

Geotechnical Engineering

Adding value to your projects with our
Geotechnical services





Geotechnical Engineering

Whether it is a (pre-)piling template, temporary dam, subsea tool or a monopile gripper, temporary works often have interfaces with the subsoil or existing foundations. Since local soil conditions can have large implications on design, operational risk and workability, TWD has its own in-house geotechnical team. Because of the seamless collaboration with the structural design and marine teams our geotechnical analyses can provide significant extra value to your project by improving:

- Designs by selecting the most effective foundation type
- **Safety** by identifying operational risks at an early stage
- **Cost effectiveness** by allowing for fast iteration during design process
- **Workability** by defining proper boundary conditions for structural and dynamic analyses

Foundations for temporary purposes

A properly designed foundation is an absolute necessity for safe and properly functioning installation equipment. Performing foundation engineering ourselves allows TWD to make tailor-made designs for temporary works. This is all performed in close collaboration with our clients, technical advisors and design teams. Due to involvement of our geotechnical team, a change in dimensions or load cases can be quickly communicated, assessed and updated.

Provided services

- Bearing and sliding envelopes for shallow foundations
- Settlement and deformation analysis
- Axial and lateral pile design
- Temporary casing, sheet pile and cofferdam design



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Drilling / driving methodologies

TWD has extensive experience in drilling projects. These range from pile refusal relief to drilling for pin-pile foundation installation. Site specifics vary between sites and the gained experience is essential for de-risked operations.

Provided services

- Assessment of drilling, driving and oscillation methodology
- Assessment of forces required
- Drill hole stability and assessment of casing requirements
- Temporary structure design including mudmat-, levelling-, and guidance requirements.
- Grouting methodology and fixation

Soil structure interaction

Structures as a mud mat, (pre-)piling template or a temporary pile for mooring a barge all interact with the local soil conditions. Soil structure interaction therefore influences workability and feasibility of operations. TWD can provide fast input at an early stage in design since our marine and structural engineers are only a few desks away. By doing so safe and proper calculations on operations can be achieved.

Provided services

- Self-stable embedment depth and on-bottom stability analysis
- Stiffness representations for dynamic models
- Drive-ability and self-weight penetration
- Soil structure interaction models for structural design



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Soil survey data and operational risk analysis

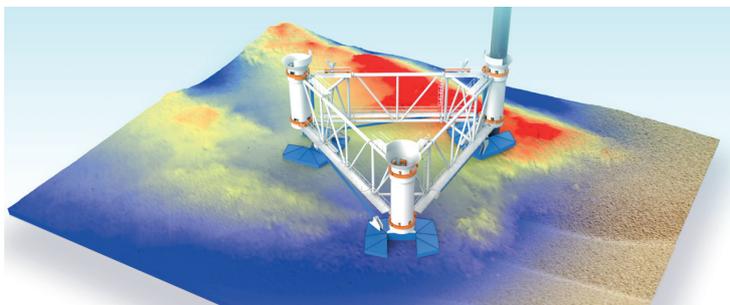
Extraordinary soil conditions can have a large impact on design as well as operations. Occurrence of scour, liquefaction, challenging bathymetry or pile run due to a weak soil layer should be foreseen. Spotting these failure mechanisms at an early stage is essential for a safe design and operation. Since our geotechnical team is involved from start to finish, potential showstoppers can be flagged at an early stage and accounted for by design or tailor-made mitigation measures.

List of TWD experts

- Arie van der Eijk
- Joost Remmers
- Tony Halliday
- Ehsan Izadi

Provided services

- Bathymetric survey interpretation
- Soil profile identification
- Operational risk assessment
- Tailor-made mitigation measured and safety approach



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