

GENOA METRO - ITALY

1st phase of the works

The realization of the first phase of the Genoa subway project includes the excavation of the Principe service shaft and the two stations "Darsena" and "Caricamento San Giorgio". This section has improved the transportation to both the Old Genoa Harbour Exhibition Centre and the new Aquarium, improving in the meantime both traffic conditions and the re-organisation of the surface transport network.

Using a new James Howden EPB type TBM (6.30m in D.), which was lowered into the "Principe" shaft, made possible the excavation of a two single-track parallel tunnels (total length 2,680m), till reaching the "Le Grazie" shaft. In the meantime the construction works of the two underground stations "Darsena" and "S. Giorgio Caricamento" were completed. Both have a parallelepiped shape, an average wideness of about 25m and length respectively of 118m and 243m.

Once the excavation of the first tunnel was completed, the "Le Grazie" shaft enabled to turn the TBM equipment by 180° and to start the excavation of the second parallel tunnel, reaching the "Principe" shaft, where the TBM equipment was dismantled and removed. Once the works at the "Principe" station completed, the "Principe" shaft was closed and all temporary support structures dismantled. Tunnel lining consisted of pre-cast reinforced concrete segments directly constructed and assembled by the Contractor.

Both consolidation grouting works and soil improvement works were executed, in order to increase the stability of both the contiguous buildings and ring road.



2nd phase of the works

The works started in September 2001 and foresaw the construction of the two new stations Sarzano and De Ferrari, through the widening of sections of existing tunnels. Works have required important preliminary soil consolidation works and were executed in a heavily populated urban area, without interruption of the existing surface traffic.

Presence of historical buildings together with the vicinity of important public buildings made it necessary that the excavation phase both in surface and underground, were carefully monitored.

During the period 1986 – 1990, IMPREGILO S.p.A. has also carried out as lead partner of the Consortium "IRG – Imprese Riunite Genova", the design and execution of civil works of the first Genoa subway line, section Brin – Di Negro, of a total length of 2,600m that included also two stations. The whole excavation phase was made using a rodheader equipment, without using explosives.