



EVALUATION AND GEOTECHNICAL CHARACTERIZATION OF A LOW VOLUME TRAFFIC ROAD - Natural Park of Montesinho, Portugal

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ABSTRACT

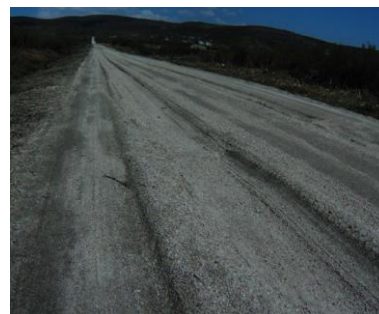
In Montesinho region, there is a low volume traffic road (LRV), more specifically a unpaved road, which needs maintenance to ensure more safety and comfort to the users. The road in question allows the connection between two dams that supply the localities of the Bragança's region, it is located in the natural park of Montesinho. For proper maintenance and valorization of a natural park, it is necessary to have roads in good condition without changing natural and semi-natural landscapes and ecological diversity of the place. Therefore, it aimed that was necessary to perform both functional and structural evaluations on field in propose to improve it. Of all the route, three kilometers of extension was selected to evaluate. With the functional evaluation, it was analysed the road surface, the road profile and the drainage system. For structural evaluation, it was necessary to divide the extension into homogeneous sections, using the accumulated difference method, indicated by American Association of State Highway and Transportation Officials (AASHTO). The division was performed by the pavement response value, through the load plate test and lightweight dynamic penetrometer test. From the sections was estimated a representative point of each section to carry out the other tests. The tests are sieve analysis to know the grain-size distribution of soil, compaction energy in the field by nuclear methods test, proctor and california bearing ratio (CBR) test in the laboratory, and the CBR in situ. Through the functional evaluation, it notes that the entire surface area analyzed, is deteriorated, it can be seen potholes, ruts and erosion channels (Figure 1).



(a) Erosion channel.



(b) Potholes.



(c) Rut.

Figure 1. Unpaved road in study.

In addition, there is no proper drainage, such as appropriate ditches and crossfall on the most part of the road. This factor is of great relevance, since unpaved roads don't have the capacity to reduce water infiltration, this becomes a potential cause of current and future damage. In the structural evaluation, three homogeneous sections were estimated for each test, it is resulting in five representative points. Finally, the tests will serve to classify and determine the soil strength, on this matter, in order to scale a road with existing LRV manuals and propose structural solutions for road improvement.