

Bank Wall Southern Zollkanal, Hamburg

Project Owner:

HPA Hamburg Port Authority

Client:

HC Hagemann GmbH & Co. KG

Quick Info:

Tie-back of a sheetpile wall with micropiles according to DIN EN 14199

Technical Information:

System:	TITAN-Micropile / type 103/51
Quantity:	64 pcs.
Length:	23,00 – 29,00 m / inclined at 43° – 59° toward horizontal axis
Service Load:	up to 1500 kN
Technique:	rotary percussive flush drilling
Building Ground:	Sand
Time Frame of Works:	29. March - 19. April 2010

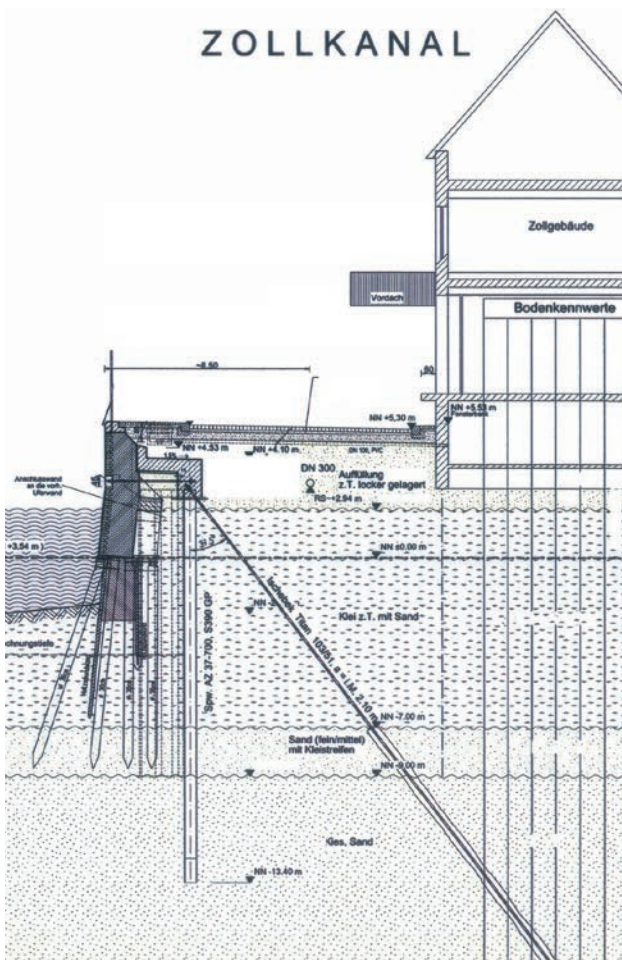


Image 1

Dating back to 1887 the bank wall of the southern Zollkanal had to be renovated between the bridges “Kornhausbrücke” and “Wandrahmstieg” (HafenCity Hamburg) including its deep foundation. It had last been augmented in 1898 and has not changed much ever since. For that matter, all the bank walls, like the entire Historic Warehouse District, are under monumental protection. Due to ever rising tides and increasing channel passages, the bank wall has been shifting outward in some areas causing visible settlements behind it. Beyond, the wall today shows obvious signs of ageing.

In order to render this wall stable for future generations, a new 140 m long sheet pile wall was supposed to be rammed on the landside of the most severely damaged sections and then tied back with micropiles in agreement with the landmark protection authority (see Image 1). Later, a steelreinforced waling would be placed on top of the anchored sheet pile and then be linked constructively to the old bank wall.

A special aspect of the grout pile production was posed by the project owner, who demanded a much higher degree of precision than required by German DIN standards for our drill works. The reason for the extraordinarily low tolerance for drill variance rested in the preservation of the landmark protected status of the

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wood piles, on top of which the historic warehouses have been founded. In order to comply with this requirement, we prompted the crafting of steel stencils according to the information provided by the surveyor, with which we were able to stay exactly on the intended bore path. And as it turned out, we indeed did not harm any of the historic deep foundations whatsoever. Images 2 and 3 exemplify our drill works in the heart of the HafenCity with our own lifting equipment load a 3 m long steel casing onto the drill mast of our bore unit.

After completion of the reinforced waling and after sufficient time for hardening, every one of our TITAN-micropiles underwent an acceptance test. As a result, we were able to prove that no deficiencies or otherwise abnormal properties related to withstanding the test loads of up to 1900 kN could be observed. Thus, all of our TITAN-micropiles were able to carry out their structural design function to the full extent and we were able to make yet another building project "ground-proof" (see Image 4)



Image 2



Image 3



Image 4