

# Effect of Heavy Vehicles on Performance of ‘Colombo-Katunayake’ Expressway

S.A.A.K.K Subasingha<sup>1</sup> and W.K Mampearachchi<sup>2</sup>

## Abstract

Colombo-Katunayake Expressway (CKE) is linking the Sri Lankan capital Colombo with the Bandaranayake International Airport and it provides great service to expanded industrial areas in the region. It makes great importance that maintain quality of the expressway as to cater better service for the public.

One of the most important factors in the recent years is the pavement damage due to the overloaded heavy vehicles and the overloading effects caused by the increased heavy vehicles traffic volume. But heavy vehicles play an important role in the economy, and are expected to remain a common sight on our expressways in the foreseeable future. Accordingly, balance criteria should be used among these two factors as to minimize economical losses. Department of Motor Traffic Sri Lanka has implemented certain standards based on vehicle axle configuration. But the heavy vehicles drivers seldom follow these standards and regulations. This practice of overloading the vehicles will have a direct impact on the pavements getting more damaged. The research overview is analyzing the damage caused by overloaded vehicles and compare with the transport cost to optimize these two factors.

Heavy vehicle traffic data is collected throughout the operating period and the data illustrates that the heavy vehicle traffic is being increased every year so that average monthly traffic in 2013 is 12,300 and now it has increased to 26,500 by 115% over 5 years. Two intermediate CCTV locations were selected and videos were used to identify heavy vehicle drivers' lane behavior. It is understood that 94% of heavy vehicles drivers use outer lane as they enforced to do. In this study, two toll gate exits were determined where there are installed weight bridges as to measure gross weight and axle loads of randomly selected heavy vehicles and to identify distribution of heavy vehicles in CKE. Several other required data can be obtained through Planning Division, Road Development Authority.

HDM4 software will be used to develop a model using available data as to find out effect of heavy vehicles in CKE so that service life reduction, kind of maintenance required and incurred cost will be evaluated. Finally, the study will optimize the road damage due to heavy vehicles and transport cost, and overloading penalties will be implemented on extra weight that the heavy vehicle is carrying.

**Keywords:** Colombo-Katunayake Expressway, Heavy vehicles, Road Development Authority, HDM4 Software, Axle loads

**Author Details**

1. Postgraduate Student, Department of Civil Engineering, Faculty of Engineering, University of Moratuwa. [amilakrish@gmail.com](mailto:amilakrish@gmail.com)
2. Professor, Department of Civil Engineering, Faculty of Engineering, University of Moratuwa. [wk.mampearachchi@gmail.com](mailto:wk.mampearachchi@gmail.com)