PROJECT SHEET

Toronto Transit Station Underpass

June, 2022

ABOUT THIS PROJECT:

Market Segment:
Rail Transportation

Engineers:
WSP Engineering

Products Used:
Xypex Admix C-500

Location:
Vaughan, Ontario, Canada

General Contractor:
Ellis Don Construction

PROBLEM

The transformation of Toronto's Metrolinx Rutherford Transit Station posed a significant challenge for Ellis Don Construction. A key component of the project involved lowering the road under an active railway to create an underpass for vehicles, cyclists, and pedestrians. However, the project faced a significant obstacle due to the high hydrostatic pressure caused by a nearby lake.

To overcome this challenge, the project engineers turned to Xypex, a leader of crystalline waterproofing solutions. In this case study, we'll explore how Xypex helped address the problem of high hydrostatic pressure and ensure the project's success. Bob Zaniewski, Xypex project manager, said, "The challenge for Ellis Don was to create a waterproof structure.

The secant piles were treated with Xypex Admix to prevent water penetration and protect the reinforcing steel in the concrete from the existing high-water table.

The water table is almost the height of the rail tracks, so the entire roadway is below the water line." The contractor selected Xypex Admixture for all concrete for the underpass due to its ability to resist extreme hydrostatic pressure.

Xypex Admix reacts with cement and byproducts of cement hydration to fill the pores and capillaries in the internal structure of the concrete, creating a non-soluble crystalline matrix. The result is concrete that prevents the penetration of groundwater for the structure's entire service life.

LASTING XYPEX PROTECTION

The Metrolinx engineering and Ellis Don teams chose Xypex for this project. "They evaluated traditional membrane waterproofing vs. Xypex," Zaniewski said. Xypex admixture was selected due to the time saved by eliminating the labour-intensive membrane application to concrete below the water table. "The engineering team realized the economics of Xypex Admix, not only in construction scheduling but in performance.

Xypex crystalline technology has self-healing capabilities that continue for the structure's life, whereas membranes do not. Having a job in Canada run over three years means multiple winters," Zaniewski said. "Applying any membrane in winter is labour-intensive and costly due to the heating required to achieve a suitable environment. The project team recognized the savings in cost, man--hours and schedules."

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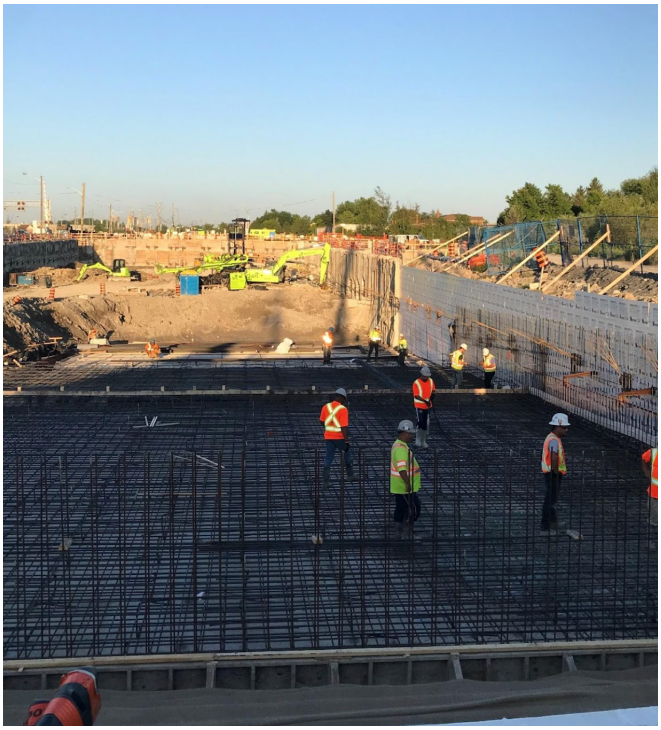
Thousands of travelers now flow through the newly transformed Rutherford Transit Station and appreciate its modern design and improved accessibility. Metrolinx, the owners and operators of this public transit system, value the long-term waterproofing protection gained by incorporating Xypex into their concrete structure.

Street view of the render for the project.



Xypex makes concrete impermeable and resistant to water damage. To ensure the reinforcement steel is permanently protected from water penetration, Xypex was added to the concrete to create a waterproof barrier that can withstand the hydrostatic pressure from a nearby lake.

Water penetration completely stopped after Xypex Admix treated concrete was applied.