

The Multi Service Group.

**Compensation Injections
North – South City-Rail
Cologne
Lot South**

Cologne, Germany



The North-South city-rail will provide south Cologne with a direct connection to the city centre and thus to the main station.

Two parallel running tunnel tubes with a length of 2.7 km each are excavated by shield driving. In some areas differential settlements are expected, which could damage adjacent buildings to a great extent.

In order to reduce settlements and thus assure a high-grade building security, compensation injections are carried out. By this method, generally from shafts, horizontal small hole drillings are bored in a fan-shaped screen under the buildings to be protected, in which injection pipes are installed. Via this sleeve pipes an injection medium (Blitzdaemmer) is pressed into the soil at the designated spots. This measure lifts the superposed soil.

The created uplift is controlled by using measurement systems and special software.

In this connection settlement data are analyzed, acquired by means of a water level gauge measurement system. The required uplifts and the subsequent injection quantities can therefore be defined in accordance with the location.

Special features with the compensation injection were, on the one hand, the first successful application of the method in non-cohesive soil and on the other hand, the uplift of buildings with deep foundations by using a jet grouting screen, which functioned as an abutment for an equal distribution of uplift pressure.

Main quantities:

7 Nos. compensation injection screens
48 Nos. recorded buildings
7,780 m² compensation injection area
14,500 m injection drillings
3,200 m³ grouting material

Contract Value (net):

18.1 Mio EURO

Construction Period:

06/2005 – 03/2008

Client:

Koelner Verkehrsbetriebe AG
Germany

Services:

Compensation injections

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