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Geotechnical and geophysical characterisation of a pile test site in post-glacial soil

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BAW and BAM have evaluated dynamic pile load testing methods on bored piles in a sandy, post-glacial environment. A test site had to be prepared, which ensures comparable conditions at all pile locations as well as a detailed knowledge on soil parameters and other boundary conditions. A detailed site investigation program was performed at a dedicated area on the BAM test site near Horstwalde south of Berlin, Germany. Boreholes have been drilled to gather undisturbed samples for lab analysis. In addition several CPT soundings have been performed as well as a geophysical survey. The site consists mainly of well graded, partly well compacted medium sands. But at depth an inhomogeneous gravel layer was detected in some parts of the site. This has led to a redesign of the test piles. They are now shorter and slimmer than originally intended to avoid the gravels at depth and to ensure that the drop weight available for dynamic test is capable to mobilize the required loads.

The boreholes look almost homogeneous – but detailed investigation showed something else! Pile design was revised to avoid highly inhomogeneous lower sands!

Pile Load Tests

**Dynamic load test**

Mission accomplished!
Further information on the pile tests:
Niederleithinger et al., 2012, IS Kanzawa.
Herten et al., 2013: Pfahl symposium (in German).

Geophysics

To complement the geotechnical results geophysical measurements have been performed between the boreholes:
- p-wave/s-wave seismic tomography
- GPR tomography (not shown)

Data have been evaluated as traditional cross-hole plots and joint tomographic inversions. General structure and inhomogeneities as in CPTs!

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