



## PROFILE OF THE GROUND

Twenty five different geological layers are present in the Amsterdam ground.  
The main geological formations are clay and sand, but local peat layers are also often found.

## INSTRUMENTATION

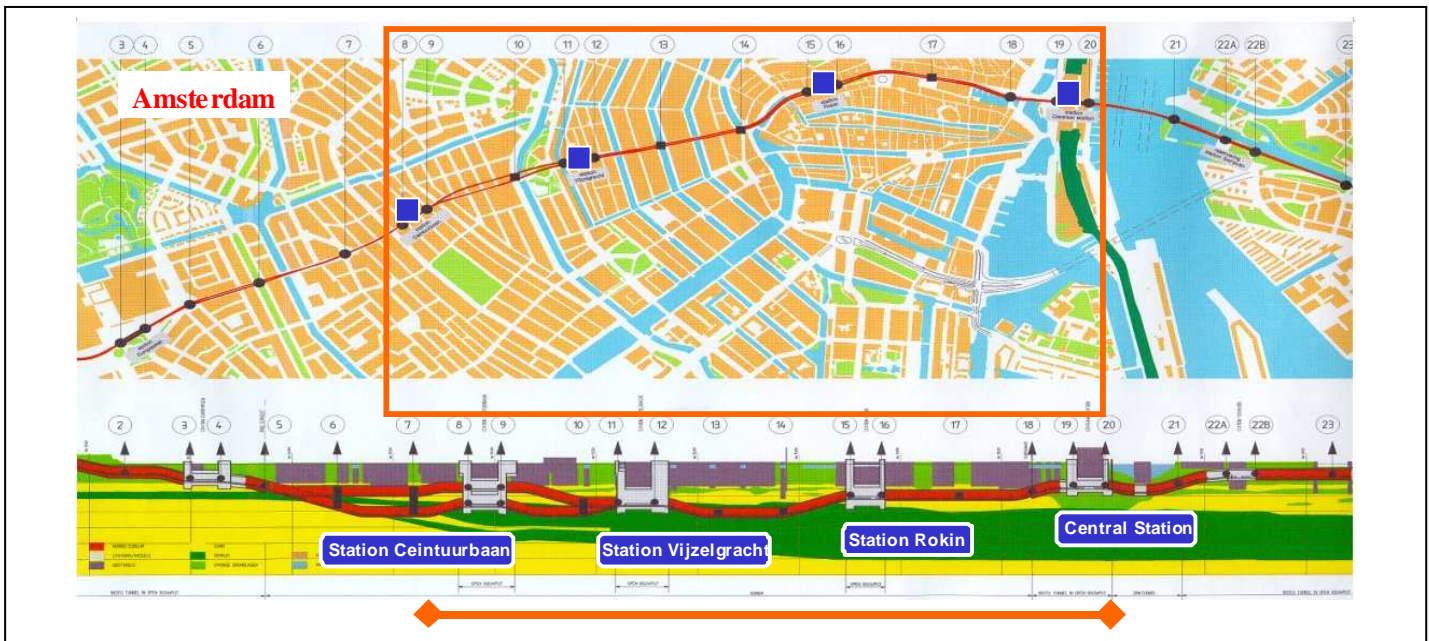
In few months SolData-Grontmij vof have installed:

- 165 electrolevels inside buildings located inside the walls perpendicular to the tunnels,
- 3 700 manual levelling bolts on buildings and 1 330 on the ground,
- 715 extensometers and 1 602 inclinometers (8200 ml of boreholes) perpendicular to the tunnel axis and close to the stations,
- 48 piezometers (vibrating wires) along the tunnels trajectory and within the stations,
- 40 inclinometers putting in place in walls,
- 720 stain gauges,
- 79 theodolites and 6 400 optical prisms on buildings façades.



## SOFTWARE

The GEOSCOPE software will pilot up to 100 computers, 74 Cyclops and 30 dataloggers.  
Approximately 2.8 billion measurements will be sent to the Noord-Zuid Lijn office for analysis at a frequency of 55 000 measurements per hour during the driving of the tunnel.



CONTRACTOR :	NOORD-ZUIDLIJN
DATE OF WORKS :	2000-2007
TIME :	7 YEARS
<b>INSTRUMENTATION :</b>	
<ul style="list-style-type: none"> <li>• Installation of 79 Cyclops with 6 400 cables.</li> <li>• 5 030 levelling bolts.</li> <li>• 720 strain gauges.</li> <li>• 165 electrolevels, 715 extensometers, 1 602 inclinometers.</li> <li>• 48 Piezometers.</li> </ul>	