

# Pull-out strength of photovoltaic support ground nails

Do soil nails have a pull-out capacity?

The present understanding of shear strength of unsaturated soils has been extended for interpretation and prediction of the behaviour of soil nails. The pull-out capacity is a key parameter for the design of soil nails.

What is soil nail pullout resistance?

In current practices, pullout test has been conducted to determine the soil nail pullout resistance (skin friction on the interface between soil nail and soil) and soil nail movement. The pullout resistance ( $q_s$ ) of the nail was obtained by dividing the peak pullout force by the active surface area of the nail

How to calculate geotechnical capacity or pull out strength of soil nail?

The geotechnical capacity or pull out strength of the soil nail can be calculated using the Equation 1. Where,  $Q_{ult}$  = Ultimate Pull Out Strength (kN),  $q_{u\text{ult}}$  = ultimate bond stress (kN/m<sup>2</sup>) can be obtained from Table 1 and  $A_s$  = Nail Bonded Area (m<sup>2</sup>).

Does matric suction affect the pull-out capacity of soil nails?

A comprehensive experimental program was conducted to understand the influence of matric suction on the pull-out capacity of soil nails installed in compacted sand under both saturated and unsaturated conditions. Pull-out tests were performed on the nails installed vertically, horizontally and at an inclination of 15°; to the vertical.

What is the pullout force of bonded soil nails?

The result from the pullout test at point A24 and B22 obtained the pullout force of 148.5 kN which was 1.5 times of the design working load. The soil nails displacement in these points was observed 1.795 mm and 3.267 mm which reveals lower than 0.2% of the bonded soil nail length (less than 36 mm).

Can soil nail resist 900 kN pull out load?

This revealed the result of the pull out resistance obtained from the field study is within the ranges and soil nail are demonstrating sufficient pull out resistance to resist the pull out load up to 900 kN. Figure 7 shows the plot of test load against displacement.

introduced soil nail and a conventional type of soil nail were compared based on their pull-out resistance. Further - more, comparing these two types of soil nails showed that regarding ...

capacity, then stripping cannot occur, and the soil nail force diagram will be determined only by the tensile and pull-out failure modes. If the soil nail pull-out strength is specified as material ...

More recently, Yin and Su [14] and Su et al. [13] carried out a series of soil nail pull out tests to investigate a

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few key influencing factors, including the overburden pressure, ...

Download scientific diagram | Pull out strength of grouted nail from publication: AN EXPERIMENTAL AND NUMERICAL ANALYSIS OF IN-SITU EFFECT OF CEMENT HYDRATION AND PULL OUT CAPACITY OF GROUTED SOIL ...

recommended nail withdrawal design values for wood structural panels. In addition, the results of a study, whereby the nailhead pull-through strengths of wood structural panels were evaluated ...

Pull out resistance of soil nails in continuous auger drilled holes H.J. Maclean<sup>1</sup>, A. Campbell<sup>2</sup>, M.R Thomas<sup>1</sup> and S. Tjokro<sup>1</sup> <sup>1</sup>Tonkin & Taylor Ltd, P.O. Box 5271, Wellesley St, Auckland ...

affect the pull-out resistance of gravity-injected soil-nail. This is due to the release of stress during the drilling process (Su et al., 2008). Su et al. (2008) carried out a series of pull-out tests on a ...

The geotechnical capacity or pull out strength of the soil nail can be calculated using the Equation 1.  $Q_{ult} = q_{ult} \times A_B$  (1) Where,  $Q_{ult}$  = Ultimate Pull Out Strength (kN),  $q_{ult}$  = ultimate bond ...

Based on the test results, the recommended allowable nail withdrawal strength for plywood and OSB panels, expressed as an equivalent specific gravity, is 0.40 for plain or screw shank nails ...

$R_{a,d}$  is the design pull-out resistance of the anchorage. Two ways of determining the design pull-out resistance  $R_{a,d}$  are discussed in EC7 [2]; the first one refers to the pull-out resistance derived from the results of tests on ...

Bond strength of soil-nail interface is the essential parameter in the design of soil nail walls. Field pullout tests provide valuable inputs for the selection of appropriate design ...

The results show that heat transfer through the thermal nail doesn't decrease the pull-out strength and in some cases can lead to an increase in pull-out capacity by up to 10%. ...

Wood Nail Pullout Withdraw Resistance Force Formulae and Calculator. The resistance of a nail shank to direct withdrawal from a piece of wood depends on the density of the wood, the diameter of the nail, and the depth of penetration. ...

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