



Norðfjarðargöng (ISL) Water & Frost Protection

Country	Iceland
Type	Road Tunnel
Client	Vegagerdin Iceland
Main Contractor	Metrostav
Execution of the work	Renesco a.s.
Designer	Mannvit hf. Engineering Reykjavik
Construction Period	2016

Project Description

The Norðfjarðargöng road tunnel is the longest Icelandic tunnel with a total mined length of over 7.5km. The project included, in addition to tunnel mining, several partial building structures, such as new roads outside the tunnel, necessary insulation against penetrating water and freezing. When the mining was completed, the excavated tunnels were constructed at both portals, the technological rooms and their equipment, and the complete telematics of the tunnel. The tunnel is mined using the Drill & Blast method.

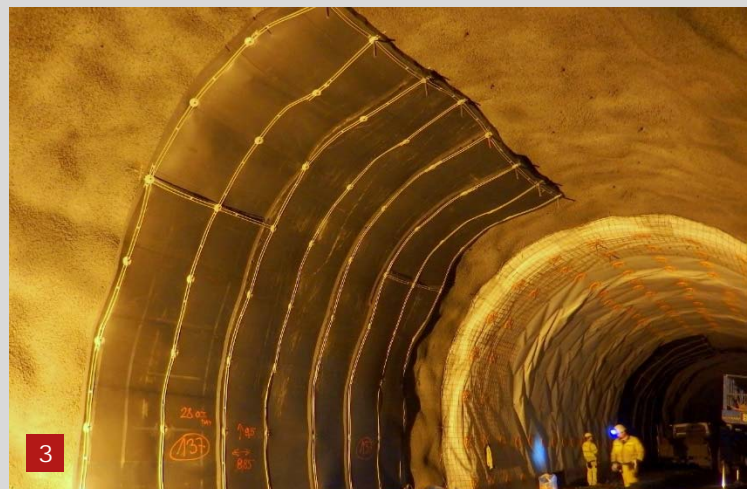
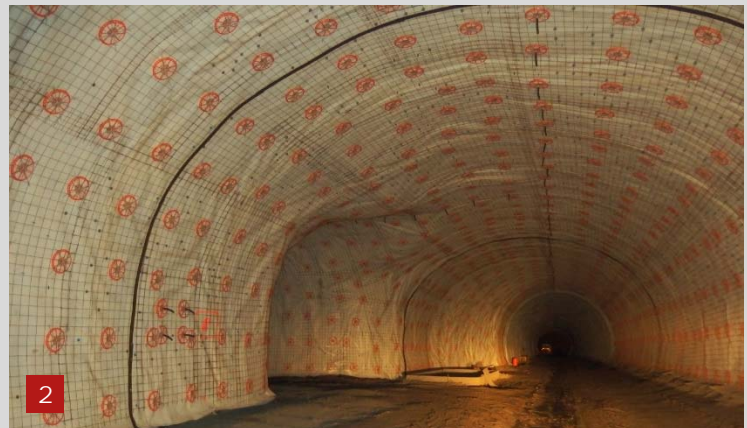
Tunneling conditions on Iceland are challenging. This is especially because mining often leads through rocks of very different qualities, so-called mixed face. Groundwater leaks and mining through fault-zones and basalt veins are also frequent.

The tunnel route runs through a mountain ridge with the highest mountain being Tvífjöll, at a height of more than 1,000m above sea level. The work was carried out from both tunnel portals with a height above sea level of 25 or 60m. From the western portal Eskifjörður, a total of 4,74m of tunnel were excavated and a total of 2,826m from the eastern portal Neskaupstaður. Excluding the last 400 meters of minings from the eastern portal, Mannvit hf. raised the tunnel with a pitch from 1.5 to 3%. The entire tunnel route leads in curves with different radii ranging from 700 m to 12,000m. The maximum height of the cover was almost 900m.

Scope of Service

Installation of water & frost protection system based on 45mm thick polyethylene (PE) foam and a 1.5mm thick linear low-density polyethylene (LLDPE) sheet membrane.

- Waterproofed over 150 separated areas
- Drilling and installation of rock bolting
- Installing of waterproof insulation on rock bolts
- Anti-frost and anti-dripping protection
- Installation of reinforcement



1. Installation of rock bolts
2. Anti-frost and anti-dripping protection (LLDPE)
3. Water & Frost Protection (PE foam, LLDPE)