Bearing capacity of photovoltaic support piles

Is a PHC pile foundation a reliable support structure for heliostats?
A comprehensive design program is proposed based on field tests and numerical simulations,considering deformation and bearing capacity. The study confirms the reliabilityof the PHC pile foundation as a support structure for heliostats,aiming to offer valuable insights for practical applications.

How much lateral load can a pipe pile hold?
Considering that the flexural capacity of pipe pile for design was about 88 kN·m,the lateral load acting on the column should not exceed 30 kN. Therefore,the maximum load was set to be 39 kN,loaded in 13 grades (i.e. each grade of load was 3 kN higher than the preceding grade).

Does the bearing capacity of a cantilever column influence the design?
The deformation and residual deformation of the pile in sand layer site were obviously larger,and the column could not be loaded further until the column cracked under 12th load grade,which indicated that the bearing capacity of the cantilever column might play a controlling role in the design.

How does torsional load affect PHC short pile foundation deformation?
The deformation of PHC short pile foundations exhibited distinct phases. Torsional load reduced the column crack load by 30%. The pile cap effectively controlled plastic deformation,minimizing foundation deformation,while torsional load increased lateral deformation.

Does lateral load affect the deformation resistance of pile cap?
Compared with the lateral load condition,the deformation of the foundation increased and the crack load reduced by about 25%. This indicated that the deformation resistance of pile cap under combined load was significantly improved,but the torque greatly weakened the ultimate failure load.

Does pile cap thickness affect torque distribution in a PHC Foundation?
Color contours of the PHC foundations with different pile cap sizes (foundation length: 3.5 m) In conclusion,pile cap thickness played a crucial role in torque reduction,and pile cap side length significantly influenced internal force distribution within the PHC short pile foundation.

Request PDF | On Apr 1, 2023, Gongliang Liu and others published Frost jacking characteristics of steel pipe screw piles for photovoltaic support foundations in high-latitude and low-altitude ...

Bearing capacity of modeled piles of different shapes were determined using the established methods of static bearing capacity equations and field load test method. The results were ...

For an offshore photovoltaic helical pile foundation, significant horizontal cyclic loading is imposed by wind

and waves. To study a fixed offshore PV helical pile"s horizontal ...

Download scientific diagram | Geometric parameters of each pile. from publication: Comparison and Optimization of Bearing Capacity of Three Kinds of Photovoltaic Support Piles in Desert ...

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The pile foundations need to meet specific bearing capacity requirements in order to provide structural support for photovoltaic systems. In this paper, based on an offshore photovoltaic ...

The determination of the bearing capacity of pile foundations is very important for their design. Due to the high uncertainty of various factors between the pile and the soil, many ...

Following the previous section that explained the general background and universal equations for the estimation of a single pile"s load-bearing capacity, we will continue with three specific methods for the calculation of the end point ...

Compared with the PHC pile, the difference in the steel pipe screw pile is that its shaft is thin, the pile-soil friction is small, and the bearing capacity is mainly borne by helical ...

The piles were subjected to axial compressive loads under four different loading rates: 1.0, 0.5, 0.1 and 0.05mm/min. Test results indicated that the axial compressive capacity of pile group ...

Key words: photovoltaic power generation; H-shaped steel piles; vertical compressive and pull out test; pile bearing capacity; pile side friction resistance 0 ? ? ????????????? ...

The results show that: (1) according to the general requirements of 4 rows and 5 columns fixed photovoltaic support, the typical permanent load of the PV support is 4679.4 N, ...

capacity and the total load capacity Qt characteristic depending on soil layers: (a) for friction pile and (b) for end-bearing pile. Fig. 2b. Typical load/settlement curves for compressive load tests: ...

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