

Study on the effects of overloading on Sri Lankan Roads

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With the increasing demand for transport means, new technological vehicles and heavy loads carrying vehicles are used by people, in order to take the financial advantage. Consequently most of the commercial vehicles plying on Sri Lankan National Highways are overloaded. Previous studies show that overloaded vehicles are carrying as much as double weights than its maximum permissible load. Limits for standard legal axle loads and gross vehicle weight have been already imposed by Minister of transport as a part of Motor Traffic Act. But they are violated oppressively by the transporters but not enforced stringently by road agencies or Motor Traffic Department.

Designing of flexible road pavements is mostly based on the cumulative number of equivalent standard axles which is significantly subscribed by the heavy vehicular traffic including overloaded vehicles. Construction cost of road pavement is hence directly incurred by above and it results in extensive, costly pavement designs. Furthermore the damage by overloaded vehicles to the pavement is exponential. Continuous overloading of vehicles reduces the design life of pavement resulting premature failures and induces additional cost to road agencies for maintaining them.

In this study, actual axle load survey data at selected locations to cover the national road network were analyzed and assayed in different aspects. Overloading of vehicles and its effects were identified in accordance to several pavement design methodologies such as Road Note 31, AASHTO & Austroads. Overloaded zones and roads were identified and design details of existing pavements were assessed for two scenarios; (1) at actual loading and (2) at legal loading limit.

Results of the preliminary assessment include Percentage of overloaded vehicles, extent of overloading, overloading trends based on the vehicle type, commodity type & travel direction. Further average equivalent standard axle loads (Average ESAL) were calculated and contribution of overloaded and non overloaded vehicles was distinguished. Cumulative number of equivalent standard axles (CNESA for 15 years) for current overloading scenario

and non-overloaded scenario were computed. It was found that the additional cost incurred with pavement construction for current overloaded scenario of each road.

It was concluded that, limits for maximum permissible axle loads should be reviewed in order to make them realistic and enforceable. Further necessity is emerged for immediate effective enforcement against the transporters who violate the stipulated rules and regulations. Huge economic loss due to extensive pavement designs would have been reduced upon effective enforcement and great attention of relevant road agencies on this regard.

Key Words: Vehicle overloading¹, standard legal axel loads limits², effective enforcement³