Analysis of prestressed piles for photovoltaic support

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.

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.

What is a PHC (pre-stressed high-strength concrete) pile foundation?
The PHC (pre-stressed high-strength concrete) pile foundation,serving as an innovative supporting structure for solar power stations,is subjected to complex loading conditions in engineering scenarios.

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 methodavailable for measuring the deformation of short pile foundations beneath the ground.

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.

What is the Frost jacking of the photovoltaic pile?
Considering the thawing settlement of the pile body,within the 25-year service period of the photovoltaic power project,the frost jacking of the pile is approximately 144.68 mm. anti-frost jacking measures are recommended to reduce the impact of frost heaving.

Saving construction materials and reducing construction costs provide a basis for the reasonable design of photovoltaic power station supports, and also provide a reference for ...

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

Prestressed concrete piles are vital elements in the founda-tions of buildings, bridges and marine structures throughout the world. They usually vary in size from 12 in. (305 mm) ... concrete ...

influencing the selection of prestressed pile are pile prices and availability. When designing a foundation a review of current unit prices for prestressed piles available in the area should be ...

The analysis indicates that a hybrid solution is particularly suitable for such type of construction. ... by the combination of soil nailing wall and pile anchor compared with a ...

The results show that during the excavation of the foundation pit, the maximum horizontal displacement of the sidewall is not at the top of the pile and the top of the slope but at a certain ...

Based on this, this article proposes a double row pile prestressed anchor cable support scheme for a deep foundation ditch project. Using ABAQUS software, establish a numerical model for ...

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, ...

the cast-in-place pile cap to resist the vertical and lateral loads. Especially when lateral loads are applied, a fixed pile-to-pile cap connection is often desired to control deflection (Richards et ...

ductility of prestressed concrete piles contain ing spiral reinforcement is presented. The meth od is based on moment-curvature analysis. Account is taken of the increase in flexural strength ...

The research shows that because of the prestressed anchorage cables in the rear row piles, the prestressed strong-constrained support structure can provide better tensile performance from ...

of sheet-pile wall and support-plate with prestressed anchor supported, and pile spacing is 3m, the pile top set top crown beam and in it top surface below 2.0m design a horizontal ...

In this paper, aiming to provide a contribution to this gap, a PVSP steel support structure and its key design parameters, calculation method, and finite element analysis (FEA) detailed with a...

Therefore, this study aims to determine the soil properties for the analysis of prestressed concrete spun piles with a diameter of 600 mm in the Northern Jakarta coastal area based on the standard ...

Photovoltaic solar panels absorb sunlight as a source of energy to generate electricity. A photovoltaic (PV) module is a packaged, and connected photovoltaic solar cells assembled in ...

The two existing calculation methods of cracking moment for the pre-stressed high-strength concrete piles are analyzed in this paper. Through systematically calculation ...

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