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Immersed tunnel at Bjørvika Oslo



Immersed tunnel

Customer: The Norwegian Public Road Authorities

Type of contract: Construction and Installation

Construction period: Aug 2005 to Dec 2009

Technical data:

Length immersed tunnel : 675 meter
Six tunnel elements: 112,5 meter in five segments, each 22,5 meter.

Width immersed tunnel: Varying, 28-43 meter.

Height immersed tunnel: Varying, 9,30-9,80 meter.

Background

An immersed tunnel was introduced by the Norwegian Public Roads Authorities to reduce the through-traffic at the centre of Oslo.

This type of tunnel was the first of its kind in Norway. Skanska, in cooperation with BAM Civiil CV/ Volker Stevin Construction Europe BV, was the successful winner of the project. The joint venture was second in the bidder competition, but the highest score on the weighted selection parameter.

Execution

The elements were casted in dry-dock at Hanøytangen outside Bergen, and towed 800 kilometres to Oslo for installation. Before the tunnel was installed, a ditch across the bay at Bjørvika had to be created. The dredging of app. 680 000 cum masses was part of the contract.

Parts of the quays at Sørenga and Havneleret were demolished for reinstalling after finishing the tunnel works. Instead of transporting the large rock materials on land, Skanska used the opportunity to save the environment by transporting the masses by sea.

The work comprised development of concrete with special qualities with respect to CO2 emission, heat development during hardening and crack width development. In addition, the project required high focus on dimensional control at strict tolerances for both concrete and underwater works.