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Editorial

Reinforced concrete box culverts are often used under roads for the conveyance of water and used at road-pipeline crossings to ensure safety of pipelines. A typical culvert is embedded in soil and subjected to earth and vehicle loads. The culvert can have either single cell or multiple cells and can be categorized by the construction type as cast-in-place or precast. In "Theoretical effects of geometrical parameters on reinforced concrete box culverts," Kuş et al. present a parametric study that investigates geometrical parameters of reinforced concrete box culverts. The authors conclude that span width and fill depth parameters have an important effect on internal forces, and that using multiple cells instead of wider span width in a single cell culvert is more reliable due to much lower internal forces and base soil stresses. Fatigue limits the service life of railway steel bridges and is, therefore, considered a crucial factor in design of steel bridges. The fatigue assessment of bridge connections is generally based on the concept of uniaxial S-N curves provided in the codes of practice. However, local stresses developed at welded connections under railway traffic are always multiaxial. In addition, directions of principal stresses change due to stochastically varying stress components defining the variable amplitude non-proportional stress histories. Multiaxial fatigue assessment can be done with the help of several models such as stress, strain, energy-based or fracture mechanics models. However, there is still no consensus on a method, which can correctly account for non-proportional loading. In "Multiaxial Fatigue Assessment of Welded Connections in Railway Steel Bridge under Constant and Variable Amplitude Loading," Praveen et al. present a preliminary fatigue assessment of welded connections based on nominal stress approach as per Eurocode EN 1993 1–9, to identify the most critical locations that are then subjected to a subsequent more refined non-proportional multiaxial fatigue damage assessment. The Hardinge Bridge is a steel truss railway bridge over the Padma River located at Paksey in western Bangladesh. It is the first railway bridge in Bangladesh and it has been in service for over 100 years. As an old steel truss bridge, fatigue cracks and corrosion are major concerns at this old age. In "Performance of the effect of fractured member of an old steel truss railway bridge: a case study of Hardinge Bridge," Awall et al. describe the redundancy analysis and the free vibration analysis of the Hardinge Bridge after fracture of its different primary members. In this paper redundancy is described with respect to change in axial stresses before and after fracture of different members. From free vibration analysis, vibrational behavior of the bridge structure before and after fracture of different members can be observed. From the analysis, the authors make conclusions about the most critical condition. Deterioration of bridge decks is a major problem in the United States. In areas where deicing salt is used in winters, corrosion of steel rebars is considered the main deterioration mechanism for bridge concrete decks. Traffic impact also amplifies the risk of concrete spalling in cracked decks, especially in bridges with high Average Daily Truck Traffic. Of all bridge components, concrete deck is the most subject to corrosion and maintaining it is the most costly and frequent activity in bridge maintenance. In "Flexural load rating of concrete bridge girder with deteriorated deck, Jnaid et al. present a Finite Element Analysis model and an analytical model to predict the ultimate flexural strength of deteriorated reinforced concrete bridge girders that can be adopted in bridge evaluation analysis. Both models take into account the damaged material properties and geometry. The proposed methodology can be adopted in computing the nominal flexural strength in the procedure of load rating analysis. The authors conclude that deterioration of concrete decks leads up to 40% reduction in rating factors. This may result in posting or closing of the bridge.

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