ABSTRACT

The study road Nakuru – Nyahururu diverts from A109 Highway in Nakuru town passes through mountainous escarpments and small towns like Bahati, Subukia and the seat of Laikipia County (Nyahururu). It covers a total distance of 60 kilometers. Alignment soil and the borrow pits were tested and analyzed, falling weight deflectometer (FWD) were analyzed at 100 meters interval for determination of uniform sections and to categorize the condition of the road, roughness measurement IRI (International Roughness Index) were analyzed at 100 meters interval and used to determine the condition of the road. Analyzing the traffic count was held in key places along the project road. Due to under design; roads are dilapidating before their design period is reached and will be forced to do the reconstruction or excessive maintenance making road construction uneconomical. It is recommended that structurally sustainable and economical design methods among the usual Kenyan road design manual Part- III & IV(1987), Tanzanian design manual (1999), AASHTO 1993 and South African mechanistic-empirical pavement analysis design software (mePADS) for a rehabilitation of flexible pavement on Nakuru – Nyahururu road. From the analysis, the cost among three methods in the beginning of the design options: - Tanzanian design manual 1999, AASHTO 1993 and South African software looks relatively more expensive than the Kenyan design manual. But the Kenyan road design manual needed a major rehabilitation. On the aspect of structurally sustainable pavement, Tanzanian design manual (1999) is safe when analyzed through the mechanistic-empirical Pavement Analysis Software (mePADS) whereas Kenyan design manual fails to reach half way the design period. AASHTO 1993 will reach its service life one or two years before the design period. Therefore; it is recommended that the Kenyan design manual RDM, 1987 needs to be revised for the design and construction of economical and sustainable road pavement structures with in the design period.