

Accepted Manuscript

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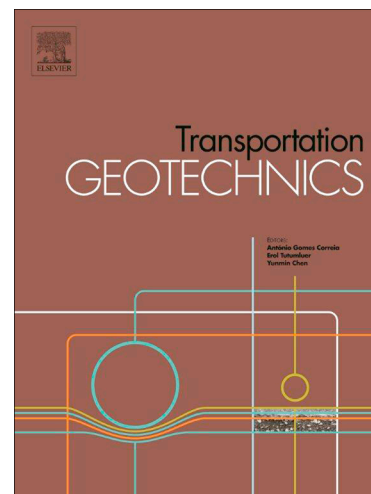
PII: S2214-3912(17)30053-3
DOI: <http://dx.doi.org/10.1016/j.trgeo.2017.08.010>
Reference: TRGEO 137

To appear in: *Transportation Geotechnics*

Received Date: 19 March 2017
Revised Date: 25 August 2017
Accepted Date: 27 August 2017

Please cite this article as: G. Canon Falla, S. Leischner, A. Blasl, S. Erlingsson, Characterization of unbound granular materials within a mechanistic design framework for low volume roads, *Transportation Geotechnics* (2017), doi: <http://dx.doi.org/10.1016/j.trgeo.2017.08.010>

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Characterization of unbound granular materials within a mechanistic design framework for low volume roads

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Abstract

Unbound granular materials (UGM), used in base and subbase layers, play a major role in the structural performance of low volume roads (LVR) with a thin asphalt surface layer. A prerequisite for a proper design of such roads is the development of reliable testing techniques to simulate the behavior of UGMs under conditions similar to those that occur when subjected to traffic. Therefore, there is a need for simple and economical test methods to characterize the mechanical behavior of UGM under the action of high traffic loads. This paper presents a methodology for the experimental characterization of UGMs with a focus on mechanistic design. The results of a test campaign aimed at characterizing the elastic and plastic behavior of UGM are shown. The laboratory tests were performed using a new volumetric compaction tests and the triaxial test. Based on the results of the tests, a new classification method for UGMs intended to be used in the base course of thin asphalt pavements is suggested.

Keywords: mechanistic pavement design, low volume road, unbound granular materials, performance tests

1. Introduction

The European low volume road network (roads with less than 1000 AADT) consists, to a large extent, of relatively thin asphalt layer pavements (TAL

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