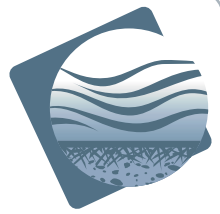




At the Lab. In the Field.
By Your Side.

JFK AIRPORT PEDESTRIAN TUNNEL

New York, New York, USA
Spring 2004



CONCRETE
WATERPROOFING

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QUESTIONS: 1-800-267-8280 or www.kryton.com

BACKGROUND

In 1999, American Airlines began construction on a \$1.4 billion, 2.2-million-square-foot terminal complex to replace Terminals 8 and 9 at New York's JFK Airport. When completed in 2007, the complex will serve domestic and international passengers on three concourses, and will include a customs and immigrations facility, a 10,000 square-foot retail and concession space, and a new 1,900-space parking garage. To allow for uninterrupted passenger service, the complex is being built in four stages.

Part of the terminal construction involved building a new 1,500-foot-long, 150-foot-wide concrete pedestrian tunnel, which runs 25 feet below finished grade with a water height of 12 feet at high tide. During the original construction of the tunnel, conventional PVC waterstop and membranes were used to waterproof the structure.

Before long, however, shrinkage cracks began to form and they, along with the cold joints and construction joints in the walls and floors, began to leak. Over the next 18 months, the foundation contractor tried numerous solutions to fill the cracks and stop the leakage. Despite spending many thousands on repair solutions, the cracks continued to grow and the tunnel continued to leak.

SOLUTION

After a number of failed repair attempts, the foundation contractor contacted the Crystal Group, a Kryton International distributor in New York. The Crystal Group offered to undertake a 50-foot test repair using Krystol™ T1/T2 crystalline crack repair and waterproofing system.

Krystol™ T1/T2 is a cementitious mixture that can be brush-applied to existing concrete structures to repair cracks, fortify and waterproof the concrete and protect it against contamination and steel reinforcement

The Kryton Group of Companies.

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



The \$1.4 BB complex will serve domestic and international passengers on three concourses, and will include a customs and immigrations facility, a 10,000 square-foot retail and concession space, and a new 1,900-space parking garage.

LOCATION

New York, New York, USA

OWNER

American Airlines

ARCHITECT & ENGINEER

DMJM Harris

REPAIR CONTRACTOR

The Crystal Group, LLC

CONTRACTOR

VRH TORCON

SUPPLIER

The Kryton Group of Companies

PROJECT CASE STUDY

JFK AIRPORT PEDESTRIAN TUNNELL

New York, New York, USA

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corrosion. After application, chemicals from Krystol™ T1/T2 are absorbed into the concrete by the natural wicking action of concrete. Once inside the concrete, the chemicals cause crystals to grow, self-sealing cracks and filling the spaces between concrete particles, permanently blocking the movement of water in all directions.

The majority of active Krystol™ chemicals migrate into the concrete within the first 28 days, meaning the surface-applied slurry can be completely removed from the surface after this time without impacting its waterproofing properties. Krystol™ T1/T2 can be applied to positive or negative surfaces, making it well-suited for repairing sub-grade structures where access to outside walls may be difficult or impossible.

Once the 50-foot test repair proved watertight, the project team gave the go ahead for full repairs to begin. The repair team began by grinding out the cracks and joints to remove the epoxy and other materials that had been used in an attempt to stop the leakage. Honeycombed sections where air had not entrained properly were also chipped out. The Krystol™ T1/T2 system was applied on all cracks and joints successfully. Even cracks greater than .75 mm were able to self-seal when allowed adequate time for crystal growth to occur.

After the shrinkage cracks and cold and construction joints were repaired, the Crystal Group used Krystol™ T1/T2 to repair a shifting armour joint, which connected two 500-foot concrete tunnel sections. The 87 feet of repairs were made more difficult by freezing temperatures and a continuous flow of 40-degree ground water at 15 PSI. Furthermore, the JFK project team wanted to pressure-test the repairs just 7 days after completion, which is earlier than recommended. Despite the adverse conditions and shortened timeframe, the test was successful and the armour joint proved watertight.

The Crystal Group completed the JFK repair project in March 2004, and to date, the concrete pedestrian tunnel remains problem free.



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