Analysis of the Flexible Pavement Sections Using Mechanistic - Empirical Method

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Pavement design procedures used in road design is either empirical or mechanistic. In Sri-Lanka most of the road pavements have been designed based on the empirical design methodologies. A guide to the structural design of roads under Sri Lankan conditions issued by Road Development Authority (RDA) is used as the reference for the local road pavement designs. Overseas Road Note 31 and American Association of State Highway Transportation official's method (AASHTO) are the other references used in the pavement designs.

Pavement layer compositions given for the same road section by the different references are not in the same. In the other hand due to the non- availability of the materials and different cost constraints in the projects might subjected to change the pavement compositions rather given by the design references.

So the different layer compositions are needed to be analyzed against their performances and developing improving method for analyzing is required.

The quality of material properties in different layer composition can be evaluated through the mechanistic- empirical methods. KENLAYER is the mechanistic- empirical tool widely used in the pavement analysis. The output results of the KENLAYER gives the vertical stresses and strains, horizontal stresses and strains, and displacements at the specified locations.

For the selected road stretch, traffic data has collected .The same section has designed using different design references and some sections are subjected to changes as available material properties. Some pavement compositions are designed with the same structural adequacy, matching with the structural Number by the varying material property which gives economic benefits. These different pavement compositions are used in analysis.

Design life has analyzed for the each pavement composition using Mechanical – Empirical method. The critical layers are identified at early stage of the failure. The study concludes by identifying the best suitable pavement composition by the evaluating of the pavement performance.

Key Words: Flexible Pavement, Mechanistic Method, Empirical Method

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