



## CASE STUDY - INNOVATIVE SOLUTION HALTS WATER INFILTRATION IN POWER COMPANY'S SWITCHYARD

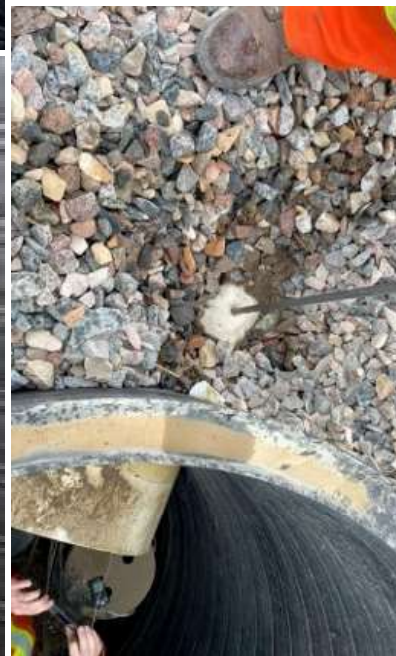
Canada

Single component polyurethane foam technique saves costs and ensures long-lasting protection against manhole flooding and soil loss.



### THE PROBLEM

A Canadian power company faced a critical issue with water infiltration in a manhole at one of their switchyard facilities. The manhole, made from semi-flexible plastic, had developed a gap between its structure and the utility lines entering it. Over time, this gap widened, leading to soil loss and the settlement of the soil surface around the manhole. Periodic flooding of the manhole became a significant risk, raising concerns about potential power outages. To mitigate this, sump pumps were installed at the bottom of the manhole, and the site required continuous 24/7 monitoring to manage the water infiltration.





## THE SOLUTION

Eco-Concrete Levelling was asked to provide a minimally invasive solution that would not require the utility service lines to be shut down. The team selected a flexible, hydrophobic, single-component polyurethane foam as the ideal material to meet the project requirements. This foam, with an adjustable reaction profile, could be slowed down to allow the material time to encapsulate the area before expanding to form a congruent seal. The low expansive pressure of the foam allowed for precise injections to take place adjacent to the manhole and utility lines without risking displacement or damage to the structure. In addition, the elasticity of the foam would help maintain a long-lasting seal that could accommodate the potential for future movement of the filled gap.



## THE SUMMARY

The project involved permeation grouting using single-component polyurethane injected through three probes driven into the soil behind the manhole, on both sides, and just above the utility lines. A carefully measured volume of material was pumped to ensure thorough coverage and encapsulation. As the grouting process neared completion, material began to seep through the gaps, confirming full treatment of the area. To ensure complete coverage, an additional small volume of foam with an accelerated reaction time was injected directly into the gap from inside the manhole. The entire process was completed in just 45 minutes, effectively sealing the gaps and halting soil piping and water infiltration. Seeing the results, the client requested the same repair on a second manhole which was complete the same day in less time. This solution saved the client significant costs and resources that would have been required for ongoing 24/7 monitoring. Completely satisfied with the work, the client solicited estimates for additional areas to be completed in the future.

