BOKU UNIVERSITY

TECHNOLOGY OFFER

Device for charging concrete in tremie pipe

The invented device relates to the placement of concrete via tremie pipe in deep foundations, e.g. bored piles and diaphragm walls. Particularly the invention improves the first charging of tremie pipe to avoid the impact caused erosion at the base of drilled shafts for better construction quality of deep foundations.

BACKGROUND

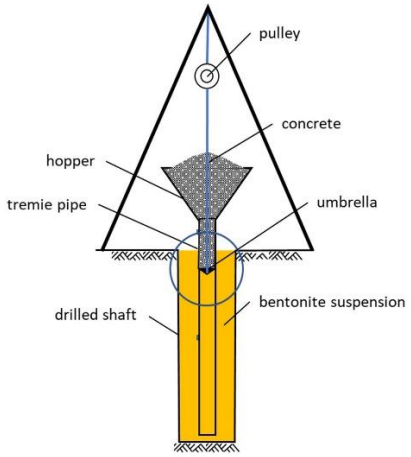
The initiation of pouring, i.e. the first shot of concrete, into the empty tremie pipe still presents a challenge for contractors with the tremie method. There are evidences that the improper initiation of pouring is responsible for some often-observed damages such as debris at pile end and bleeding along piles and diaphragm walls. The objective of the invention is to provide a device for the initial charging of the tremie pipe in a well-controlled manner so that the disturbance caused can be avoided.

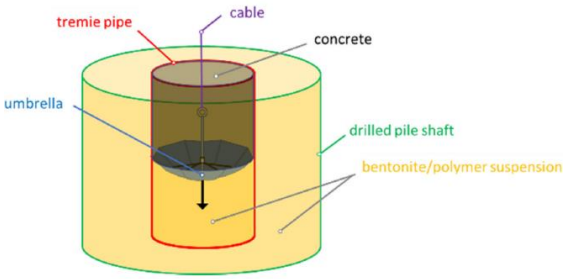
TECHNOLOGY

The device is comparable to an inversed umbrella. The device is robust to survive the harsh site conditions and is flexible to be adapted to different tremie pipe diameter and pile length. The device is placed upside down into the tremie pipe and connected with a rope to a tripod with a pulley. This mechanism enables controlled descending of concrete to initiate pouring. Once the device reaches the bottom, the tremie pipe is lifted and the device slides out of the tremie pipe. The device can be cleaned and reused.

Through controlled descending speed of concrete, the mixing of concrete with supporting fluid is avoided; the segregation of concrete, and the turbulence and impact induced erosion and local failure in soil. The use of this device together with the tremie pipe will improve the construction quality of deep foundations.

A prototype has been built which is currently tested at a construction site.





BENEFITS

- Initial charging of the tremie pipe in a well-controlled manner
- Avoidance of damages such as debris at pile end and bleeding along piles and diaphragm walls.

REFERENZ:
2021-06

OPTIONEN:
- R&D Cooperation
- Licensing

KEYWORDS:
Bored pile, Tremie pipe, Concrete segregation

TECHNOLOGY READINESS LEVEL
Prototype (TRL4)

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