

PROJECT DESCRIPTION

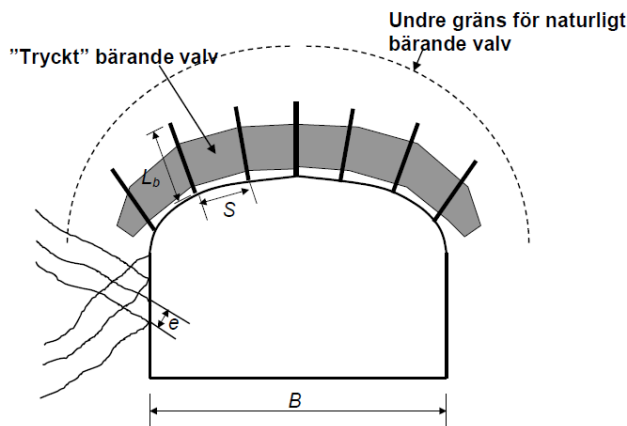
SKB (Swedish Nuclear Fuel and Waste Management Company)

Forsmark, Sweden

The final repository for short-lived radioactive waste (SFR) is owned and operated by the Swedish Nuclear Fuel and Waste Management Company (SKB) and have been active since 1988. SKB is now planning to extend the facility with five 275 meters long and one 240 meter long vault linked to the existing facility. Vibrations associated with the construction of the new vaults could lead to fall-out of loose rock and previously installed shotcrete, which could lead to injuries and/or infrastructure damage of the existing facility. To prevent this a temporary support system had to be designed for the potentially loose rock.

ITASCA'S ROLE

Itasca designed a system of rock support consisting of rock bolts and a steel wire mesh to prevent fall-out of loose rock and shotcrete using a combination of analytical methods and engineering judgement. Analytical methods included arching action of jointed rock (as shown below) and support of loosened rock volume in the roof.



Analytical design of supported arch in tunnel roof using rock bolts

PROJECT RESULTS

The project resulted in recommendations for bolt lengths and spacings to be used together with wire mesh for different areas in SFR. Refinements and adjustments were then implemented following a site visit and inspection of areas to be reinforced in the facility.