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Electric Vehicle Drive with Matlab/Simulink

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ABSTRACT : *The river flow pattern and protects the banks against erosion. Recognition of the flow pattern around a we prepared a diagrammatic presentation of test in the friction between eastern and western parts of the flight. Average values of friction of each of the three sections of the runway, in down stroke and up stroke, were measured once before tire removal operation and the second time after the tire relaxation and the exploitation rate index and minimum quality of flight surfaces were Tehran fault and Rey fault will destroy of the city, respectively. Farahzad neighborhood in northern Tehran is one of the most seismic parts of Tehran metropolis.this study is to investigate the seismicity of the neighborhood in terms of the risk of earthquakes.*

Keywords - *Friction, Earthquake, Turbulence model.*

INTRODUCTION

1.1 BASAL REINFORCED EMBANKMENTS ON SOFT SOILS:

Reinforced soil concept (Vidal, 1969) using geosynthetics proved as the best technique, which can be used to enhance the strength and deformation behavior of soil in difficult situations. An embankment constructed on soft foundation is designed with a layer of geosynthetics reinforcement at its bottom. Jewell (1988) described the mechanism by which reinforcement could improve the performance of embankments on soft soils. This involved the recognition that the lateral earth pressure within the embankment over a soft cohesive foundation imposes shear stresses on the foundation soil. The tensile force in reinforcement resists the driving outward forces thus adding stability.

Tensile forces mobilized in the reinforcement based on the effective length of reinforcement, shear strength mobilized at the contact surface of fill-reinforcementground interface. Based on the effective length the layer of geosynthetics can be termed either extensible/ inextensible material. The difference between extensible and inextensible sheet being only

the effective length over which full mobilization of shear stresses occurs. In the case of extensible sheet only the elongated portion is considered as effective while, total length of sheet is considered in the case of inextensible sheet. The basal reinforcement can serve to resist some or all of the earth pressure within the embankment and to resist the lateral deformations of the foundation, thereby increasing bearing capacity and stability, Jewell (1988). A systematic design approach is to be followed to evaluate the embankment stability with respect to internal and external failure mechanisms.

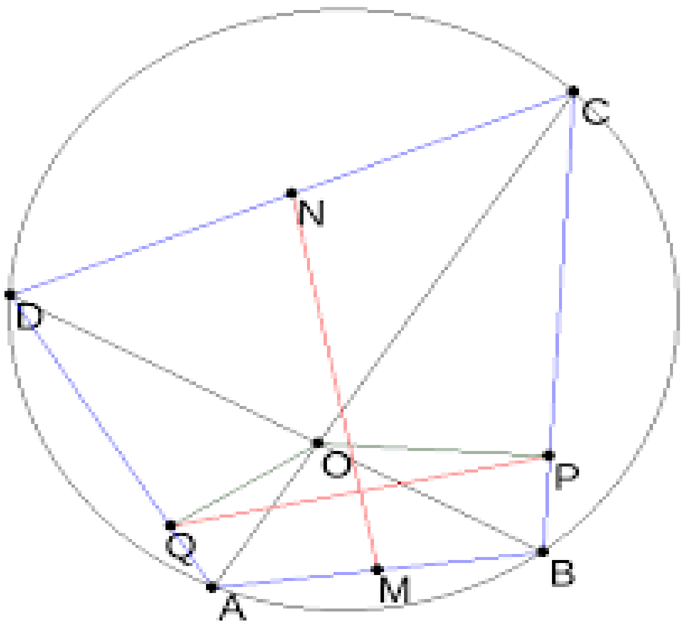
The failure mechanism of reinforced embankments are (i) lateral sliding of embankments over the base reinforcement layer, 9ii) Foundation extrusion (bearing capacity failure), (iii) global stability analysis (iv) breakage or pullout of reinforcement (v) Excessive displacement. In order to prevent this failure mechanism, consideration must be given to (i) the reinforcement–soil interface shear strength under conditions where the reinforcement is pulled out from the soil above and below it, (ii) the tensile strength of the reinforcement and (iii) the stress–strain characteristics of the reinforcement relative to those of the foundation soil.

Kinematics of the deformation (Figure. 1) dictates typical failure of reinforced soil structures. At failure of soil mass the reinforcement is subjected to pull. As shown in Figure 2, almost all the available design methods incorporate only the axial pullout mechanism Jewell (1992). Here the gravity stresses will remain as normal stress on sheet reinforcement, consequently, the shear resistance mobilized at the interface is proportional to these stresses. However, as shown in Figure 3, at failure, the shape of reinforcement adjacent to the failure surface is subjected to oblique pull (Bergado et al. 2000). Under the action of oblique force or displacement, the soil beneath the

Due to transverse pull/ transverse displacement additional normal stresses develop over geosynthetic reinforcement at the intersection of the reinforcement and the failure surface, which in turn increases frictional resistance. Giroud (1995) related geosynthetic strain to deflection on a global scale but, no analysis is available that couples normal and axial displacements of reinforcement. Madhav and Umashankar (2003 & 2005) evaluated the response of geosynthetic reinforcement to transverse force/displacement under linear response and non linear response of sub grade.

1.2 STATEMENT OF PROBLEM AND ANALYSIS

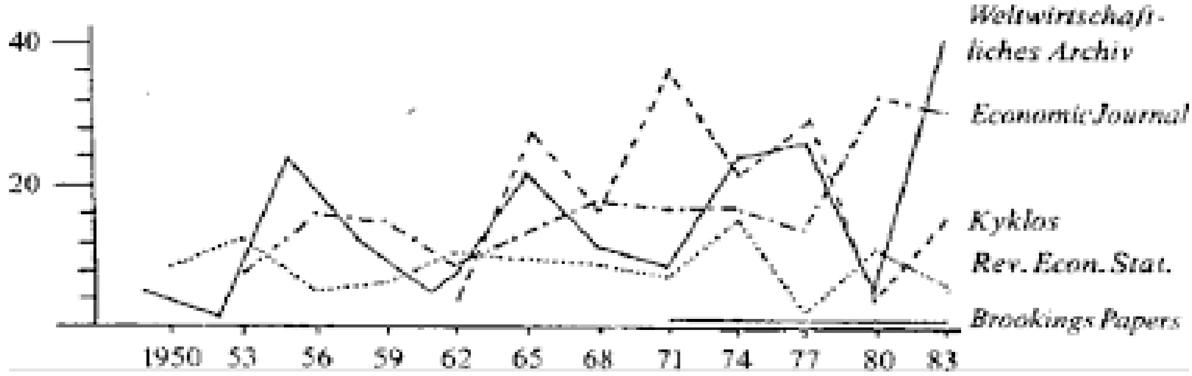
A granular fill embankment of given geometry is considered on soft clay bed homogeneous in nature. Reinforcement in the form of geosynthetics layer is provided at the foundation-fill interface with little embedment in to fill. The sketch of embankment is shown in Figure 4 The analysis is carried out by limit equilibrium methods. Bishops simplified method is used for analyzing factor of safety. Geoslope package is used to generate the critical failure circle and to compute factor of safety. The geometry of embankment, ground and properties of fill, ground and reinforcement are detailed in Tables



1.3 STABILITY FROM ROTATIONAL FAILURE

For a trial failure surface, the driving and resisting moments from normal and tangential components at the base of sliding wedge (selected) are computed. Factor of safety is computed as a ratio of resisting moment to driving moment. Resisting force includes cohesive resistance along length of failure surface.

A critical slip circle surface having least factor of safety is identified. Geoslope software is used for generating the critical slip surface. 3.2 STABILITY OF EMBANKMENT WITH BASAL REINFORCEMENT - HORIZONTAL PULL A geosynthetic reinforcement is introduced horizontally between foundation soil and embankment fill (Figure 5). The layer is extending to the full width and length of embankment. Full mobilization of shear resistance along the surface of the basal



reinforcement is assumed.

Figure 5 Horizontal pull in reinforcement layer

2. RESULTS For the same critical circle

obtained in axial case knowing length of reinforcement Le, moment center the transverse force developed due to oblique pull is computed by considering a rotation of 0 (horizontal), 0.002, 0.004, 0.006, 0.008 and 0.01 radians at the point of intersection of reinforcement with slip surface. Factor of safety with the above rotations are computed and the results are presented in Figures 9 and 10.

3.1 EFFECT OF ANGLE OF INTERNAL FRICTION OF EMBANKMENT: Figure.9 shows the variation of factor of safety with change in friction angle of the embankment soil for unreinforced and reinforced embankments. It is observed that the factor of safety of both unreinforced and reinforced embankment is increasing with friction angle, Φ. An increase of 1.02 to 1.05 for unreinforced embankment, 1.12 to 1.15 for reinforced embankment 1.21 to 1.25 with oblique pull is observed for increasing phi. This phenomenon is observed, since with increasing frictional angle of embankment soil, the interfacial friction between the embankment soil and the reinforcement layer increases results in increase in mobilized tension in the reinforcement causes to increase in factor of safety.

3.2 EFFECT OF OBLIQUE PULL IN THE REINFORCEMENT LAYER ON FACTOR OF SAFETY

The variation of factor of safety with oblique pull is presented in Figure. 10. It is observed that factor of safety is increasing with rotation linearly and with angle of internal friction. An increase from 1.12 to 1.21 for phi 28, 1.14 to 1.23 for phi 32 and 1.16 to 1.25 is observed for various oblique forces developed due to rotation. An increase up to 30% in factor of safety is observed considering oblique pull compared to axial pull for all phi values.

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