

FULL-SCALE INVESTIGATION ON THE VOLUMETRIC RELATIONSHIP BETWEEN LABORATORY AND IN-SITU COMPACTION

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ABSTRACT

Gyratory shear compaction is currently accepted as a standard for the analysis of the characteristics of bituminous mixtures used in the construction and maintenance of flexible pavements. However, especially since the introduction of this technique in specifications is quite recent, contractors are still not totally confident on the way they should operate in order to satisfy requirements defined as a function of gyratory compaction.

In this general context, the Authors show the results obtained in a full-scale experimental site where the compaction, which derives from the use of standard rollers, was compared with that obtained in the laboratory by means of gyratory compaction. The testing site was made of sections characterised by the use of mixtures and thicknesses of the layers, which were combined in various ways in order to reproduce typical conditions met in Italy on major infrastructures. Moreover, rolling patterns were defined in order to obtain different degrees of compaction for each layer (base, binder and wearing course). Laboratory investigations were carried out in order to evaluate the volumetric and compaction properties of the mixtures in the various conditions met on site. The experimental results lead to develop empirical equations, which correlate, for the considered mixtures, laboratory and in-situ compaction.

KEYWORDS: pavements, mixtures, compaction, rollers, gyratory compactor.