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Editorial

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Significant variations in the earthquake ground motions could occur at different supports of long span bridges. These variations may be caused by a variety of Spatial Variation of Ground Motion (SVGM) sources. The stochastic responses of highway bridges to spatial variation of ground motions have been studied by several investigators [1, 2]. In "A study of the nonlinear behaviour of the irregular Beni Haroun cable-stayed bridge to progressive seismic failure under SVGM", Ouanani et al. investigate the progressive failure of the cable-stayed bridges, accounting for seismic wave propagation, incoherence effect and site-response effects. A spectral representation method is used to develop a computer code. This code is used to simulate SVGM time histories to be compatible with an overall coherency function and a target response spectrum. A three-dimensional Finite Element Model (FEM) of an asymmetric bridge: the Beni Haroun cable-stayed bridge, in northeastern Algeria, is developed to include the effects of the main components of SVGM on response parameters in terms of variations of absolute maximum vertical displacements and flexural moments along the deck and on height of short and tall pylons. The numerical results reveal that the bridge responses are very sensitive to the SVGM, with site-response effects being more critical than those of incoherence components and wave propagation. As a general trend, it is shown that the assumption of uniform excitation results in much lower ductility demands on bridges than incoherence and site SVGM components and that the latter should be considered for the seismic response assessments and progressive seismic failure studies of irregular cable-stayed bridges. To meet the increasing traffic demand for urban transportation, bridges are designed wider with multilane. Steel box girders have gradually become one of the main forms of wide, and curved bridges. In "Study on temperature field and shear lag effect of instantaneous high temperature during paving of wide steel box beam bridge deck", Li et al. examine distribution of instantaneous high-temperature temperature field during the placement of asphalt pavement. The results indicate that there are significant temperature changes in the pavement layer and steel box girder during the placement of asphalt pavement. The temperature field of the steel box girder in the paving area is significantly affected by the paving temperature. After the temperature of the steel box girder reaches 103°C, the temperature decrease rate of the flange plate is greater than that of the box chamber temperature. The temperature drop rate at the junction of the top plate, web plate, transverse partition, and flange plate is faster than in other areas. The authors conclude that under the maximum stress, the temperature of the mixture, pavement layer thickness, and pavement placement speed have little effect on the shear lag coefficient of the top plate in the paving area. Bridges must be designed to ensure safety for all users. At the same time, the design should be performed with an appropriate risk level. In Sweden, Soil-Steel Composite bridges (SSCB) are the most common bridge type. For SSCB, local verification of Load Model 1 in Eurocode is most often governing the design. The objective of "Probabilistic risk analysis of local verification of Load Model 1 in Eurocode for Soil-Steel Composite bridges in Sweden" by Lagerkvist et al., is to investigate whether local verification of LM1 load case could be modified without decreasing the agreed risk level in Eurocode. Weight in motion measurements from real traffic were extrapolated with Rice formula. Monte Carlo simulations were used to simulate the 1000-year return period event to obtain the acceptable risk level as prescribed in Eurocode. The results show that the local verification of LM1 is conservative, considering the acceptable risk level in Eurocode. The authors propose a modified implementation of local verification of LM1 in Eurocode for SSCB, which they contemplate could reduce the climate impact by up to 14% associated with the construction of new SSCB in Sweden. Integral abutment bridges are small- and medium-span bridges that do not have expansion

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joints or bearings, thereby reducing the cost of maintenance. The span of integral abutment bridges is primarily dependent on the magnitude of the thermal stresses considered during the design process. However, the adoption of integral abutment bridges has been limited globally because of the inherent complexity of the design caused by the large number of indeterminacies originating from rigid connections and soil-spile interactions. To compare piled substructure responses from an in-service integral abutment bridge, which was subjected to a parametric set of ground motions, a multiple-support excitation algorithm has been used in conjunction with the beam on nonlinear Winkler foundation model [3]. Pile displacement in integral abutment bridges due to daily and seasonal temperature variations is a problem that has been documented in [4]. Therefore, the design and construction of integral abutment bridges require careful attention to these inherent complexities. In "State-of-the-Art: Tracing the history, development, and design of integral abutment bridges", Shedge and Kumar aim to highlight the variations in major integral abutment bridge projects constructed worldwide. Additionally, the bibliographic analysis performed for integral abutment bridges identified key topics studied by researchers, which are discussed in detail in the current state-of-the-art. The objective of this literature survey is to provide practical bridge designers and researchers with an understanding of previous and ongoing developments in integral abutment bridges.

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