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Editorial

Integral abutment bridges have certain advantages over conventional seat-type abutment bridges due to increased redundancy, higher damping, smaller displacements, and, thus, the elimination of unseating potential. However, there is a lack of information on their seismic modeling, system response, and seismic design. In "Seismic Behavior and Design of Steel Girder Bridges with Integral Abutments", Monzon et al. present the recommended guidelines for the seismic design of steel bridges with integral abutments. These guidelines are based on analytical investigations as well as available experimental research. Contrary to the common assumption in analysis and design, nonlinear finite element analyses showed that the typical girder-to-abutment connection is not rigid and can influence the overall seismic response of the bridge. The authors propose a procedure for calculating the minimum required embedment length of the girder into abutment stem to achieve a rigid connection is proposed, and a procedure to evaluate the steel pile ultimate lateral displacement capacity. In "Optimization of the economic practicability of fiber-reinforced polymer (FRP) cable-stayed bridge decks", Al-Rousan et al. aim to find the optimum cable spacing and the optimum FRP deck stiffness in terms of vertical deformation. The authors develop eighteen models using ABAQUS; three different deck stiffness and six different cable spacing. The results show that for certain cable spacing the deflection decreased, and the cable stress increased as the deck stiffness increased. For certain deck stiffness, the paper concludes that cable stresses and maximum deck deflection increased as the spacing between cables increased. The authors propose a relationship to find the optimum cable spacing for each deck stiffness, and optimum deck stiffness for each cable spacing. The paper concludes that using FRP deck instead of the concrete deck will lead to vertical deformation and cable stress less than the allowable proposed values by the design code because of the lightweight of the FRP materials. In their paper "Optimum semi-active hybrid system for seismic control of the horizontally curved bridge with Magnetorheological damper", Kataria and Jangid investigates the application of Magnetorheological (MR) damper for a seismic control of the horizontally curved bridge isolated with different passive devices. The selected bridge is a three span continuous concrete box girder supported on pier and rigid abutment. The bridge deck is modeled as a single spine beam, which is made with number of small straight two node beam elements and supporting pier model as linear lumped mass system. The MR dampers are located between the deck and abutments or piers in chord and radial direction. The bridge is excited with four different ground motions having different ground motion characteristics with all three-ground motion components (horizontal as well as vertical). The paper concludes that the MR damper with different isolator is effective in controlling the response of the curved bridge and bearing displacement. The authors propose that the combination of MR and Lead rubber bearing (LRB) can provide an effective way for overall seismic control of curved bridge structure.

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