

عنوان مقاله:

Comparison of Live Load Effects for the Design of Bridges

محل انتشار:

فصلنامه روشهای تصفیه محیط, دوره 5, شماره 3 (سال: 1396)

تعداد صفحات اصل مقاله: 13

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خلاصه مقاله:

Design and lifelong structural performance of bridges is primarily governed by the live load models representing truck traffic. In Pakistan, bridges are designed as per Pakistan Code of Practice for Highway Bridges 1967 (PHB Code) and American Associations for State Highway and Transportation officials LRFD (Load and resistance factor design) Bridge Design Specifications (AASHTO). Further, National Highway Authority (NHA) has specified legal limits on the live loads to prevent overstressing of bridges. Different states of US had calibrated the AASHTO live load model based on the actual truck weights and traffic volume present in the respective states. In Pakistan, service-level truck traffic is significantly different in axle weights, axle configuration, gross vehicle weights (GVW) and traffic volume than that of United States and Canada. Further, in Pakistan, over the years, service-level truck traffic has changed significantly in axle weights, axle configuration, GVW and traffic volume due to developments in truck industry to meet the heavier loads carrying demands by various industries. Thus, live load models specified in 1967 PHB Code, AASHTO live load model and NHA legal limits may not be a true representation of today's service -level truck traffic of Pakistan. After discussing the different Live Load Models currently in practice for the design of highwaybridges in Pakistan, this paper compares the load effects produced by the actual trucks on sample bridges with the load effects ofcode specified live load models. Three simply supported, Pre-stressed concrete girders/bridges were considered to study theeffects of actual trucks and live load models. Maximum load effects were calculated using influence lines by running each truckon the sample bridges. Maximum load effects were also calculated for live load models of respective codes. Normalized loadeffects were calculated by dividing the truck load effect with the load effect due to code specified load model and results wereplotted on probability plot to compare the results. The results show that the .highway loading in Pakistan produces much greaterload effects than anticipated from the bridge design codes

کلمات کلیدی:

Live Load, HL-93 loading, Class A loading, Lane loading, Gross Vehicle Weight

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