



TransEd Valley Line LRT twin tunnel project

Edmonton, AB, Canada



Project Information

Project category:
Infrastructure

Years of construction:
2017-2020

Years of MAPEI involvement:
2018-2020

MAPEI coordinators:
Enrico Pavese, Monica Rourke

MAPEI owner:
City of Edmonton

Project manager:
Ken Sullivan

Installer:
Carpi Tech – Davide Chitotti and John Wilkes

Main engineers:
Arup and Luis Corgo, Sr. (tunnel engineer, Bechtel)

Contractors:
Bechtel, Arup and EllisDon

Photographer:
Latitude Photography



Project Overview

When the Canadian city of Edmonton, Alberta, undertook its first foray into underground mass transit with a \$1.8 billion project, it turned to MAPEI's UTT team for waterproofing and concrete expertise.



Products Used

- Idrostop™ Multi 11**
- Mapeband™ PVC Tape 500**
- Mapeplan® TU S 25**
- MapeWrap® 11**
- MapeWrap 12**



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Underground-transit construction new to Edmonton, but not to MAPEI UTT

London's world-famous Underground was already 45 years old when the Edmonton Transit Service was founded in 1908 to serve the Alberta provincial capital's commuters. Underground transit may be old school for Londoners, but for Edmontonians, the TransEd Valley Line twin tunnel project was a venture into unknown territory. This territory, though, was not unknown to MAPEI's well-established Underground Technology Team (UTT).

"This was a Design, Build, Maintain and Operate project under 30 years' contract and the MAPEI Polyglass waterproof membrane system was selected over the specified competitor solution, as we were able to provide hands-on training in the field, equipment and engineering, and a quality product," said MAPEI coordinator Monica Rourke, Manager of Waterproofing and Injection Systems, USA and Canada, for MAPEI UTT.

The underground work included boring of tunnels and station excavations using products from Mapei S.p.A.'s (Italy) Polyglass line. Because the work took place in an urban setting, the protection of existing structures and buried utilities that could be impacted by the construction was critical to the successful completion of the work. Excavation on the twin tunnels, each about 1,312 ft. (400 m) in length, started in March 2017 and was completed by April 2018. Over 70,000 tons (71 123 283 kg) of soil was excavated. The tunnels sit at a depth ranging from 11.5 to 59 ft. (3.5 to 18.0 m) below the ground.

MAPEI products on the jobsite

The MAPEI UTT/Carpi Tech team mobilized on the job in May 2018 and began training, as well as installing **Mapeplan TU S 25** membrane. With the tunnel construction completed, the general contractors began lining the tunnel for stabilization. The first layer was shotcrete, followed by the complete Polyglass waterproof membrane system. After the membrane

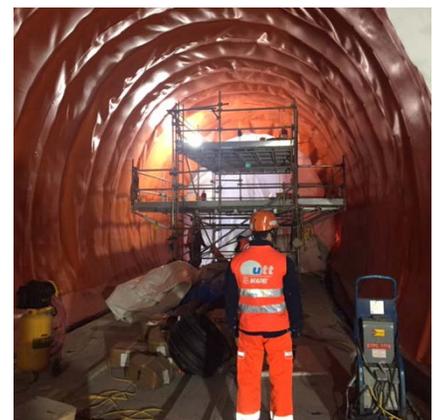
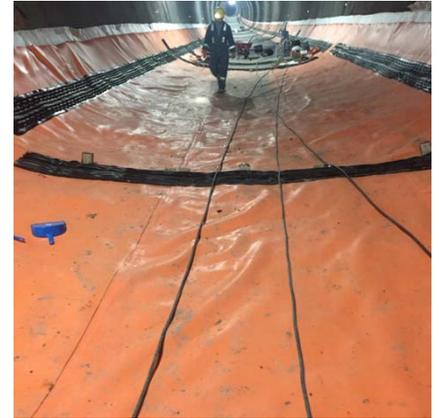
installation was completed, crews added a steel-fiber-reinforced mix for the final lining. **MapeWrap 11** and **MapeWrap 12** structural epoxy putty adhesives, along with **Mapeband PVC Tape 500**, were then used to terminate the membrane at the four portals.

MAPEI UTT's expertise was also needed for an additional task that involved repairing a tunnel joint roughly 33 ft. (10.0 m) in length that a contractor had damaged. For this task, MAPEI UTT employed the **Idrostop Multi 11** injection hose system, which is a PVC-P re-injectable hose that is used as a backup waterproofing system.

Construction for the southbound tunnel was completed in March 2020; this tunnel is now completely lined with its final concrete finish. The tunnel for the northbound side is set to be completed later in 2020.

Due to delays in other sections of the line, including an unfinished bridge leading directly to the tunnels, the date for the tunnels to be put into service has been pushed to sometime in 2021. One of the contributing factors to the project's stretched length of time was that the contractors liked the Polyglass membrane system so much, they added it on their own to other structures within the project – specifically, the storm drain tank.

In the end, the people of Edmonton, whose LRT system was already the northernmost of its kind within the continent of North America, can now boast that they have underground transit – just 157 years later than London.



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