

Whampoa Station Waterproofing Repair

Hong Kong, China (2018)

PRODUCTS USED:

Krytol Plug™ Krytol Repair Grout™ Krytol Internal Membrane™ (KIM®)
Krytol Bari-Cote™ Krytol T1®

OWNER/DEVELOPER/ARCHITECT/ENGINEER:

MTR Corp. Ltd.

CONTRACTOR/APPLICATOR:

Chun Wo Construction Ltd.

DISTRIBUTOR:

Chevalier (Building Supplies & Engineering) Ltd.

BACKGROUND

As the population of Hong Kong has continued to grow, MTR Corp. Ltd. has continued to enhance their existing mass transit railway (MTR) network. By 2016, that led them to extending the Kwun Tong line to Whampoa.

A year later, however, they discovered that there were waterproofing challenges at the new Whampoa station. These were found when MTR Corp. Ltd.'s contractor had discovered that the MTR station's tunnel was leaking. Out of the possible reasons for this leakage, the most likely one was the very high hydrostatic pressure of the area, which was the result of the station and its surrounding tunnels being constructed 16 m (53 ft) below grade. That would make repairing the leaks particularly difficult. To add to that challenge, the repair team was only allowed to work from 2 am to 4 am so they wouldn't disturb residents in the area.

With that in mind, the team knew they would need a waterproofing solution that could withstand high hydrostatic pressure and provide permanent waterproofing within a short period of time. Initially, the general contractor of the team had considered using epoxy injections to repair the leaks. But they eventually determined that the injections would not offer the permanent solution they needed.

SOLUTION

The repair team opted for Kryton's Krytol® Leak Repair System, knowing that it can be applied to the negative side of hydrostatic pressure to provide a permanent waterproofing solution. To start, they used the rapid-setting Krytol Plug before applying Krytol Repair Grout. At the same time, they used KIM-treated concrete and Krytol Bari-Cote to repair honeycombs in the station's concrete. Then, they waterproofed the concrete surface of the station tunnel area with Krytol T1.



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Several of these solutions use Krytol® technology to provide permanent waterproofing capable of handling high hydrostatic pressure. As a result, after they've been applied to the concrete, the Krytol technology will remain within the concrete waiting to chemically react to water. Once water is present, the technology activates and uses the water and nearby unhydrated cement particles to form insoluble needle-shaped crystals that fill the concrete's capillary pores and micro-cracks. That blocks possible pathways for water and waterborne contaminants.

In short, the repair team found that by choosing these Kryton solutions, they were able to save considerable time on their repair work and reduce their short-term costs all while working within short sessions. The tunnel is now permanently waterproof and safe from the surrounding hydrostatic pressure.



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