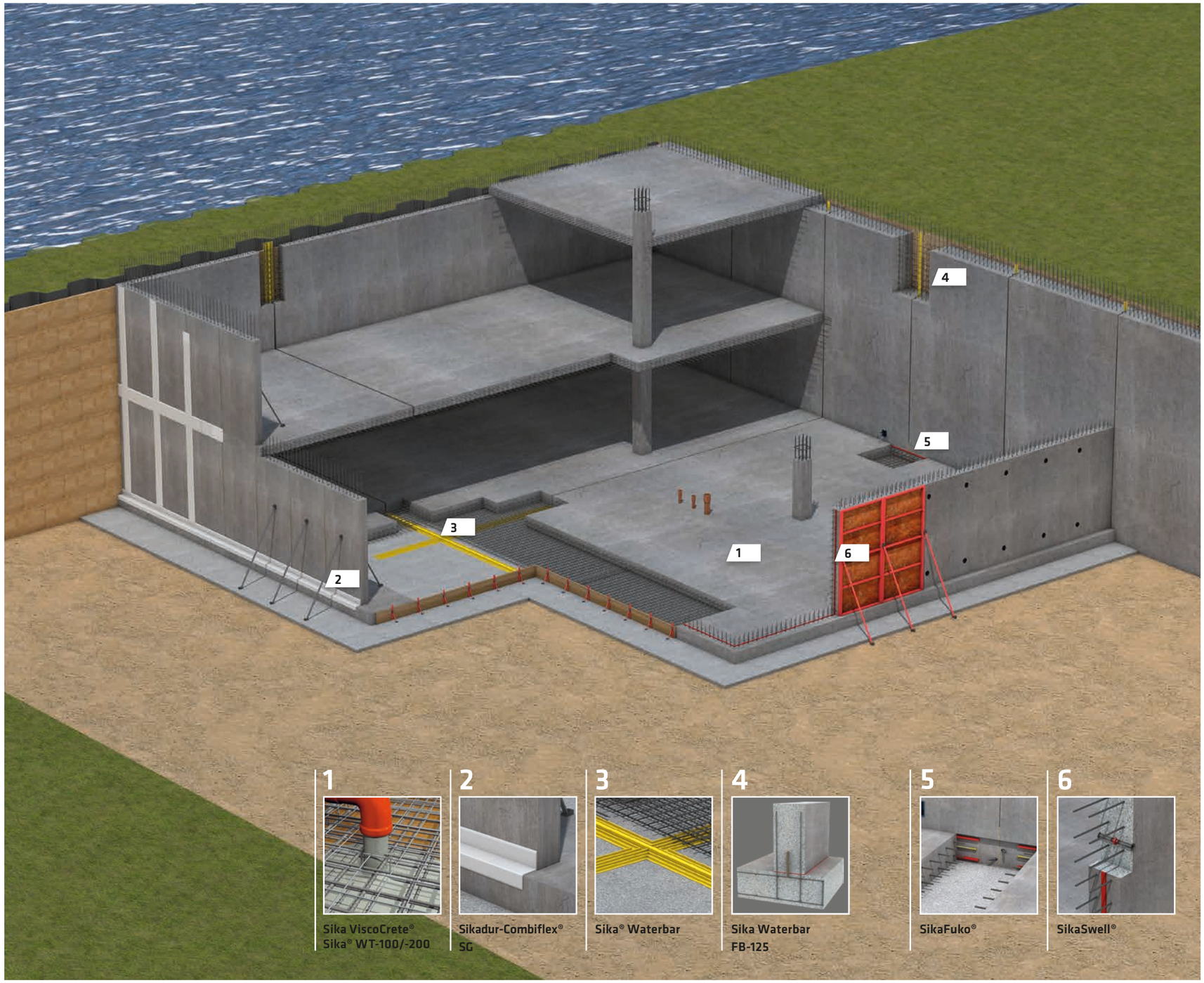
MAIN ADVANTAGE
- Fully bonded membranes
- Very cost effective
- Simple and fast to apply
- For pre- and post-application

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

SIKA PRODUCTS AND SYSTEM SOLUTIONS

SikaShield® W	Bituminous membrane bonded to the concrete substrate with a special polymer modified cement adhesive.
SikaShield® E80	Self-adhesive, fully bonded, SBS-bituminous, 1.5 mm thickness, membrane for post-applied below ground waterproofing.
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.
Sika® Waterbar FB-125	Flexible fully bonded hybrid waterstop (FPO based), for construction 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).

SIKA WHITE BOX CONCEPT AND WATERTIGHT CONCRETE SYSTEMS



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

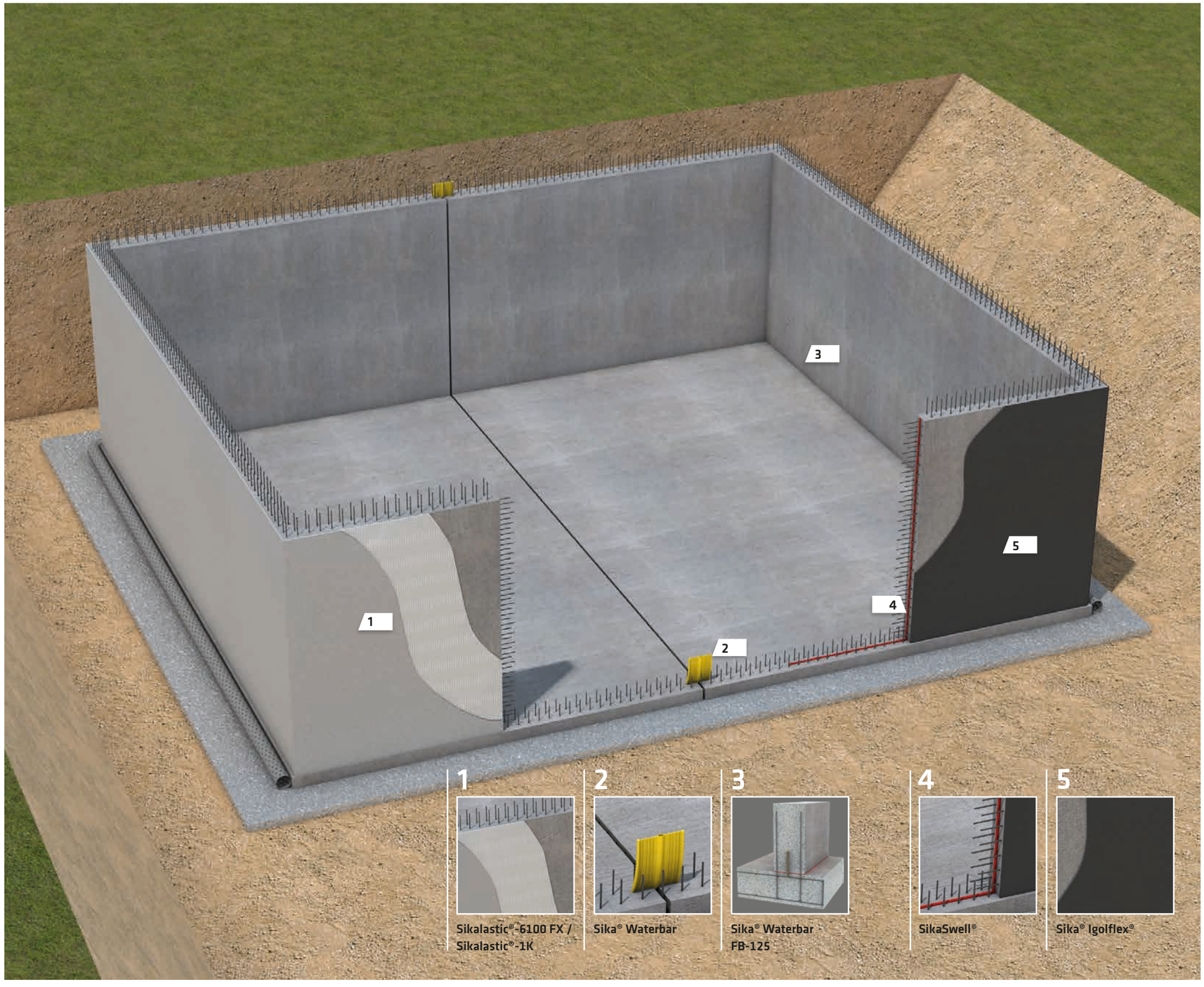
- Underground car parks
- Commercial developments
- Residential buildings
- Industrial facilities

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 crystalline 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.
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.
Sika® Waterbar FB-125	Flexible fully bonded hybrid waterstop (FPO based) for construction 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 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.

SIKA UMBRELLA CONCEPT

Bituminous and cementitious coatings



EXTERNALLY APPLIED SYSTEMS WITH OR WITHOUT CRACK-BRIDGING ABILITIES

Sika waterproof mortars and bitumen-based coatings are rigid to flexible waterproofing Products to seal basements against damp soil, seepage and percolating water. They must be pre-applied on suitable substrates under new structural concrete slabs and are generally postapplied externally on new walls. 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. The selection of one or other solution is mainly related with local availability and established practices.

USE

- As the waterproofing solution for Grades 1–2
- 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®-107 Seal / Plus	2-component, polymer modified, rigid cementitious waterproofing mortar, internally and externally applied for full surface waterproofing and tanking.
Sikalastic®-6100 FX / -1K	One-component, elastic cementitious membrane for waterproofing and concrete protection.
Sika® Igolflex®	Family of bituminous emulsion with elastomeric resin. Sika® Igolflex®-101: polyestyrene filled Sika® Igolflex®-201: fiber filled Sika® Igolflex®-301: elastomeric
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.
Sika® Waterbar FB-125	Flexible fully bonded hybrid waterstop (FPO based), for construction joints.
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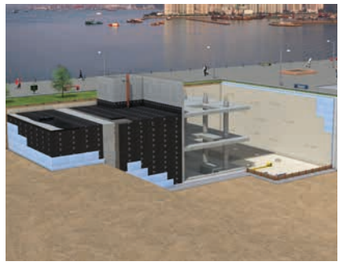
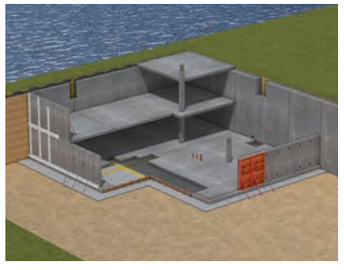
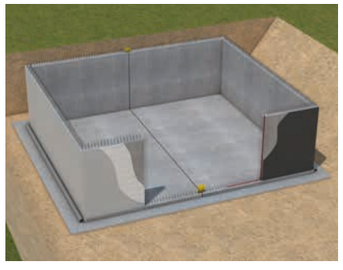
OVERVIEW OF SIKA BASEMENT WATERPROOFING SOLUTIONS

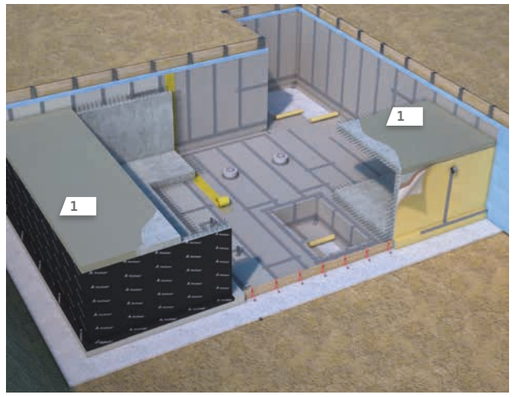
An overview and selection guide for new constructions

	Sika Yellow Box **SikaProof® A+**	**Sika Hybrid solution** **SikaProof® A+ / SikaShield®**	**Sika Black Box** **SikaShield®**	**Sika White Box** **Sika® Viscocrete® / Sika® WT-200 P / Sika Waterbar® / Sikadur Combiflex® / SikaSwell® / SikaFuko®**	**Sika Umbrella system** **SikaShield® / Sika® Igolflex® / SikaTop® / Sika MonoTop® / Sikalastic®**
					
Technology / Type of system	Fully bonded sheet membrane	Fully bonded sheet membrane	Bituminous sheet membrane	Watertight concrete	Bituminous sheet membrane and bituminous coatings
Waterproofing Concept / Strategy	■ Pre-applied below the base slab and on lost-formwork ■ Post-applied on existing concrete structure ■ Externally applied	■ Pre-applied Sikaproof® below the base slab and on lost-formwork ■ Post-applied SikaShield® on existing concrete structure ■ Externally applied	■ Pre-applied below the base slab and on lost-formwork ■ Post-applied on existing concrete structure ■ Externally applied	Integral	■ Post-applied on existing concrete structure ■ Externally applied
Grade of watertightness	Grades 1–3	Grades 1–3	Grades 1–2	Grades 1–3	Grades 1–2
Concrete protection	High	High	High	Low	Limited
Water resistance level	■ Very high hydrostatic pressure ■ Seepage / percolating water ■ Capillary water	■ High hydrostatic pressure ■ Seepage / percolating water ■ Capillary water	■ High hydrostatic pressure ■ Seepage / percolating water ■ Capillary water	■ High hydrostatic pressure ■ Seepage / percolating water ■ Rising capillary water	■ Seepage / percolating water ■ Capillary water
Performance characteristics	Crack-bridging: +++ Water vapour tighness: +++ Chemical resistance: +++ Gas barrier: +++ Durability: +++	Crack-bridging: ++ Water vapour tighness: ++ Chemical resistance: ++ Gas barrier: ++ Durability: ++	Crack-bridging: + Water vapour tighness: + Chemical resistance: + Gas barrier: + Durability: +	Crack-bridging: n.a. Water vapour tighness: + Chemical resistance: + Gas barrier: + Durability: +++	Crack-bridging: n.a./+ Water vapour tighness: + Chemical resistance: + Gas barrier: + Durability: +
Safety level / Reliability	HIgh	Medium to high	Medium	Low to medium	Low
Excavation method	Open excavation and piled walls	Open excavation and piled walls	Open excavation and piled walls	Open excavation and piled walls	Only open excavation
Repair in the event of leaks	By crack injection	By crack injection	By crack or area injection	By local injection of limited areas. Damage is easy to locate	By crack or area injection
Conditions of application	■ Controlled conditions required (temperature, water, humidity) ■ Substrate preparation required ■ Limited exposure time before concreting ■ Membrane to be cleaned before concreting	■ Controlled conditions required (temperature, water, humidity) ■ Substrate preparation required ■ Limited exposure time before concreting ■ Membrane to be cleaned before concreting	■ Controlled conditions required (temperature, water, humidity) ■ Substrate preparation required	■ Limited to suitable temperatures for concreting works ■ No substrate preparation required	■ Controlled conditions required (temperature, water, humidity) ■ Substrate preparation required
Advantages	■ Highly efficient ■ High performance ■ Easy to apply ■ Low risk ■ High durability	■ Highly efficient ■ High performance ■ Easy to apply ■ Low risk	■ Fully bonded membranes ■ Very cost effective ■ Simple & fast to apply ■ For pre- and post-application	■ Very cost effective ■ No protection required (walls) ■ Simple & fast construction ■ High durability	■ Very cost effective ■ Simple & fast to apply

PODIUM DECK WATERPROOFING

A podium is described as the part of the basement which has no elevated building on top. A recreational area above the common underground carpark between different residential towers is a typical podium of new urban developments. Podium deck waterproofing is critical for the overall watertightness of the sub-structure. The waterproofing solution can either be an extension of the below-ground waterproofing system, or a different technology. Sika not only provides various liquid and sheet waterproofing solutions for podiums, but also transition details between different technologies to ensure a fully watertight basement.

COMBINED LIQUID APPLIED AND SHEET MEMBRANES



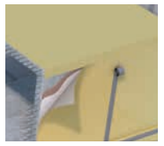
1

Sikalastic®-M 689 / -8800 / Sikalastic®-M 811

2

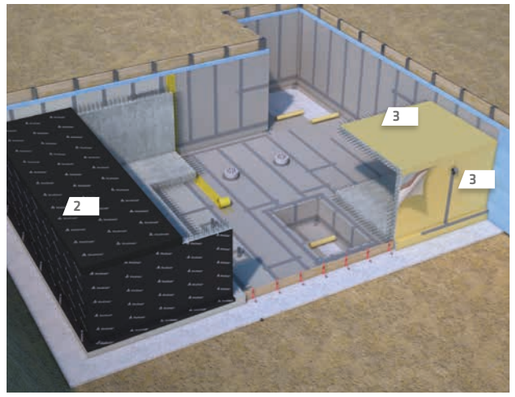
SikaShield® W SikaShield® E80

3



SikaProof® A+

FULL-SURFACE SHEET MEMBRANES WRAP



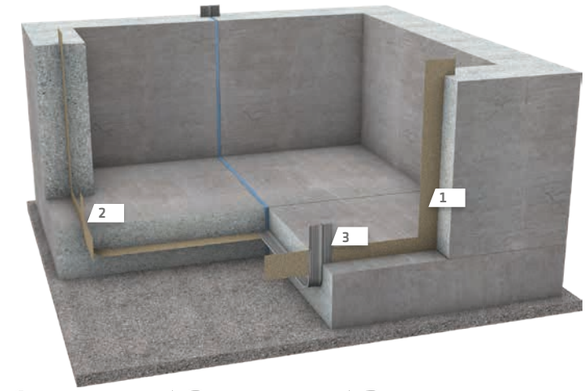
HOT-SPRAY APPLIED LAM

Sikalastic®-M 689 / -8800	Highly flexible, crack bridging, fast curing, 2-component pore polyurea based liquid applied membranes for vertical and horizontal areas.
Sikalastic®-M 811	Highly flexible, crack bridging, fast curing, 2-component polyurethane / polyurea based liquid applied membranes for vertical and horizontal areas.

SHEET MEMBRANES

SikaProof® A+	Pre- or post-applied sheet waterproofing membrane system for application below base slabs, on podium deck and on single- and double-faced formwork cast walls.
SikaShield® W	Bituminous membrane bonded to the concrete substrate with a special polymer modified cement adhesive.
SikaShield® E80	Self-adhesive, fully bonded, SBS-bituminous, 1.5 mm thickness, membrane for post-applied below ground waterproofing.

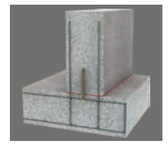
JOINT SEALING SYSTEMS



1

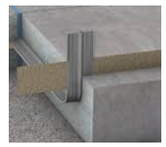
Construction joints

2



Installation

3



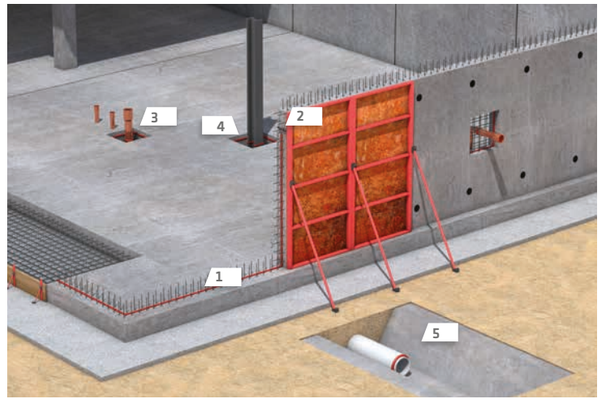
Connection with Sika Waterbar® D-240 FPO in expansion joints

Sika Waterbar® FB-125

Flexible fully bonded hybrid waterstop (FPO based), for construction joints In slabs or walls, such as slabs to walls; in watertight concrete structures or in any combination with other Sika Waterproofing Systems, e.g. SikaProof®.

MAIN ADVANTAGE

- Easy handling fast installation. No form pieces required for installation
- Flexible and easy handling
- Fully bonding between waterbar and concrete. No risk of water migration
- No rebar recess or extra shutter design required
- One complete solution compatible with expsnion joint system



SikaSwell® Sealants and Profiles

Range of hydrophilic profiles and gun applied sealants, designed for sealing and waterproofing of construction joints and penetrations.

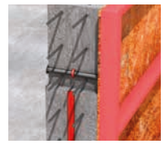
MAIN ADVANTAGE

- Suitable for difficult situations (i.e. environmental conditions or access)
- Products for almost all water qualities including sea water and water with high salt content
- Can provide back-up security in combination with other waterproofing systems
- Solutions for sealing between different materials and substrates
- Internationally tested and approved

1

Construction joints

2

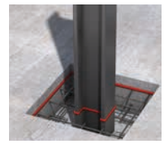


Waterproofing details

3

Penetrations

4



Isolation joints

5

Precast concrete

PROJECT REFERENCES

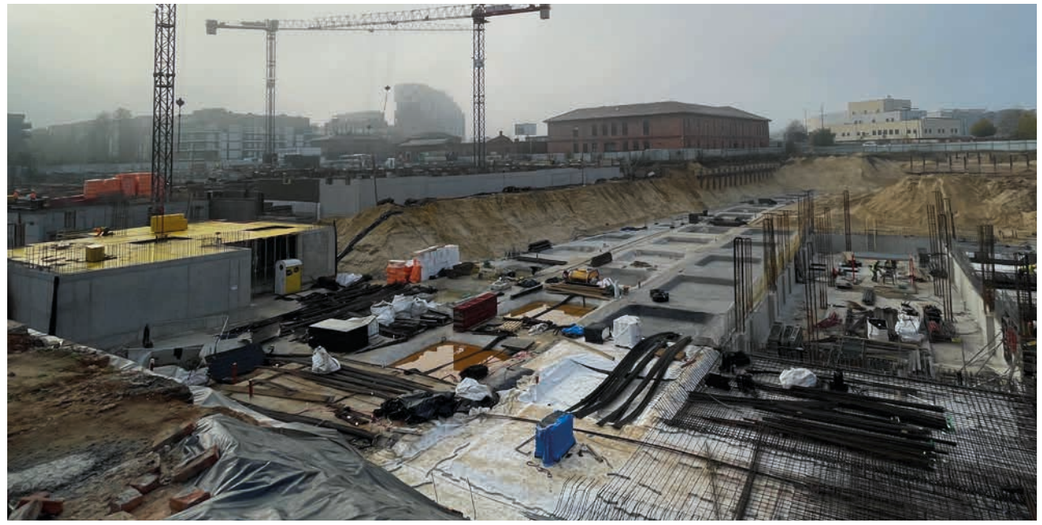
JEDDAH OPERA HOUSE

Location: Jeddah, KSA
Sika products: 62,000 m² of SikaProof® A+ & P, Sika WTC, Sikalastic®-8800, Combiflex®, SikaSwell®

THE GRID, MAROUSI

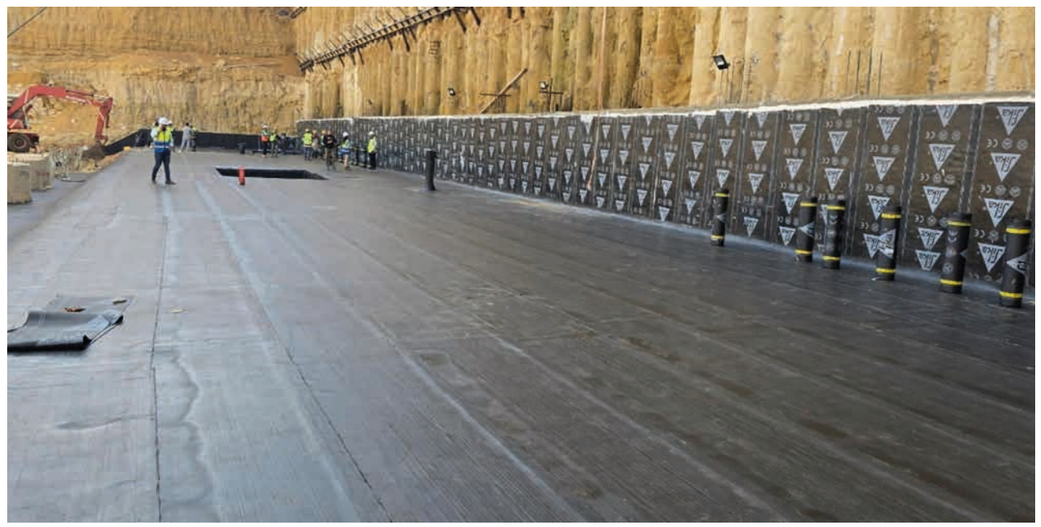
Location: Athens, Greece
Sika products: 30,000 m² of SikaProof® A+, Sika Waterbar® FB-125

WITA STWOSZA OFFICE KRAKÓW



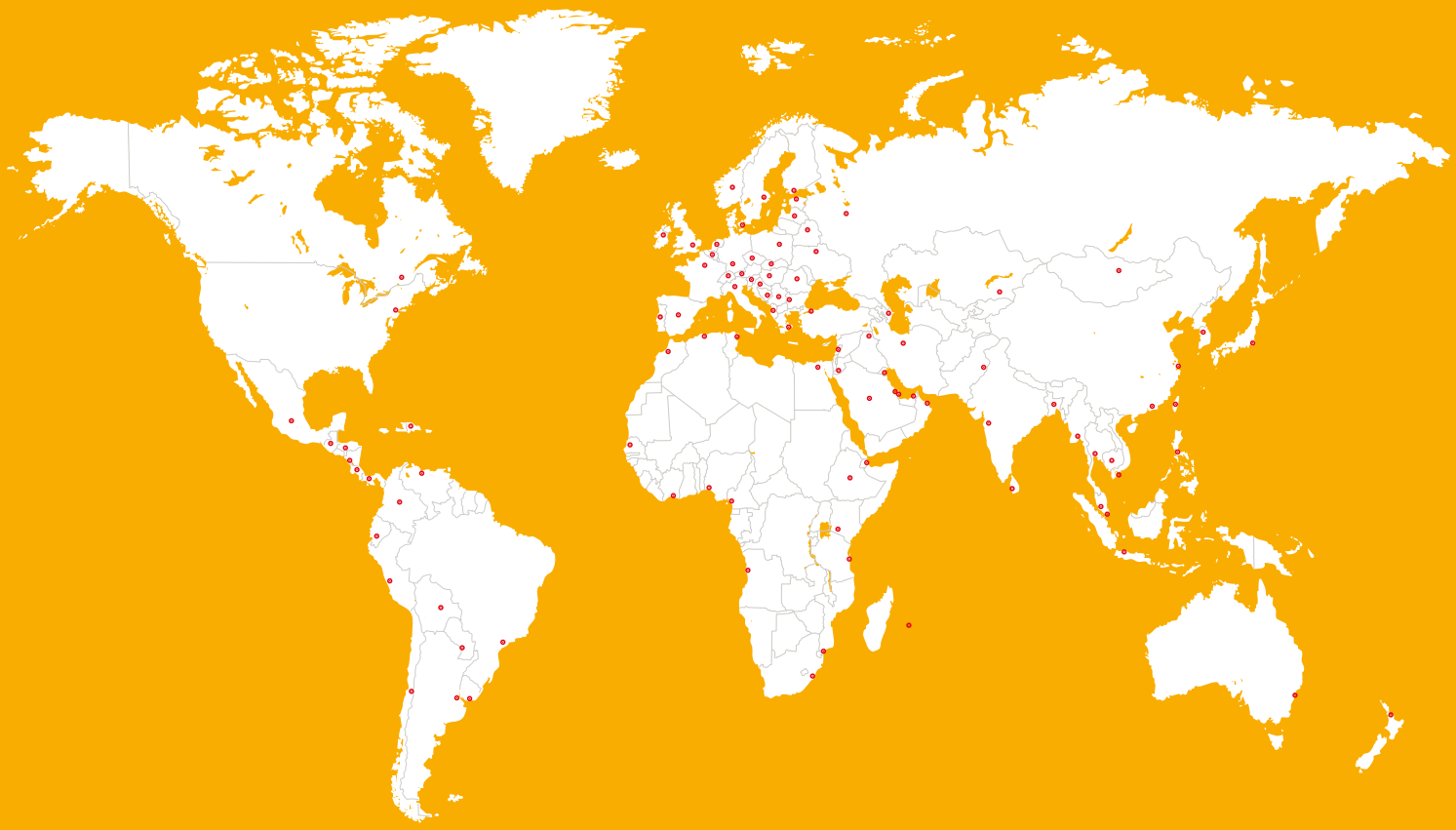
Location: Krákow, Poland
Sika products: 12,600 m² of SikaShield® W172, 2,000 m² of SikaShield® E80 SA, SikaProof® primer + PCI Pecimor

TAJ TOWER



Location: New Capital, Egypt
Sika products: 10.000 m² of Sikashield® W154, 40.000 m² of SikaShield® E46

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.

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