

CHARACTERIZATION OF THE FOULED BALLAST LAYER IN THE SUBSTRUCTURE OF A 19TH CENTURY RAILWAY TRACK UNDER RENEWAL

EDUARDO FORTUNATO 1), ANTÓNIO PINELO 1) and MANUEL MATOS FERNANDES 2)

1) Laboratório Nacional de Engenharia Civil - LNEC

2) Faculdade de Engenharia, Universidade do Porto

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Abstract

The purpose of these field and lab studies undertaken during rehabilitation work being done on an ancient railway line was to characterize a layer of ballast fouled with soil found in the track substructure. The field studies included the characterization of the thickness, grain size distribution and void ratio of the fouled ballast layer, as well as a large number of plate load tests, both on the fouled ballast layer and on the subgrade. The resilient behaviour of the fouled ballast was evaluated in the lab by cyclic triaxial tests on large size reconstituted specimens with distinct fouling indexes (different grain size distribution) and distinct humidity states (dry or wet). The results obtained were used as support for the decision to maintain the fouled ballast layer under the new sub-ballast in a number of stretches of the renewed line.

Keywords: cyclic triaxial tests, fouled ballast, plate load tests, resilient modulus, track rehabilitation, (IGC: C8/D6/H6)

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