



# SIKA TECH ZONE

Why is waterproofing important for below ground structures?

#Waterproofing

BUILDING TRUST



# THE BACKGROUND OF BELOW GROUND STRUCTURES

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.

## 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.

**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.

## SELECTION OF RIGHT WATERPROOFING SYSTEM

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.

In construction projects, the importance of below-grade waterproofing is vital. It protects the building or structure from water damage and structural deterioration caused by moisture penetration. However, selecting, designing, and installing the appropriate below-grade waterproofing system is critical, as small mistakes can lead to significant problems and costs down the line.

## DIFFERENT AREAS OF APPLICATION



### 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.



### 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

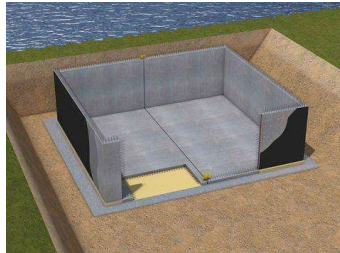
Basement waterproofing solutions for below ground leisure facilities and indoor swimming pools and other sport rooms.

# SIKA SOLUTIONS OVERVIEW

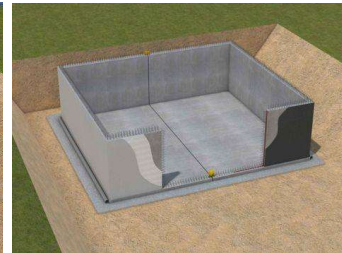
Sika waterproofing solutions protect basements and underground structures from water infiltration and damage, making these spaces more comfortable to live in and giving more possibilities for use of the space. Using Sika solutions can lower the overall cost and increase the long-term durability and lifespan of the project.



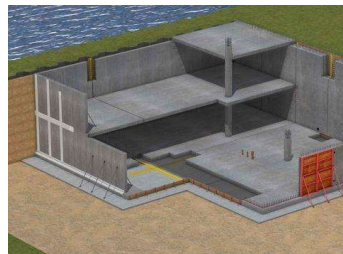
Fully Bonded Sheet Membranes



Wet-bonded Sheet Membranes



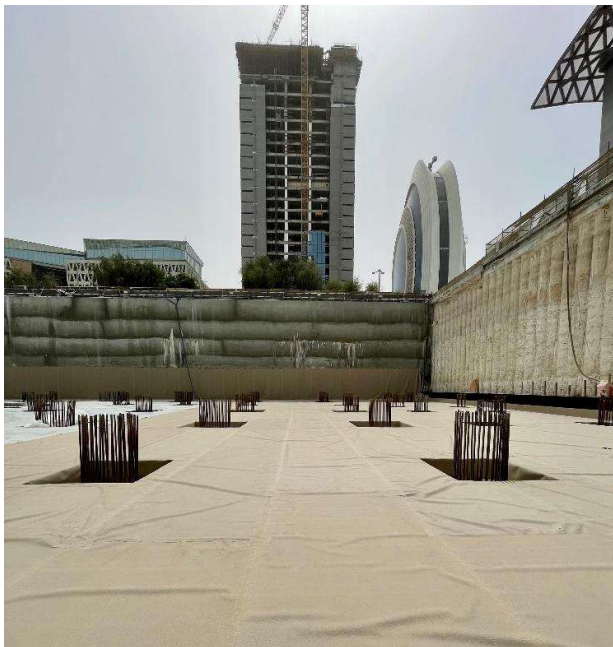
Waterproofing Mortars and Coatings



Watertight Concrete System



Concrete Repair



## 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.

To know more about our product solutions for the below ground structures, [click here](#) or call us at **18002108050**

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