

Remodeling of the Metro Station Hamburg-Barmbek

NEIDHARDT
GRUNDBAU GMBH

Project Owner:

Hamburger Hochbahn AG

Client:

HC Hagemann GmbH & Co. KG

Quick info:

Posterior deep foundation within the ticket hall of a metro station by means of Gewi-micropiles

Technical Information:

System:	Gewi-pile / steel diameter 32 and 40 mm
Quantity:	3 pcs.
Length:	2x 11,5 m (6°) and 1x 10,5 m (perpendicular)
Service Load:	up to 420 kN
Technique:	single head non-percussive flush drilling
Building Ground:	Sand
Time Frame of Works:	February 9th, 2010

In the redesign project of the metro station Hamburg-Barmbek a shear wall had to be erected, so the existing pillars in the entrance hall could be removed. The load transmission of the shear wall takes place via a 0,80 m thick foundation slab. We were entrusted with the task to provide the necessary deep foundations by means of 3 micropiles (2x 6° and 1 x perpendicular).

One of the two non-perpendicular micropiles, which was drilled through the existing foundation, required special consideration since any load transmission from the new foundation slab onto the old one had to be avoided by all means. We solved this problem by equipping the Gewi-rod within the penetrated old foundation slab (bore length ca. 1,50 m) with double corrosion protection, onto which we also added a smooth plastic tube in order to ensure the decoupling of the micropile from the old foundation.

Moreover, the extremely confined workspace posed a significant problem to our works. To begin with, we had to manoeuvre our drill unit over the public staircases of the metro station outside the regular operating hours; a task that was complicated by low ceilings and narrow turning points. Even with a shortened drill mast (2,80 m)

and a simple non-percussive rotary drill head the height restriction of 2,40 m caused by the rail bedding above compelled us to lower the drill points further into the work trench, so we could place our 1,0 m long casings onto the drill mast (see Image 1). Despite these special circumstances, further aggravated by temperatures well below freezing, we were able to complete this project in only one day while careful not to cause any damage to the public facilities.



Image 1

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