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Spotlight on *Structures*

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Volume 49 of *Structures* (March 2023) is now available to read at www.sciencedirect.com/journal/structures/vol/49.

As the Featured Article from this issue, Lorenzo Macorini, Associate Editor for *Structures*, has selected a paper that uses a probabilistic model of the fatigue collapse of concrete railway bridges and proposes an enhancement of the existing *fib* Code 2010 fatigue model.

The article will be available free of charge for six months.

Editor's Featured Article

Fragility estimate of railway bridges due to concrete fatigue

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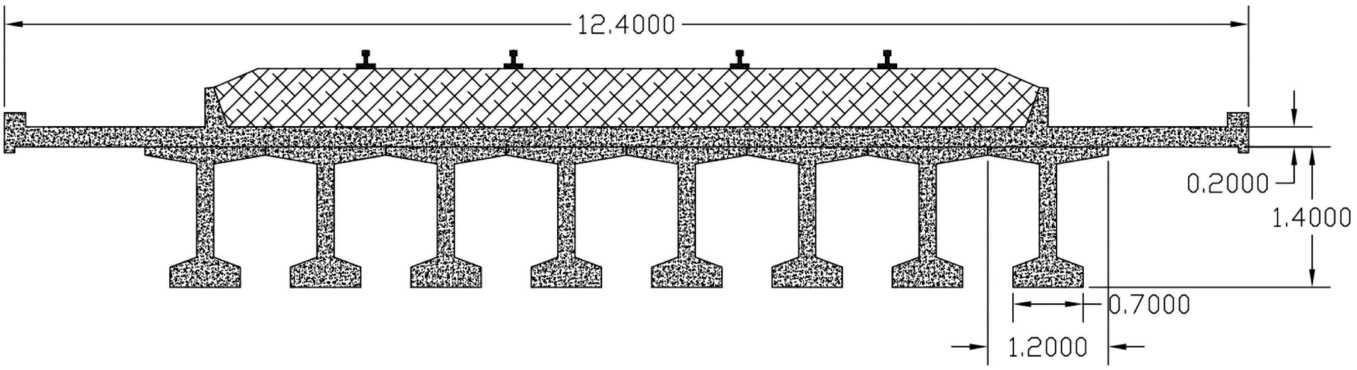
Railway concrete bridges are prone to fatigue collapse, being subjected to multiple cyclic loads during their lifetime. This paper proposes a probabilistic procedure for assessing the fatigue life of concrete railway bridges. The procedure includes the uncertainties related to the concrete fatigue model and the concrete strength by highlighting the relevant uncertainty of existing fatigue models. Therefore, it proposes an enhancement of the fatigue model proposed by the *fib* Code 2010 to reduce the modelling error possibly. The model has been calibrated on an extensive data set of normal-strength concrete samples following a Bayesian approach. Parallelly, the parameters have been reduced using a Bayesian step-wise deletion process. The paper uses the proposed probabilistic model to estimate the fragility curves in general cases by considering appropriate ranges for the train velocity, stress ratios and the number of cycles per year. In the second step, the paper applies the procedure to the fragility estimate of a typical prestressed-concrete railway bridge. The bridge response has been estimated using a finite-difference (FD) model. The FD model, simulating train–track–bridge interaction, has been calibrated on the measured displacement response. The analyses have been referred to different scenarios when suitable ranges of train velocities and cycles per year are considered.

→| Read the full paper at **https://doi.org/10.1016/j.istruc.2023.01.123**



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