

Horizontal static load of photovoltaic support pile foundation

Is a pile foundation system suitable for a horizontal solar axis tracker?

Provided by the Springer Nature SharedIt content-sharing initiative Policies and ethics The present investigation proposes a suitable pile foundation system for a horizontal solar axis tracker (HSAT) to be constructed at Kutch, Gujarat. The analysis is carried out based on the soil properties obtained from ten different borehole locations.

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.

Do pile-bucket foundations have static loading behavior?

Conclusions In this study, model tests and a series of numerical analyses were conducted to investigate the static loading behavior of pile-bucket foundations. The excess PWP of the soil and the moment of the pile were studied using the model tests.

Is the PHC pile still elastic under cyclic loads?

Clearly, under cyclic loads of 6 kN and 12 kN, it could be considered that the PHC pile was still in the elastic stage. This indicated that the loading and unloading stiffness of the foundation structure was not degraded by repeated action under normal operating conditions.

What type of load is used to test a building foundation pile?

In this test, a 2-8# vertical pile and a 2-X2# inclined pile were tested under horizontal static load using the slow maintenance load method, in accordance with the Technical Specifications for Testing Building Foundation Piles (JGJ106-2014) [25].

How are pile foundations subjected to different magnitudes of load?

The pile foundations are subjected to different magnitudes of load as per the location of the solar trackers, i.e., exterior, interior, and far-interior, as shown in Table 1.1.

the horizontal, the vertical, the rocking and the horizontal-rocking coupling mode. The static deformations of all pile foundations are given in the appendix for a better interpretation. 4 ...

Based on the numerical results, the piles are found to carry about 60-75% of the applied pseudo-static load. This pile load proportion increases with increasing magnitude of ...

to derive a corresponding static load-displacement relation. Especially, for dynamic load test in which wave

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propagation phenomena in the pile cannot be neglected, wave matching analysis ...

Skirt-pile foundations have gained widespread attention in the field of offshore engineering due to their ease of installation and high bearing capacity. In this study, the ...

The overall reinforcement of soft soil foundation has the disadvantages of large engineering quantity and high cost. When the pile foundation bears horizontal loads in the soil, the mechanical properties of the ...

In addition to supporting vertical loads from superstructures, piles are frequently subjected to horizontal soil pressures, long-term wind, wave, and current forces, as well as ...

Dynamic vertical pile load tests were carried out during pile driving and at 5 hours and one week after the end of pile driving. Static alternating cyclic horizontal load test was carried out 13 ...

In Figure 15a, as the horizontal load on the piles escalates from 0 to 6 kN, under identical loads, the square pile's top showcases the largest horizontal displacement, followed by the round pile, with the serpentine pile ...

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 ...

Conclusion: Under horizontal load, with the increase of pile number and the pile cap aggrandizement, the position of maximum moment of pile body is shifted from 5-8 times diameter of pile to the ...

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