



POLITECNICO DI TORINO
Dipartimento di Georisorse e Territorio



GEORESOURCES AND ENVIRONMENT ASSOCIATION



ITALIAN TUNNELLING ASSOCIATION

INTERNATIONAL CONGRESS
MECHANIZED TUNNELLING: CHALLENGING CASE HISTORIES

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**TORINO METRO LINE 1, THE TUNNELS EXCAVATION OF
THE FIRST SECTION**

Abstract

In the first section of Metro Torino Line 1 about nine km of tunnels are included. For the tunnel construction, three earth pressure balance system tunnel boring machines (EPB-TBMs) were selected. The alignment design, the urban context and the very particular geological conditions have required special measures in order to achieve the ambitious goal of complete the first Metro section in time for the Winter Olympics to be held in Torino in 2006. Soil improvement solutions have been implemented where the assessments indicate potential risk of damage to the pre-existing structures. Ground conditioning with injection of heavier substances obtained by mixing calcareous filler mixtures with water, to integrate the ground conditioning techniques with foams, was used. A wide monitoring system made of more than three thousand instruments and based on a Web-GIS architecture, has been installed to guarantee the safety of the construction works.