

Experimental record of photovoltaic support pile foundation

What are the different types of photovoltaic support foundations?

The common forms of photovoltaic support foundations include concrete independent foundations, concrete strip foundations, concrete cast-in-place piles, prestressed high-strength concrete (PHC piles), steel piles and steel pipe screw piles. The first three are cast-in situ piles, and the last three are precast piles.

Can photovoltaic support steel pipe screw piles survive frost jacking?

To study the frost jacking performance of photovoltaic support steel pipe screw pile foundations in seasonally frozen soil areas at high latitudes and low altitudes and prevent excessive frost jacking displacement, this study determines the best geometric parameters of screw piles through in situ tests and simulation methods.

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 reliability of the PHC pile foundation as a support structure for heliostats, aiming to offer valuable insights for practical applications.

How inclination affect the deformation characteristics of PHC pile foundations?

The study assessed the inclination of the column top, ground displacement, and torsion to analyze the stress and deformation characteristics of PHC pile foundations. The deformation of PHC short pile foundations exhibited distinct phases. Torsional load reduced the column crack load by 30%.

How to measure the deformation and stress state of PHC piles?

However, due to the fact that the foundation part of PHC piles was buried in the soil, it was challenging to obtain the deformation and stress state through monitoring means. There was no direct test method available for measuring the deformation of short pile foundations beneath the ground.

Can helical piles be used for ground-mounted solar PV systems?

For ground-mounted solar PV systems, two different pile foundation types were experimentally analysed for the pull-out test in clayey, sandy, and mixed (c - f) soils. Maximum uplift load at failure of various diameter and length were compared for plain piles with helical piles.

Pile group foundations are widely used to support contemporary long-span sea-crossing bridges, such as China East Sea Bridge (Liu et al., 2007), San Francisco-Oakland Bay Bridge (Frick, ...

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The soils in seasonal frozen regions freeze and thaw frequently, causing severe frost heave and thaw

settlement problems, which bring challenges to piles of photovoltaic ...

Pile foundations have been widely used to support heavy superstructures on soft soil. A pile foundation may be either prefabricated and driven into soil or constructed in situ. During or ...

Piles are a common type of foundation to support engineering structures in frozen ground, but they may suffer from heaving once sufficiently moist frost-susceptible soils freeze ...

This paper is part of a comprehensive study to assess the seismic performance of foundations supported by helical piles. The paper presents an experimental study conducted to ...

The available experimental evidence on the behaviour of pile foundations under vertical loads (settlement, load sharing, bearing capacity), by monitoring of full scale structures or by ...

This study has comprehensively investigated the bearing characteristics of three types of photovoltaic support piles, serpentine piles, square piles, and circular piles, in desert ...

Additionally, the configuration of the groups and the shape of the piles have an effect on how the foundation behaves [12]. When pile foundations are subjected to inclined cyclic loads, this would ...

A database of 195 field records of long-term settlement of high-rise buildings in Shanghai soft coastal clays is presented. The collected field records are divided into two ...

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 ...

Foundation on soft soil has always been a challenge for civil engineers and pile foundation is by far the most suitable and comprehensive idea for construction on soft soil. In ...



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