



Project **Grout pressure and tension measurements in the "Groene Hart Tunnel"**

Subject: Monitoring  
Project number: N-01188000  
Location: Leiderdorp, The Netherlands  
Principal: COB, commission F512  
Type of principal: Investigation Centre for Subterranean Construction (COB)  
Date: 2001 - 2004

Description:

The COB, commission F512, commissioned Fugro to measure grout-pressure and tension on 5 rings of the tunnel lining.

Fugro installed grout-pressure and tension sensors in the reinforcement during the manufacturing of the segments. Two tunnel-rings, consisting of ten segments, contained grout-pressure and tension sensors. The remaining three rings contained four grout-pressure sensors each. In total Fugro installed 80 tension sensors and 32 grout-pressure sensors. The sensors were connected to a data-acquisition unit. Continuous measurements were carried out during 8 measuring days.

