البحث الاول

تأثير تسليح التربة على مقاومة الشد للمرابط الرأسية المدفونة في الرمال.

The effect of soil reinforcement on pullout resistance of an existing vertical anchor plate in sand.

By

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Computers and Geotechnics. (2006), Vol. 33, No. (3), pp167-176.

Abstract : The behavior of vertical anchor plates embedded in reinforced and non-reinforced cohesionless soil has been investigated with the help of small-scale model tests. Steel rods (model piles) with different lengths and diameters placed vertically or inclined at different locations relative to the anchor plate were used to reinforce the sand in front of both strip and square anchor plates. The considered parameters include pile length, pile diameter, pile spacing, position of pile row relative to the anchor plate and the inclination angle of the installed piles, the anchor embedment depth, the anchorage geometry and the relative density of sand. The test results indicate that this type of reinforcement significantly increases the stiffness of the soil and the pullout resistance of shallow anchor plates. Based on test results, critical values were discussed and recommended.

البحث الثاني

سلوك القواعد الدائرية المرتكزة علي تربة حبيبية مقيدة الحركة الجانبية.

Behavior of circular footings resting on confined granular soil.

Journal of Geotechnical and Geoenvironmental Engineering **ASCE**, (2005) Vol. 131, No. (3), pp. 359-366.

ABSTRACT: This paper presents the results of laboratory model tests on the influence of soil confinement on the behaviour of a model footing resting on granular soil. Confining cylinders with different heights and diameters were used to confine the sand. The ultimate bearing load of a circular footing supported on a three-dimensional confined sand bed was studied. The studied parameters include the cell height, cell diameter, the depth to the top of the cell and the embedded depth of footing. Initially the response of a non-confined case was determined and then compared with that of confined soil. The results were then analyzed to study the effect of each parameter. The results indicate that the bearing load capacity of circular footing can be appreciably increased by soil confinement. It was concluded that such reinforcement resists lateral displacement of soil underneath the footing leading to a significant improvement in the response of the footing. For small cell diameters, the cell-soil-footing behaves as one unit (deep foundation), while this pattern of behaviour was no longer observed with large cell diameters. The recommended cell heights, depths and diameters that give the maximum bearing capacity improvement are presented and discussed.

البحث الثالث

سلوك قاعدة شريطية مرتكزة على نربة رملية ذات ميول مدعمة بخوازيق و ستائر لوحية.

Strip footing behavior on pile and sheet pile-stabilized sand slope.

Journal of Geotechnical and Geoenvironmental Engineering ASCE, (2005), Vol. 131, No. (6), pp. 705-715.

ABSTRACT: This paper presents the results of laboratory model tests on the behavior of a strip footing supported on a row of piles and sheet pile-stabilized sandy slope. A comparison between the bearing capacity improvements in the two cases was made to study the most efficient of them. The parameters varied in the study include pile diameter, pile length, pile spacing and location of pile row, height of sheet pile, location of sheet pile and location of the footing relative to the slope crest. Initially the bearing capacity of non-stabilized cases were determined and then compared with those of stabilized slopes. The results were then analyzed to study the effect of each parameter. The results indicate that stabilizing earth slope using a row of piles or sheet pile has a significant effect in improving the bearing capacity of the strip footing. This improvement in bearing capacity increases when pile spacing decreases and pile length increases with further improvement with increasing pile diameter. However, the overall improvement when using sheet pile to stabilize earth slope is much better than that when using a row of piles.