### Knight Theater Pedestrian Tunnel, NC United States
*Shotcrete Construction*

Several systems of waterproofing were considered, including HDPE membrane, PVC membrane, double-bonded spray applied cementitious membrane and cementitious concrete admixtures. After evaluating the cost and constructability issues of these methods, a combination of two systems were selected to achieve the specified and desired results. It was decided to use KIM® in the structural shotcrete walls and invert concrete slab of the tunnels and then apply a double-bonded spray applied membrane to the walls.

### Ensenada International Terminal (EIT) Grain Tunnel, Mexico
*Cast-in-Place Construction*

A below grade concrete tunnel to house a belt transportation system and grain silo were constructed using Kryton's KIM® admixture, Krystol® Waterstop System for joints and Krystol® Crack System. The port location meant that the tunnel would be in constant contact with sea water and it was essential the tunnel remained water free. Water in the transport tunnel could ruin entire containers worth of valuable grain. Further, salt water and its ability to corrode the steel and structure was also a key factor in the waterproofing design.

### Shanghai Subway, China
*Precast Construction*

Different sections in the stations for the new subway line in Shanghai faced problems due to sulphate attack, chloride penetration and corrosion. Krystol® T1/T2 and KIM® where chosen for simplicity of use and for their ability to lower long-term maintenance cost. Even under the hydrostatic pressure of the Huangpu River KIM®'s performance has proven effective.


**Kryton International Inc.**

Technical Headquarters
1645 East Kent Avenue
Vancouver BC
Canada V5P 2S8
Tel: 1-604-324-8280
Fax: 1-604-324-8899
Toll Free: 1-800-267-8280
Email: info@kryton.com
Web: www.kryton.com

Worldwide Distribution, Barbados
Phone: 246-437-3202
Fax: 246-429-5143
E-mail: distribution@kryton.com


www.kryton.com

AUTHORIZED DISTRIBUTOR

# CONSTRUCTION AND REPAIR OF CONCRETE TUNNELS

## Using Krystol® Technology

*At the Lab. In the Field. By Your Side.*

Kryton's Krystol® waterproofing system is specially suited to tunnels because of its reliability, simplicity, self-sealing ability and lowest overall cost.

***"This is how concrete waterproofing is done today!"***

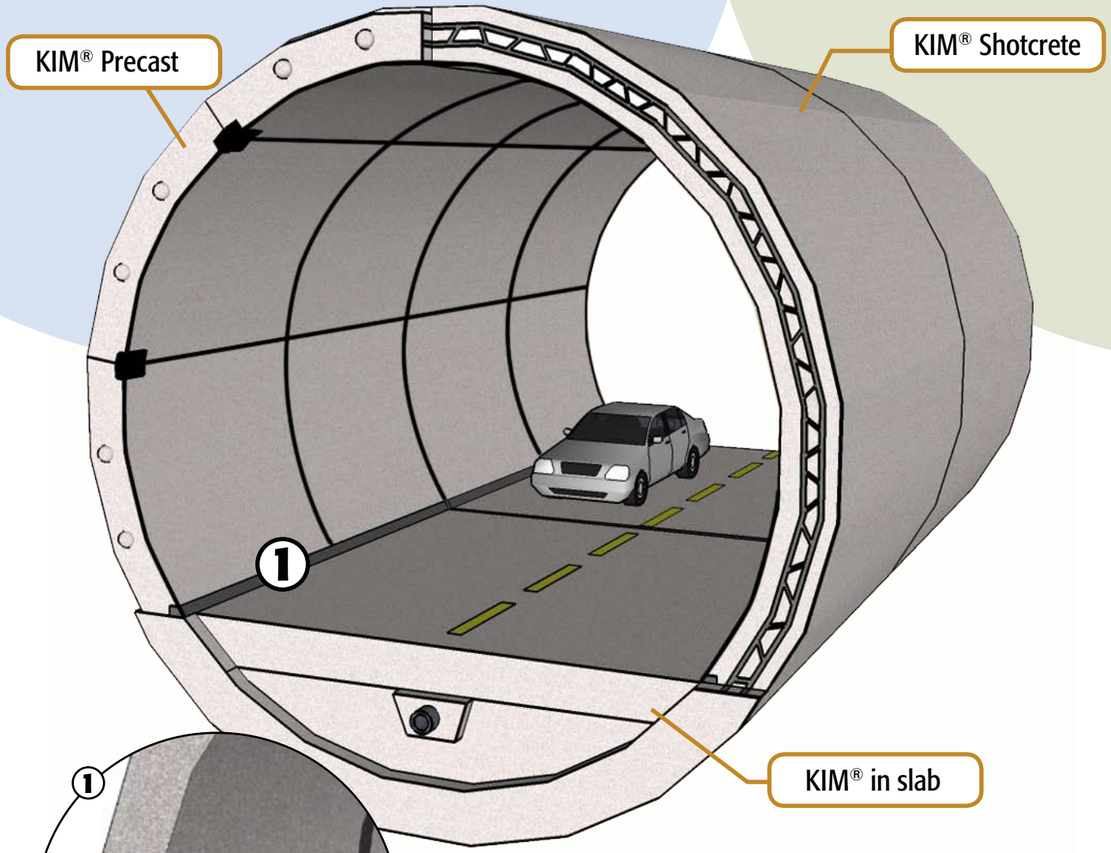
# Construct Watertight Tunnels that Last

Tunnels can be subjected to heavy traffic and vibration, temperature changes, corrosion damage and freeze thaw cycles which affect the tunnel's durability.

Proper waterproofing prevents the penetration of moisture and chemicals into the concrete and steel components of the tunnel. Ultimately protecting the durability and structural integrity of the concrete; overall, prolonging the life of the tunnel. Kryton's Krystol concrete waterproofing system protects the structural rebar from corrosion and provides a durable, leak-free solution that will last for the life of the tunnel.

Whether using cast-in-place, shotcrete and/or precast to construct your tunnel, KIM® can be added to the concrete at the plant, or onsite to the mixer truck to make your concrete watertight. KIM® turns the concrete itself into the waterproofing membrane – eliminating the need for any surface-applied membrane to be applied. KIM® and the Krystol® system reduce labour, construction schedules and costs for concrete waterproofing. KIM® also works to reduce shrinkage and cracking during curing.

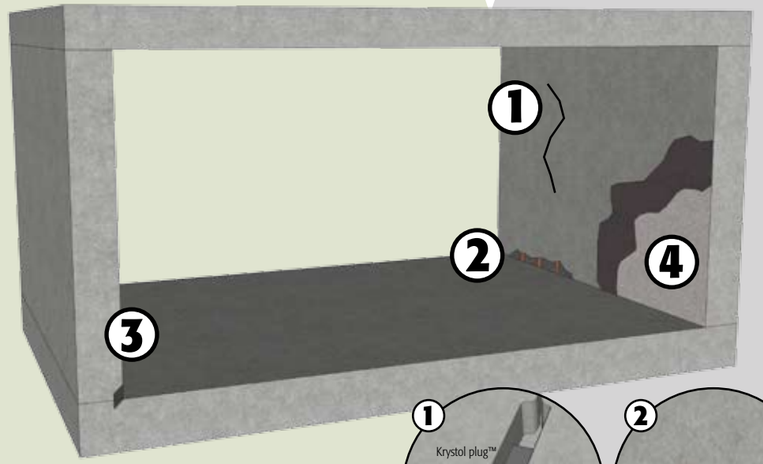
Adding KIM® to your mix will ensure your concrete is waterproof for the life of the tunnel.




Remove the worries of costly repairs and disruptive downtime; design your tunnels with the KIM® admixture and Krystol® joint system. Kryton's Krystol® technology grows crystals inside the concrete, filling pores and capillaries, transforming ordinary concrete into an impenetrable barrier to liquids. With the KIM® admixture, membrane systems become redundant.

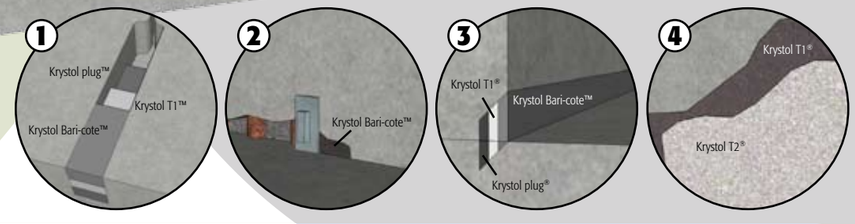
- Create impenetrable concrete with KIM® in the mix
- Ensure non-moving construction joints are sealed with the Krystol® Waterstop System

# Repair & Waterproof Existing Tunnels




Wherever previous waterproofing systems have failed, Kryton has a solution; the only solution that is as strong as concrete and works 100% of the time.

- Seal cracks and stop leaks with the Krystol® Crack Repair System
- Resurface honeycombing and spalling, and waterproof with the Krystol Bari-cote™
- Repair leaking cold joints using the Krystol® Crack Repair System
- Prevent water ingress by applying Krystol T1® and Krystol T2® to the concrete on the inside of the tunnel.




## Repairing the Sichuan Tunnels

***Background***

In 2007, construction was completed on a 180 km (112 mi) superhighway that included 5 pairs of tunnels through the mountains of the Sichuan Province of China.

Shortly after completion the tunnels needed to be repaired; the soil and rock conditions paired with heavy seasonal rainfall quickly contributed to cracking and water leakage within the newly completed tunnels. With approximately 125,000 sq m (150,000 sq y) of surface area throughout the tunnels, the waterproofing repair work was a significant undertaking.

***Solution***

Because the leaking tunnels had already been built using cast-in-place concrete, Kryton's team recommended using Krystol T1 and T2 surface applied crystalline slurry coat system. Krystol T1/T2 is a two-step, brush-applied system that prevents water intrusion, repairs cracking and maintains existing concrete structures.
T1 seals the concrete against permeating water and T2 protects the surface of the structure from moisture. Once applied, the chemicals are absorbed into the concrete creating a strong barrier to water.

250 t of T1/T2 were used to waterproof the 125,000 sq m (150,000 sq y) of tunnel walls and about 2t of Kryton's crack repair system material were also used to mend the 1,200 m (3937 f) of cracked and leaking concrete.

Less than a year later, a massive earthquake struck Sichuan killing more than 68,000 people. It destroyed communities and cost the government 1 trillion Yuan (US $146.5 billion) to rebuild. Despite the quake's wholesale destruction the waterproofed tunnels of the Sichuan Mountains, remained unaffected.


Tel: 1.604.324.8280 | Toll Free: 1.800.267.8280 | 1645 East Kent Ave. Vancouver BC Canada V5P 2S8