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SETTLEMENT ANALYSIS OF ROADWAY EMBANKMENT BODY

A. Mouratidis *

Professor, Aristotle University of Thessaloniki (ATh), GR

* ATh, Department of Civil Engineering, 54124 Thessaloniki
tasos@hermes.civil.auth.gr

P. Nikolidakis

Phd, Aristotle University of Thessaloniki (ATh), GR

ABSTRACT

Red mud is the solid remainder produced within the alumina processing. In Greece, a large quantity of this material is annually rejected to the Corinthian gulf, as a slurry, causing serious damage to the local ecosystem.

The Laboratory of Road Engineering, of the Aristotle University of Thessaloniki, has undertaken research projects to fully investigate the possibility of applying this by-product in road construction. In the frame of a pilot project introducing the construction of a roadway embankment, a complete laboratory testing of the material itself and of different mixtures with soils was performed.

According to the outcome of this experimental study, the roadway embankment would consist of three different sections. A first one using a A-4 soil and two sections built up from red mud mixtures. The performance of the embankment with regards to its deformability and, particularly, of each Section separately, was studied by means of three different models relating loads to displacements. Within this research study, the analysis carried out suggests evaluation methods to compute the elastic modulus of each material as well as methods to calculate the vertical deformation at the centreline of the embankment body.