A LIVE LOAD MODEL FOR BRIDGES IN JORDAN

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ABSTRACT

LIVE LOAD MODELS FOR BRIDGES

IN JORDAN

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About 44% of the existing bridge structures in Jordan need minor repairs, and 10% need major repairs due to overloading of axle loads of local vehicles using the road network.

The problem of overloading comes as a consequence of the absence of an accepted "Jordanian Bridge Design Code". In the last few years, the number of bridges has been increasing while the problem remains unsolved.

Designers used to adopt the "AASHTO" live load system with some trials to overcome this problem by increasing the live load by factors of 10%, then 20% and finally 50%; but in spite of that the need for an exact solution still remains.

This research deals with the development of live load models based on methods of systems reliability analysis.
The measurements of the Ministry of Public Works for axle weights during one week (which was maximum period available in the same site), was adopted as Arbitrary-Point-in-time loading from which a 50-year live load model was developed by two different approaches.

The results of these models show that:

a. The actual axle load in Jordan produce bending moment actions four times the actions produced by "MASUTO" systems for bridges with spans ranging between (15-35)m.

b. The most critical vehicle model for spans up to 20.00 m was found to be the five axle vehicle with a gross weight of 67 Tons.

c. The most critical vehicle model for spans from 20 to 35 m was found to be the six axle vehicle with a gross weight of 76 Tons.