

The Multi Service Group.

Commerzbank Tower

Frankfurt, Germany



Contract Value (net):

16 Mio EURO

Construction Period:

06/1994 – 06/1995

Client:

Hochtief AG, Frankfurt

GERMANY

Services:

Bored Piles

Energy Piles

Top-Down Excavation

Contact:

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After its completion in May 1997, the new Commerzbank AG headquarter dominates the Frankfurt skyline with its overall height of 299 meters

In order to reduce settlements in immediately neighboring bank buildings with their sensitive computer equipment, piles had to be installed vibration-free and down to depths of up to 50 meters for sufficient load bearing. Each pile carries a load of up to 20 MN into the Frankfurt limestone, but also used side friction from the upper clay layers.

Spherical grab equipment in combination with hydraulic casing rotators were used to install telescopic piles with upper diameter of 1.80 m and lower diameter of 1.50 m to reduce skin friction during casing installation. Harder layers of rock were loosened with a chisel.

Shaft grouting additionally improved the load bearing of all piles. To further reduce settlements and improve underlying limestone, ground injection below each pile tip was performed with pressures of up to 20 bar.

Numerous piles were tested using ultrasonic testing methods. Hydraulic pressure cells were placed into some pile tips and toes in addition to vibrating wire strain gauges to monitor stresses and settlements during construction of the building.

Quantities:

111 Nos. Foundation Bored Piles (1.80 m, Depth of 50 m)

Integrity Testing

Stress and Settlement Monitoring of Piles during Construction