

Evaluation of Interaction Properties of Geogrids in Cohesive Soils

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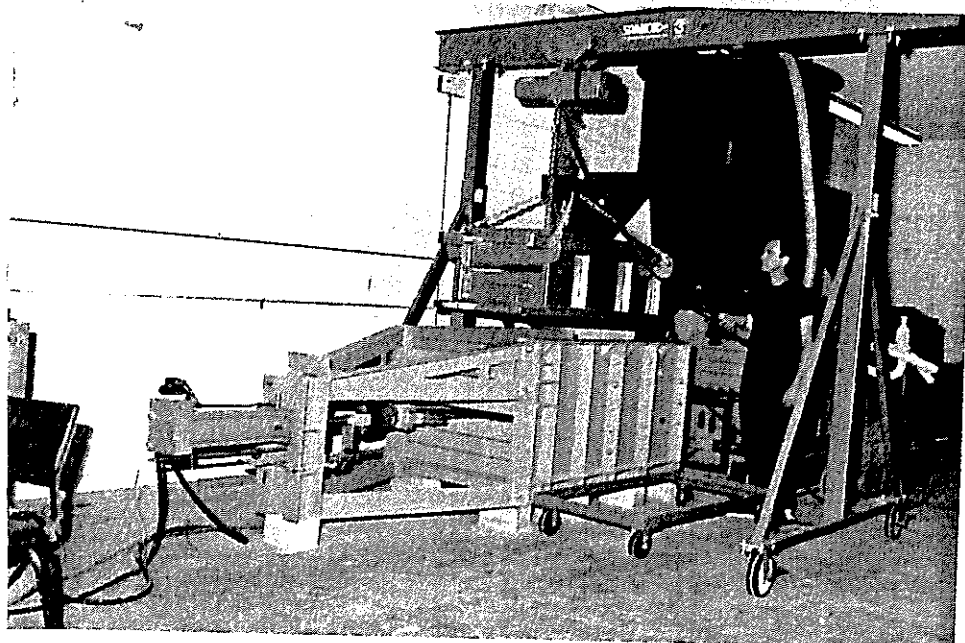
Problem

The increase in the use of geosynthetics in the reinforcement of highway embankments and slopes led to the development of testing procedures to evaluate their interaction properties. Previous research has concentrated on the evaluation of the interaction properties of the reinforcement in granular soils.

However, the use of available cohesive soils in Louisiana and in

other states for the construction of reinforced walls and slopes could significantly reduce the costs of these structures.

Limited research to evaluate the reinforcement interaction parameters (pull-out resistance and shear stress-strain characteristics) in cohesive soils has been done. There is a need to develop an appropriate testing procedure and to evaluate the interaction parameters of reinforcement in cohesive soils.



LTRC technician prepares geogrid-reinforced soil specimen for testing in the pull-out box.



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Objectives

The major objectives of this research are:

- To develop a pull-out testing procedure for geogrids in compacted clays.
- To establish a testing program for the evaluation of the effects of various parameters on pull-out resistance (pull-out rate, confining pressure and soil density).
- To develop an interpretation scheme for determining the interface parameters required

for the design of reinforced embankments.

- To evaluate the methodology through correlation with in situ pull-out tests.

Description

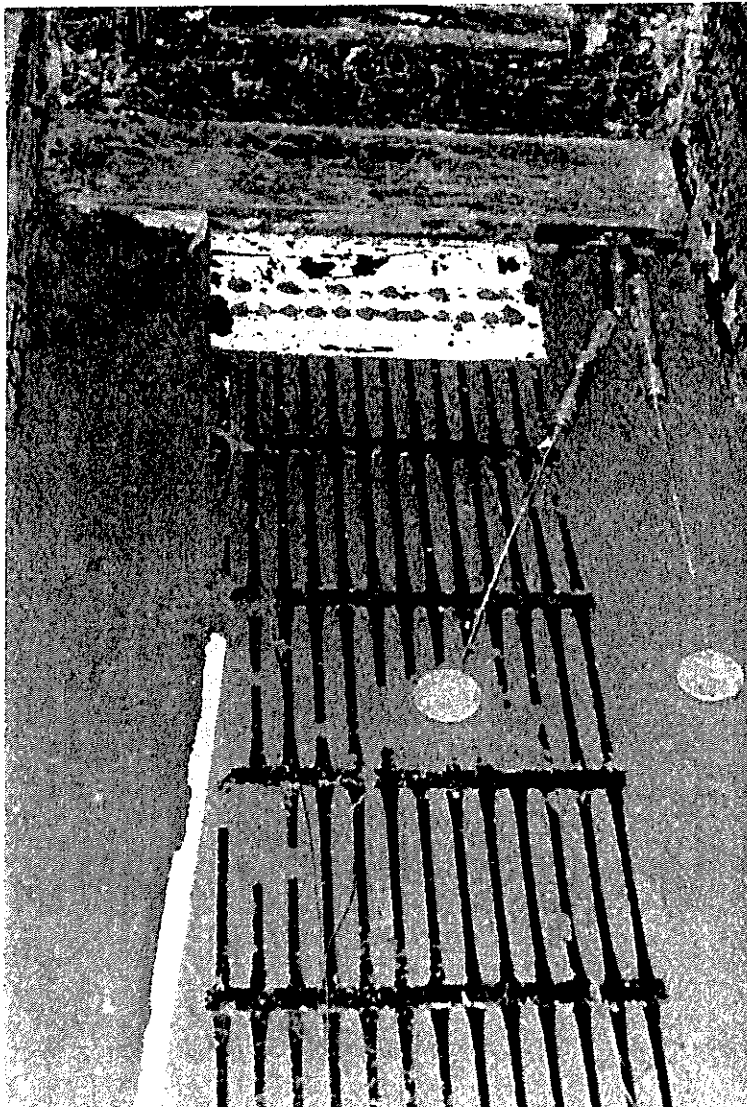
A testing program was established to determine the effect of testing parameters on the interaction mechanism. In order to obtain the required interaction parameters for the design of reinforced structures with compacted clays, an interpretation scheme was

developed. The interpretation scheme provided guidelines for the design and analysis of reinforced soil structures.

To evaluate the proposed methodology and testing procedure, laboratory pull-out test results will be compared with results of in situ pull-out tests. Instrumentation of the test embankment will provide the necessary data for the analysis of geogrid-soil interaction.

Implementation Potential

This study will provide cohesive soils interaction parameters for reinforced-soil structures. Guidelines for the use and analysis of geogrids in such materials will be provided.



An instrumented geogrid specimen being tested in cohesive soil in the pull-out box.