



# SIKA SOLUTIONS

## TUNNELS AND UNDERGROUND SUBWAY STATIONS

**BUILDING TRUST  
CONSTRUIRE LA CONFIANCE**





# SIKA GROUP

## Company founded in 1910

- More than 30 000 employees on every continent
- Subsidiaries in more than 100 countries
- More than 400 factories in the world
- 18 global technology centres

# SIKA CANADA INC.

## Company established in Canada in 1957

- More than 500 employees
- 8 production sites ISO 9001 / ISO 14001 certified
- 1 technology centre for North America + local R&D centre and dedicated laboratories







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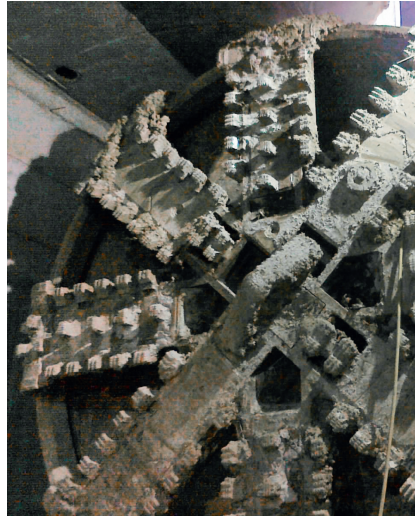
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# TBM SOLUTIONS



## FOAMING AGENTS

### **Sika® Stabilizer-1118 TBM CA**

Foaming agent for earth pressure balance machines (EPBM) for low to high permeability soils

### **Sika® Stabilizer-1219 TBM CA**

High-performance foaming agent for earth pressure balance machines (EPBM) in heterogeneous soils and low temperature environments

### **Sika® Stabilizer-1513 TBM CA**

Foaming agent for earth pressure balance machines (EPBM) specifically designed for abrasive soils excavation

### **Sika® Stabilizer-1514 TBM CA**

Foaming agent for earth pressure balance machines (EPBM) for clayey soils presenting clogging and adhesion issues

### **Sika® Stabilizer-1518 TBM CA**

Foaming agent for earth pressure balance machines (EPBM) for clayey and cohesive soils

## POLYMERS AND ADDITIVES

### **Sika® Stabilizer-3212 TBM CA**

Anti-clay, pure polymer used to reduce clogging in compact soils

### **Sika® Stabilizer-3214 TBM CA**

High-performance, anti-clay, pure polymer formulated to reduce clogging in compact soils

### **Sika® Stabilizer-3710 TBM CA**

Strong thickening polymer used to absorb excess of ground water in extracted materials

## TAIL SEALANT GREASES

### **Sika® Stabilizer-2131 TBM**

Fire-resistant, first-fill tail sealant grease for shielded TBMs

### **Sika® Stabilizer-2231 TBM**

Fire-resistant, continuous tail sealant grease for shielded TBMs



# TBM SOLUTIONS



## BACKFILLING GROUT ADMIXTURES (CEMENTITIOUS AND BENTONITE)

### RETARDING & SUPERPLASTICIZING ADMIXTURES

#### **Sika® Stabilizer-5010 TBM** <sup>CA</sup>

Retarding and water reducing admixture for cement or cement / bentonite injection grout

#### **Sika® Stabilizer-5012 TBM** <sup>CA</sup>

High-range water reducing admixture for cement / bentonite injection grout



## BACKFILLING GROUT ADMIXTURES (CEMENTITIOUS AND BENTONITE)

### ACCELERATING ADMIXTURES

#### **Sika® Stabilizer-6015 TBM** <sup>CA</sup>

Set and hardening accelerating admixture for cement / bentonite injection grout

#### **Sika® Stabilizer-6018 TBM** <sup>CA</sup>

High-performance set and hardening accelerating admixture for cement / bentonite injection grout



## INJECTION RESINS

#### **Sikafix® HH+**

Hydrophobic, low-viscosity and high-solid polyurethane injection resin

#### **Sikafix®-101 US**

Hydrophobic and low-viscosity polyurethane injection foam

#### **Sikafix®-210**

Fast-reacting polyurethane-based resin with short gel times and high final strength for water stopping applications

#### **Sika® Injection-304 / 304 PS**

Very low-viscosity polyacrylic polymeric strengthened resin with adjustable reaction time for permanent watertight sealing

#### **Sikafix®-501**

Fast-curing and foaming, silicate-based foaming injection resin for heading face stabilization and void filling

#### **Sikafix®-601**

Fast-curing, non-foaming, silicate-based, rigid injection resin with short reaction time for demanding ground consolidation and stabilization



# TUNNELING



## ANCHORING SOLUTIONS

### King® MS-Cable

High-performance, neat, shrinkage-compensated anchoring grout for cable bolting applications

### King® HS-Cable

High-performance, neat, shrinkage-compensated anchoring grout for applications in soil containing sulphates

### SikaCem® Accelerator

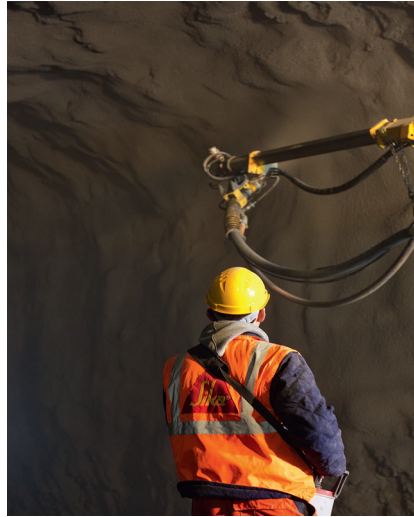
Non-chloride hardening accelerator formulated to increase the early strength of grouts without affecting the initial workability

### Sikafix®-210

Fast-reacting polyurethane-based resin with short gel times and high final strength

### Sikafix®-601

Fast-curing, non-foaming, silicate-based, solid injection resin



## WET MIX SHOTCRETE SOLUTIONS

### Sika® Sigunit® L-500 AFI

Alkali and chloride-free liquid wet mix shotcrete accelerator

### Sika® Sigunit®-530 AFI

High-performance alkali and chloride-free liquid wet mix shotcrete accelerator

### Sika® Sigunit® P-10 AF

Alkali and chloride-free, readily soluble powdered accelerator for on-site shotcrete

### SikaFiber® Force-48 / 54

48 or 54 mm long macro-synthetic fibres used in structural shotcrete to improve energy absorption, load capacity, ductility and abrasion resistance

### King® MS-W1 UG

Factory-blended, pre-packaged shotcrete mix with very good pumpability, slump retention and reduced rebound for underground work (compatible with macro-synthetic or steel fibres to increase flexural strength)



## DRY MIX SHOTCRETE SOLUTIONS

### King® MS-D3 UG

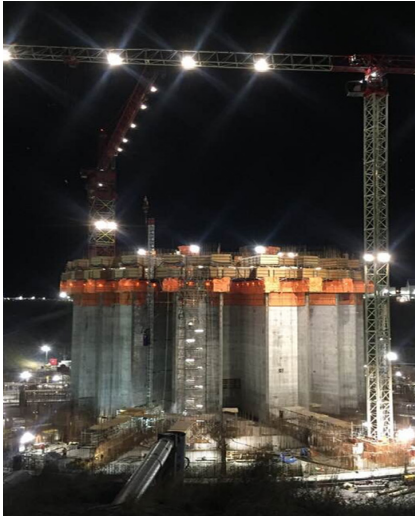
High early strength, factory-blended, pre-packaged shotcrete mix containing Portland cement used for ground support applications in underground work (compatible with macro-synthetic or steel fibres to increase flexural strength)

### King® RS-D2

Factory-blended, pre-packaged shotcrete mix powered by Rapid Set® technology providing greatly reduced setting times and very rapid strength development (compatible with macro-synthetic or steel fibres to increase flexural strength)



# CONCRETE ADMIXTURES



## WATER-REDUCING AND WORKABILITY IMPROVING ADMIXTURES

### ViscoCrete®

Superplasticizing polycarboxylate (PCE) based admixture with various water reducing and slump retention levels

### SikaTard® et Viscoflow®

Extended workability retaining admixtures

### Sika® Plastocrete®

Water-reducing admixtures providing an economical and effective way to reduce mixing water, providing up to 10 % water reduction

### Sika® Plastiment®

Water-reducing and set retarding admixtures

### Sikament®

High-range water reducing admixtures



## DURABILITY ENHANCER ADMIXTURES

### Sika® Air

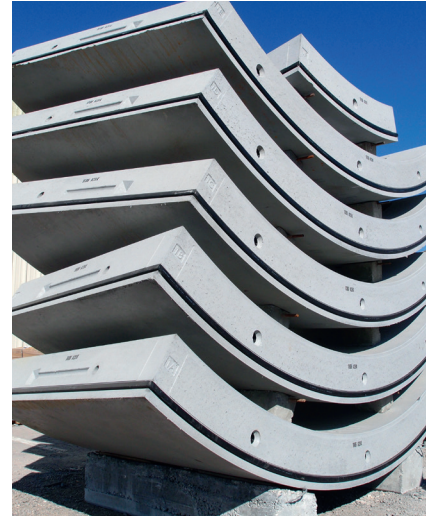
Air-entraining admixture with unique formulation for superior air entrainment of concrete and improved workability

### Sikacrete®-950 DP

Silica fume densified, dry powder admixture for cement concrete and mortars

### SikaControl®

Shrinkage reducing / compensating admixtures used to produce high-performance concrete with greatly reduced potential for drying shrinkage, cracking and curling



## CONCRETE SEGMENT ADMIXTURES

### ViscoCrete®-6100 / -5100 / -2100 / -1000

Superplasticizing polycarboxylate (PCE) based admixtures with various water reduction and slump retention levels

### SikaControl®-75 / NS / SC

Shrinkage reducing / compensating admixtures used to produce high performance concrete with greatly reduced drying shrinkage, cracking and curling

### Sika ViscoFlow®-2020 / -2050

PCE based admixtures providing extended workability without set time delay

### Sika® WT-240 P

Integral powdered crystalline-based permeability reducing admixture for use in various watertight concrete in above- and below-ground applications



# CONCRETE WORK PRODUCTS



## SELF-COMPACTING CONCRETE

### SikaCrete®-08 SCC

Ready-to-use, cement-based, highly flowable, self-compacting concrete usable for concrete thickness between 25 mm and 450 mm

### King® MS-S10 SCC

High-performance, factory-blended, self-consolidating, concrete repair mix containing Portland cement, silica fume, sand and 10 mm controlled-grain size stone

### King® RS-S10 SCC

High-performance, polymer-modified, rapid-hardening, self-consolidating concrete designed for concrete repairs, formulated with Rapid Set® cement, a redispersible polymer powder, 10 mm stone and other additives.



## HIGH PERFORMANCE CONCRETE

### SikaCrete-211 Flow plus

Ready-to-use, factory-prepared cementitious concrete that can be used for pump or hand applications exceeding 25 mm. Specially formulated concrete for improved workability and easier surface finishing

### King® MS-S10

High-performance, factory-bagged concrete designed for concrete repairs and new construction, formulated with Portland cement, an air-entraining agent, silica fume, synthetic fibres, sand and stone with a controlled grain size of up to 10 mm

### King® RS-S10

High-performance, very rapid hardening, polymer-modified concrete repair mix, pre-blended with Rapid Set® technology cement containing a redispersible powdered polymer, sand and 10 mm controlled-grain size stone



## CONCRETE CURING

### UltraCure NCF et DOT

Single-use, wet curing blankets for traffic or pervious concrete coating

### Sika® FlorSeal WB

Sika® Florseal WB-18 & -25 are ready-to-use, water-based, clear, high gloss, non-yellowing acrylic emulsion cure and seal solutions, applicable on to new concrete substrates after the final finishing operations are completed to form a film that retains mix water, allowing normal hydration



# WATERPROOFING SOLUTIONS



## DRAINAGE AND PROTECTION SYSTEMS

### **Sika® Drainage Mat 420 / 720 / 1000**

Waterproof drainage mats offering different levels of drainage and compressive strength, usable as protective layers for membrane systems

### **Sikaplan®-800 / -1000 Geotextile**

800 to 1000 g/m<sup>2</sup> polypropylene, non-woven geotextiles usable as a protection or separation layers beneath underground or tunnel waterproofing membranes



## WATERPROOFING SHEET MEMBRANE

### **Sikaproof® A+ 08 / 12**

Polyolefin (FPO) based sheet membrane for foundations and other below ground concrete structures. It is loose laid on substrate, for pre-applied and post-applied applications. Available in thicknesses ranging from 0,8 mm to 1,2 mm

### **Sikaproof®-200**

Fully-bonded TPO membrane system for pre-applied and post-applied applications in foundations and other below ground concrete structures. Designed for a long-term durability and available in 2 mm thickness

### **Sikaplan® WP-1100**

Loose laid PVC and TPO sheet membrane systems for long term durability. Available in thicknesses from 2 mm to 3 mm



## JOINT WATERPROOFING SOLUTIONS

### **Greenstreak® PVC Waterstops**

Waterstopping products and solutions used to seal construction and expansion joints in concrete structures

### **Sikaswell® S-2 / A**

Specially formulated range of high-performance, swellable, acrylic profiles and sealants for the water stopping of all kinds of construction joints

### **SikaFuko® Smart**

Re-injectable PVC hose system for sealing various constructions and connection joints in watertight concrete structures

### **SikaFuko® VT-1 / VT-2**

Re-injectable PVC hose for sealing various constructions and connections joints in watertight concrete structures. Supplied in diameters ranging from 6 mm to 10 mm



# ANCHORING AND REPAIR SOLUTIONS



## WATERTIGHT INJECTION RESINS

### **SikaFix®-PU**

Flexible polyurethane injection grout

### **SikaFix®-HH LV**

Low-viscosity, expanding, flexible and hydrophobic polyurethane injection grout

### **SikaFix®-HH+**

Hydrophobic, low-viscosity, high-solids, expanding polyurethane injection grout. It will stop flowing water and displace it from cracks and voids, replacing the water with a flexible and closed-cell foam

### **Sika® Injection-307 / Sika® Inject-215**

Low to very low viscosity, elastic polyacrylic injection resins with versatile and adjustable reaction time

### **SikaInjection®-310**

Powder-based acrylate injection resin



## REACTIVE ANCHORING, INJECTION AND GROUTS - EPOXY

### **Sika AnchorFix®**

Epoxy-based chemical anchoring resins line with fast-curing or extended working time

### **Sikadur®-31 Hi-Mod**

High-modulus, high-strength, structural, epoxy paste adhesive

### **Sikadur®-32 Hi-Mod**

Epoxy-based protective coating and bonding adhesive

### **SikaTop®-Armatec® 110 Epocem®**

Anti-corrosion coating and bonding agent

### **Sikadur®-35 LV**

Solvent-free, moisture-insensitive, low-viscosity and high-strength multipurpose epoxy resin adhesive

### **Sikadur®-52**

Super low-viscosity injection resin

### **Sikadur®-55 SLV**

Super low-viscosity, moisture-insensitive epoxy resin crack healer and penetrating sealer



## REPAIR MORTARS

### **SikaTop®-123 PLUS**

Polymer-modified, non-sag, cementitious mortar with silica fume and containing a migrating corrosion inhibitor for structural repairs. Designed for overhead and vertical surfaces, on grade, above grade and below grade on concrete and mortar (building, parking structures, industrial facilities, bridges, tunnels, etc.)

### **Sika MonoTop®-410F**

Polymer-modified, fibre-reinforced horizontal, overhead and vertical repair and reprofiling mortar with integral corrosion inhibitors

### **SikaQuick®-1000**

Rapid-hardening repair mortar with extended working time for structural repairs (horizontal and full depth patching) of concrete roadways, parking structures, bridges, dams and ramps



# CONSTRUCTION & REINFORCEMENT



## CEMENTITIOUS AND RESINOUS ANCHORING GROUTS

### SikaGrout®-212

High quality, non-shrink cementitious grout with a unique two-stage shrinkage compensation mechanism

### SikaGrout®-428 FS <sup>CA</sup>

Non-shrink and chloride-free, cementitious precision grout powered by Viscocrete® technology

### SikaGrout®-300 PT

High-performance, zero-bleed, sand-free cementitious grout

### King® MS Cable

High performance, shrinkage-compensated, sand-free anchoring grout

### Sikadur®-53

Epoxy resin-based structural grout designed for injection, anchoring and seating applications

### Sikadur®-42 Grout Pak MF/LE

Pre-proportioned epoxy base plate grouting system



## RAILING SEATING AND INSULATION

### Sika® Icosit® KC 330 Primer <sup>CA</sup>

Adhesion promoter/primer used as a pre-treatment of dry concrete, steel and asphalt substrates. For improving adhesion of the Sika® Icosit® product range

### Sika® Icosit® KC 340/45 <sup>CA</sup>

Flexible polyurethane grouts designed as a vibration and noise-reducing grout for continuous rail work (embedded floating tracks with medium axle loads)



## STRUCTURAL REINFORCEMENT SYSTEMS

### Sika® Carbodur® S

Pultruded carbon-fibre reinforced plastic (CFRP) laminate designed for strengthening concrete and masonry structures (bonded onto the structure as an external reinforcement using Sikadur®-30 epoxy adhesive)

### SikaWrap®

Carbon fibre fabric for structural strengthening systems

### Sikadur®-30 / -300 / -330

A range of solvent-free, moisture-insensitive epoxy resins designed for bonding reinforcement elements and impregnating various Sika® reinforcement fabrics



# INTERIOR FINISHING SOLUTIONS



## SCREEDS AND UNDERLAYMENTS

### Sika® Level-125

Polymer-modified self-levelling cementitious underlayment using Sika® ViscoCrete® technology for use in applications of 1 to 38 mm thickness

### SikaFloor® Level-25

Polymer-modified, versatile and durable cementitious self-levelling screed for interior concrete floors which can be applied manually to achieve a rapid, flat, economic substrate levelling prior to the application of the final floor finish. Typical application thickness: 5 - 25 mm

### Sika® Level Primers

Range of flooring primers specially formulated to improve adhesion between substrates and floor coverings ensuring a strong and durable bond. Flooring primers offer several benefits, including improved bonding, reduced porosity and increased resistance to moisture and chemical penetration



## FLOORING SYSTEMS

### Sikafloor®

Range of technical and decorative epoxy or polyurethane resinous flooring systems for all types of flooring

### High Performance Systems

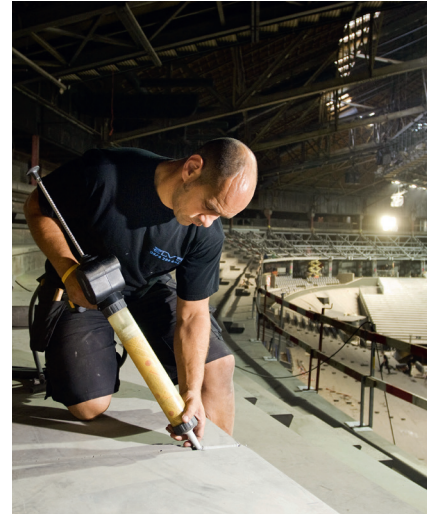
Range of flooring systems for specific applications and requirements: Sikafloor® ESD for antistatic protection or Sikafloor® MRW for mechanical rooms protection

### Decorative Solutions

Aesthetic and comfortable epoxy resin-based flooring with various mineral- or synthetic-based inclusions for public, commercial and tertiary premises

### Sikafloor® NA PurCem®

Advanced generation of polyurethane-cement systems specifically designed for extreme service conditions (service temperatures, exposure to abrasion and chemicals, heavy point loads and frequent and heavy traffic, frequent and intensive cleaning)



## ADHESIVES AND SEALANTS

### Sikaflex®-1a

Premium grade, high-performance, moisture-cured, polyurethane-based non-sag elastomeric sealant

### Sikaflex®-1c SL

High-performance, self-levelling polyurethane sealant with accelerated curing capacity

### Sikaflex®-2c / -2c SL

Non-sag, polyurethane elastomeric sealants (self-levelling version available)

### Sikaflex®-2c NS EZ Mix

Non-sag, chemically-cured, polyurethane-based sealant for working joints treatment

### Sika® Loadflex®-524 EZ

Semi-rigid, solvent-free, self-levelling polyurea control joint filler



# COMPLEMENTARY SOLUTIONS



## SPECIAL APPLICATIONS CONCRETE, FIBRES AND ADDITIVES

### **Sikacrete®-910 UHPC**

Ultra high performance concrete (UHPC) formulated for structural and architectural applications in civil engineering, including concrete rehabilitation/retrofitting and precast concrete applications

### **SikaFibers®**

Sika offers a complete range of concrete fibres including micro- and macro-synthetic fibres, steel fibres and mixed fibres to improve the properties of fibre-reinforced concrete in the plastic and hardened state.

### **Chromix®**

Free-flowing, concentrated pigment granules designed to permanently colour concrete and other cementitious materials. Usable to colour cast-in-place, precast and dry-cast concrete floor slabs, walls, steps, sidewalks, curbs, columns, arches, blocks, pavers and other decorative objects



## FIRE-RATED EXPANSION JOINTS

### **Emshield® DFR2**

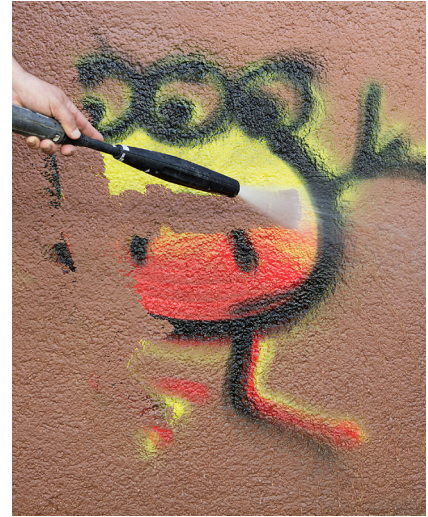
Fire-rated, primary watertight expansion joint for repairs, retrofit and new installations in structural expansion joints and construction joints in horizontal-plane applications

### **Emshield® WFR2**

Fire-rated and watertight wall expansion joints for interior and exterior applications. Sound attenuation and 2-hour fire-rated joints

### **Emshield® TFR-RWS**

Fire-rated tunnel expansion joint designed to meet the requirements of specific tunnel fire rating scenarios



## WATERPROOF AND PROTECTIVE COATINGS

### **Sikagard® SN-100 / SN-40**

Highly penetrating, clear monomeric silane sealers formulated to provide an integral barrier against ingress of moisture and waterborne salts into concrete and masonry while allowing surfaces to breathe

### **Sikagard®-550 W**

Acrylic-based elastomeric coating for protective and decorative applications. It bridges microcracks, minimizes carbon dioxide, water and chloride ingress and aesthetically enhances structures

### **Sikagard®-5850**

Clear, mat and ready-to-use, polyorganosiloxane-based permanent non-sacrificial anti-graffiti and anti-fly poster protection coating



# MASONRY AND ROOFING



## MASONRY MORTARS

### King 1-1-6 Type N

Pre-mixed, factory-bagged type N mortar specially designed for laying bricks, natural stones, concrete blocks and other masonry products

### King® Block Type S / King 2-1-9 Type S

Premixed, factory-bagged Type S mortar specially designed for laying bricks, natural stones, concrete blocks and other masonry products, when a higher compressive strength is required

### King® MasonGo 100

Pre-mixed, factory-bagged type N mortar designed for laying bricks, natural stones, concrete blocks and other masonry products

### King® MasonGo 200

Pre-mixed, factory-bagged type M mortar designed for laying bricks, natural stones, concrete blocks and other masonry products, when a higher compressive strength is required



## FILLING GROUTS

### Fine grouts

#### King® CellFiller E-20

Pre-mixed, factory-bagged expansive grout specially designed for filling cells and other cavities when laying concrete blocks

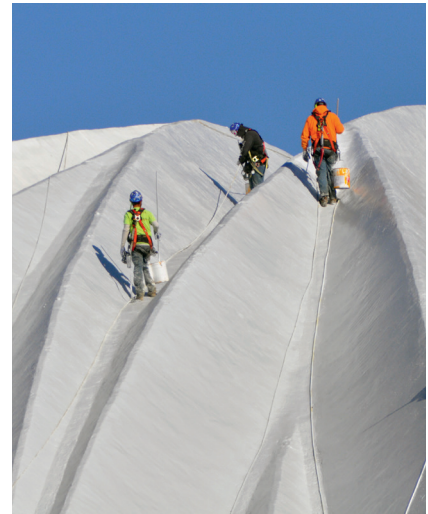
#### King® CellFiller E-30

Pre-mixed, factory-bagged expansive grout specially designed for filling cells and other cavities when laying concrete blocks

### Coarse grout

#### King® CellFiller C-20

Pre-mixed, factory-bagged expansive grout specially designed for filling cells and other cavities when laying concrete blocks



## ROOFING AND WATERPROOFING MEMBRANES

### Sarnafil®

Single-ply PVC thermoplastic roofing membrane produced with an integral fibreglass mat reinforcement (Sarnafil® G) for adhered roofing systems or an integral polyester reinforcement for mechanically-attached roofing systems (Sarnafil® S)

### Sikaplan®

PVC thermoplastic roofing membrane designed with an integral fibreglass mat reinforcement

### Sikalastic®

Liquid-applied, polyurethane-based waterproofing membranes perfectly suited for roofs with complex details or geometry



# CANADIAN PROJECT REFERENCES



## Réseau Express Métropolitain (Montréal, QC)

67 kilometres public transit system based on automated electric light rail technology, serving the Greater Montreal area. Sika contributed to the project with its structural adhesives for segment bonding, injection grouts for post-tensioned structures, admixtures for segment prefabrication and other construction solutions, including its Sikaplan® waterproofing membrane system



## Broadway Subway (Vancouver, BC)

Extension of 5.7 km (5 km underground and 700 m elevated) of the Millennium Line in Vancouver, including 6 underground stations. Sika was involved in the project with a variety of tunnelling products, various waterproofing and injection solutions and a multitude of repair products



## Scarborough Subway Extension (ON)

Transportation project to extend Line 2 of the Greater Toronto Area subway system by nearly 8 km to Scarborough. The tunnel was excavated using an EPB tunnel boring machine of over 12 metres in diameter. Sika developed an annular grout mix adapted to the requirements of the project and supports the project with admixture storage and distribution containers



## Airport Trail Tunnel (Calgary, AB)

The Airport Trail Tunnel in Calgary is a project worth almost 300 million dollars will run through the city under the Calgary International Airport. EMSEAL's Emshield TFR-RWS expansion joints were installed across the tunnel roof to optimize protection in the event of fire



## Eglinton LRT (Toronto, ON)

This major public transit project in central Toronto stretches 19 km (including 10 km underground) from west to east, and includes 25 stations. Sika distinguished itself on this project through its technical expertise and its ability to provide construction solutions that met the challenges faced by the project, such as waterproofing membrane systems, grouts and injection resins, shotcrete, rail fastening grouts and more



## Highway 401 Rail Tunnel expansion - Metrolinx (ON)

The project includes two single-track rail tunnels, each 180 m long and 11 m high, running under the junction of highways 401 and 409. The sequential excavation method (SEM) was used to excavate the tunnels less than 5 m under the 21 lanes of traffic kept open on highways 401/409. Sika contributed to the project with the Sikaplan® waterproofing membrane system, complemented by other waterproofing and construction solutions



# OUR TEAM AND ONSITE SERVICES



For any questions, requests for information, or literature, feel free to contact us!

Scan the QR code below or visit our website at [sika.ca](http://sika.ca) under the **Contact** section



**Admixture storage and dispensing containers** (20 ft or 40 ft, insulated and equipped according to project needs)



**On-site admixture delivery** service using a dedicated fleet of tanker trucks



**Mobile laboratory** for concrete testing on site