



E2 Avloppstunnel (SE) Water & Frost Protection, Tunnelduk

Country	Sweden
Type	Water management
Client	Stockholm Vatten A
Main Contractor	YIT
Execution of the work	Renesco GmbH
Designer	Sweco
Construction Period	2024-2026

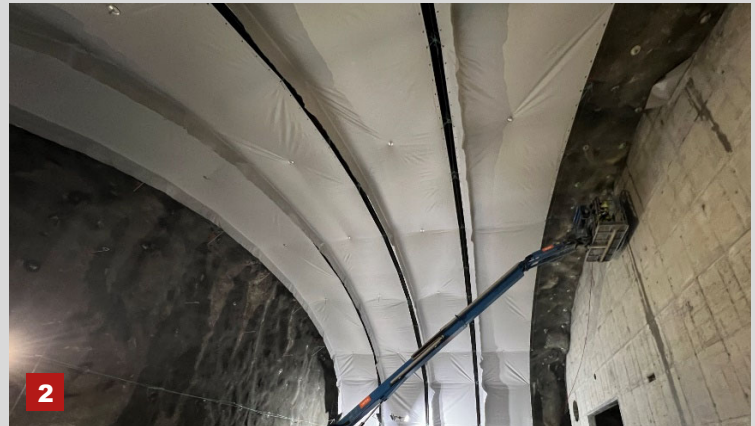
Project Description

The project is part of the development of Henriksdal wastewater treatment plant, the largest in Sweden and one of the largest in Europe. It is also one of the world's largest wastewater treatment plants located inside rock. The main tunnel runs under the urban area between Bromma and Sickla in Stockholm and it will be approximately 14 kilometers long. The contracted lot has a scope of 7.7 kilometers of tunnel including rock caverns.

Scope of Service

Supply and install of the water & frost protection system (drip shield) using a 0.6 mm thick reinforced PVC-coated polyester fabric lining with a high tear and tensile strength. The lining is fastened to a steel wire arched frame which is bolted into the rock and forms the theoretical profile. All fabrics are jointed together by hot air welding to guarantee a waterproof seal and stretched by PE ropes to give an aesthetical visual appearance.

- Tunnel cloth/ fabric (RTM 700-RP) is self-extinguishing and cannot be ignited. It complies with ISO 9705 tunnel classes A/B in accordance with the Norwegian Public Roads Administration's requirements in manual N500/Table 4.4 and has an Environmental Product Declaration.
- Installation of anchor bolts M16 for the membrane system.
- Drilling by fully automatized rig (AMV 236T) via Trimble navigation, Bever Control System to allow a precise anchoring/navigation with an accuracy less than 10 mm. All controlled by a surveyor team using Leica System.
- Drilling and surveying data converted and recreated in Gemini and Bever control from client's documentation and tunnel scans for exact position of hook bolts and technical bolts.



1. Drilling operations with the AMV 236T for the bolting
2. Tunnel cloth (Tunnelduk) application at the rock cavern
3. Rock cavern, Drip Shield