

# Nordøyvegen, Norway

## Project specifications

Project type: Subsea tunnel  
Application: Permanent sprayed concrete linings

## Partners:

Owner: Møre og Romsdal Fylkeskommune  
Contractor: Skanska  
Concrete supplier: Unicon AS



## Background

The Norwegian Nordøyvegen road connects a small group of islands north of Ålesund to the Norwegian mainland. Crossing four fjords with tunnels and bridges, the road provides a faster, ferry-free connection for the approximately 3,000 residents of the islands.

The Nordøyvegen road project includes three subsea tunnels that have a combined length of 13 km (8 mi). To meet the national standards for tunnel design, concrete supplier Unicon AS collaborated with Bekaert to reinforce the tunnels' permanent linings.

## The challenge

The Nordøyvegen road project was challenged to reduce the cost per cubic meter of concrete, while meeting the performance requirements set forth in the Norwegian Concrete Association publication no.7.

## The solution

To create an impermeable skin and high-strength reinforcement for these conditions, the concrete was reinforced with Dramix® 4D 65/35BG.

Unicon AS used 15-17 kg/m<sup>3</sup> for the layers that needed to meet E700 energy absorption classes and 25-27 kg/m<sup>3</sup> to meet E1000 energy absorption classes.

The use of lower dosages resulted in an optimized cost/performance solution.