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EDITORIAL

This issue of *Bridge Structures* leads off with a paper by Pimentel and Fernandes on 'Simplified expressions for the vibration serviceability of beam-like footbridges'. Some drawbacks have been called to attention regarding the vibration serviceability guidelines presented in these codes. In this paper, simplified expressions for the vibration serviceability of beam-like footbridges in the vertical direction presented in these codes are investigated, aiming at improving them. The failure of one structural element can lead to the failure of further structural elements and thus to the collapse of large sections or the entire structure. Such disproportionate collapses have been discussed and investigated for some years, but mainly for buildings. However, in the field of bridge engineering, this phenomenon has received only sporadic attention. Although international guidelines for cable-stayed bridges require that the loss of one cable must not lead to the collapse of the entire structure, comprehensive analyses which include non-linear dynamic effects are rare. To account for dynamic effects, a quasi-static analysis with a dynamic amplification factor of 2.0 is recommended. This value is possibly too large, leading to uneconomic solutions. In 'Cable loss and progressive collapse in cable-stayed bridges', Wolff and Starossek examine the structural response of a cable-stayed bridge to the loss of one cable by means of dynamic analyses including large displacements. The effects of cable sag, transverse cable vibrations and structural damping are determined and dynamic amplification factors are computed. In 'The effect of higher modes on the regularity of single-column-bent highway viaducts', Maalek et al. define a structure as irregular if its response is influenced considerably by higher modes. The effects of the higher modes on the geometric regularity of single-column-bent viaducts are investigated by comparing modal parameters resulting from the elastic eigenvalue modal analysis with transverse displacements obtained from static modal pushover analyses. A class of bridges with equal span lengths, but with different pier heights is considered in the study. For a better identification of the modal behaviour of this class of bridges, several regularity indices are discussed. Some of these indices were used previously in model updating, model validation and the determination of modal correlations in the field of experimental vibration analysis (modal testing) of mechanical and structural systems. Certain modifications have been applied to previous works in order to improve bridge regularity indices. New indices have also been proposed for the attainment of a more realistic representation of the structural particulars of such bridges to be consistent with the analytical methods addressed in the AASHTO Specifications for practical design purposes. The results calculated with the aid of various indices are reported and compared. Integral abutment bridges are constructed such that the deck is continuous and connected monolithically with the abutment wall with a moment-resisting connection. To alleviate thermal stresses in the bridge superstructure due to temperature variations, abutments are commonly supported on steel piles that are oriented with their weak axis perpendicular to the longitudinal axis of the bridge. This orientation allows the vertical piles to bend laterally along their weak axis while the abutment walls rotate rigidly as the structure expands and contracts. The amount and the mode of the deformation of the abutment wall due to temperature fluctuations depend on the relative flexural stiffness of the bridge deck, abutment wall, foundation piles, lateral passive pressure of soil retained behind the wall, and confining stress level in the soil. William et al. investigate the 'Stability of steel girders under the effect of temperature variations and moving loads in integral abutment bridges', using a detailed 3D finite element model which is verified against field-measured data.

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