Preparing Data for Calibration of Mechanistic-Empirical Pavement Design Guide in Central Saudi Arabia

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Abstract : Through progress in pavement design developments, a pavement design method was developed, which is titled the Mechanistic Empirical Pavement Design Guide (MEPDG). Nowadays, the evolution in roads network and highways is observed in Saudi Arabia as a result of increasing in traffic volume. Therefore, the MEPDG currently is implemented for flexible pavement design by the Saudi Ministry of Transportation. Implementation of MEPDG for local pavement design requires the calibration of distress models under the local conditions (traffic, climate, and materials). This paper aims to prepare data for calibration of MEPDG in Central Saudi Arabia. Thus, the first goal is data collection for the design of flexible pavement from the local conditions of the Riyadh region. Since, the modifying of collected data to input data is needed; the main goal of this paper is the analysis of collected data. The data analysis in this paper includes processing each: Trucks Classification, Traffic Growth Factor, Annual Average Daily Truck Traffic (AADTT), Monthly Adjustment Factors (MAFi), Vehicle Class Distribution (VCD), Truck Hourly Distribution Factors, Axle Load Distribution Factors (ALDF), Number of axle types (single, tandem, and tridem) per truck class, cloud cover percent, and road sections selected for the local calibration. Detailed descriptions of input parameters are explained in this paper, which leads to providing of an approach for successful implementation of MEPDG. Local calibration of MEPDG to the conditions of Riyadh region can be performed based on the findings in this paper.

Keywords : mechanistic-empirical pavement design guide (MEPDG), traffic characteristics, materials properties, climate, Riyadh