

STRUCTURAL ANALYSIS OF ASPHALT PAVEMENTS ON COLLECTOR RURAL ROADS

M. Losa *

Associate Professor, University of Pisa, IT

M. Marvogli

Graduate Engineer, University of Pisa, IT

P. Leandri

PhD Student, University of Pisa, IT

R. Bacci

PhD Student, University of Pisa, IT

* Department of Civil Engineering, 56126 Pisa, Italy, losa@ing.unipi.it

ABSTRACT

Many of the Italian collector rural roads have been built on historical ancient roads. For this reason they present particular features that differentiate these pavements from highway pavement structures for which traditional design and structural analysis methods have been developed.

In order to define guidelines to be used in structural redesign of collector rural road pavements, field tests were carried out on 6 test sections by using FWD and GPR; in addition, cores were taken and test pits were dug for direct investigation of the existing ancient pavement.

The experimental data were used in order to characterize spatial variability of pavement materials and thickness. Accurate mechanistic analyses were carried out in order to evaluate critical strains; relationships between critical redesign parameters and FWD deflections were investigated in order to assess structural capacity of pavements directly from the FWD deflection basin data and layer thickness without backcalculating the layer stiffness moduli.

KEY WORDS: Pavements, Structural analysis, Moduli, strains, deflections