

Abstract

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Investigation of Factors Affecting Pavement Roughness

Asphalt concrete pavement is the most common type of pavements used in Egypt and around the world. Several factors can affect the pavement performance. A good understanding of these factors would enable pavement specialist to build smooth, cost effective, long-lasting pavement that requires little maintenance; satisfies user needs. Several methods can be used to evaluate the pavement performance. Among these methods is the pavement roughness. In 1986, the Long-Term Pavement Performance (LTPP) project was established as a part of Strategic Highway Research Program (SHRP); it was aiming to construct a large scale database to satisfy a wide range of pavement information needs. This project was designed to allow for a comparison of the performance of different pavement sections under various sets of loading; environmental conditions. The main objective of this research is to evaluate the effect of service life; pavement thickness on the pavement roughness. The data from the LTPP database were used to develop mathematical models correlating the pavement thickness, service life, environmental conditions, traffic levels; subgrade type to pavement roughness. These models recommended that the effect of increasing the thickness on the expected service life is negligible for the conditions of low traffic, dry environment; medium temperature. Traffic level does not have a considerable effect on deterioration rates of pavement roughness in case of coarse subgrade; dry environment.