

# Mississauga Public Works

## Water distribution expansion project



**Location**

Region of Peel, Mississauga, Ontario

**General contractor**

McNally Construction Inc.

**Engineering firm**

UMA Engineering Ltd.

**Distributor**

Multisurethanes Ltd.

**Product used**

Azo-Grout™ 443 by Azon



**Figure 1** Location of water transport tunnel and grout application

**Situation**

Two plants in the South Peel region water distribution system—the Lakeview Water Treatment Plant and Lorne Park Water Treatment Plant—pump water from Lake Ontario to serve approximately 1.28 million people in the cities of Brampton, Mississauga and community of Bolton. Several watermains link the two in the Mississauga Public Works service areas allowing water to transfer from either west to east or east to west. The 67-acre Lakeview Water Treatment distribution system was expanded to accommodate the population growth in the eastern sections of the region.<sup>1</sup>

A water transport tunnel starting at the Lakeview Water Treatment Plant located on the north shore of Lake Ontario extending out to Bolton is part of an agreement to supply water to the York Region.

Underground trenchless tunnel boring was employed along sections of the tunnel route to limit any disturbance of the above ground activities in highly developed and populated areas.

As the TBM (tunnel boring machine) equipment entered lower water table zones located near streams and silty soils, water began to enter the tunnel during boring and construction. Construction progress was halted for 3-weeks due to the water leakage.

**Action plan**

Multisurethanes was consulted to assist in finding the most feasible methods of stopping water infiltration in one part of the tunneling project—including the use of chemical grouting. (Figure1)

Strategic drilling and polyurethane injection utilizing Azo-Grout™ 443 into the tunnel sidewalls and ceiling proved to be effective techniques to stop the inflow of groundwater and provide ground stability.

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### About the product

Azo-Grout™ 443 is a low viscosity, hydrophobic polyurethane chemical grout used for soil stabilization in a variety of water-bearing soils. The low viscosity characteristics allow the material to penetrate the earth, adding structure and stabilization by encapsulating the granules and forming a rock-like mass.

In situations where sand, loam or clay need to be stabilized, Azo-Grout 443 can be utilized. These applications may exist on the outside of tunnels, footings for bridges or in the utility shafts of dams.

### Outcome

The tunnel walls appeared dry and (any further) water leakage was abated due to the improved ground conditions. Further construction delay was avoided and tunnel construction resumed.

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'South Region of Peel Report, 2008. "Water Quality Report"  
<http://www.peelregion.ca/pw/water/quality/reports>.

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Figure 2 Drilling of injection holes prior to inserting packers



Figure 3 Injecting Azo-Grout™ 443 into packers in tunnel wall

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