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Editorial

Rebar cages are the skeletons of reinforced concrete bridge columns formed by connecting the longitudinal to the transverse reinforcement with tie wire connections. The recent collapse of several bridge rebar cages shows the need to establish guidelines to enhance the lateral stability of these temporary structures. In "Improving the stability of bridge column rebar cages during construction", Builes-Mejia and Itani present the results of their experimental and analytical studies on the stability of bridge column rebar cages. The authors conducted the experimental investigation on two full-scale rebar cages to determine their lateral behavior and to calibrate nonlinear computational models. Based on their investigation, the authors conclude that internal bracings provide the significant component of the cage lateral stiffness and strength and propose guidelines to improve the lateral stability of column rebar cages. The combination of dead load and live load is very important in bridge design as it controls the strength limit states. The basic set of load factors for the Strength I limit state is 1.25 for dead load and 1.75 for live load and dynamic load. For design cases when the dead load dominates, i.e. for Strength IV limit state, the dead load factor is 1.5. The acceptability criterion for load and resistance factors in the AASHTO LRFD Code is closeness to the target reliability index, which is assumed to be 3.5 for steel and concrete girder bridges. However, the reliability analysis performed for a full range of dead load to live load ratios indicates that when live load is about 10–20% of the total load, the reliability indices are about 3.0, which is lower than the target value of 3.5. This is an indication that the reliability level is insufficient and there is a need for increasing load factors. On the other hand, for dead load constituting about 100% of the total load (i.e. no live load), the reliability index is much higher than 3.5, which means that the load factor 1.5 can be reduced. In their paper "Proposed load combination factors for bridges with high dead-to-live load ratios", Nowak et al. propose to change the current Strength IV load factors to dead load of 1.4 and live load factor 1.4, and present the results of the reliability analysis in graphic form. The authors conclude that their proposed load combination factors result in a more uniform reliability level for all combinations of dead load and live load. Most of the major cities in the United Arab Emirates (UAE) have witnessed a rapid growth rate in population during the past two decades, which was accompanied by the development of major transportation infrastructure. This fast growth of the infrastructure and the pressure of constructing more infrastructures in the UAE cities did not allow the local authorities to develop a suitable Bridge Management System (BMS) to maintain the nation's valuable asset at acceptable levels of safety and serviceability. In "A conceptual framework for a bridge management system for UAE", Yehia et al. aim at developing a conceptual framework for a BMS that recognizes the local conditions and needs of the UAE. To achieve this objective, the paper provides a review of the BMS around the world and a summary of the local practices and experiences in this area. In addition, the authors propose a framework for the development of a comprehensive bridge management system for UAE and discussion of the main components of the proposed BMS. Thermal imaging can be used to image subsurface damage resulting from the corrosion of embedded reinforcing steel, which typically manifests as delaminations at or near the level of the reinforcing steel. Delaminations interrupt the heat transfer through the concrete, resulting in surface temperature variations that can be assessed using thermal cameras. This type of damage occurs in bridge decks, soffits, parapets, abutments and other concrete bridge components. Washer discusses "Advances in the use of thermographic imaging for the condition assessment of bridges", and its use for the condition assessment of concrete bridge components, focusing on applications to the areas of the bridge not exposed to the radiant heating of the sun. The paper discusses the effects of environmental parameters on the ability to image subsurface defects (delaminations)

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at different depths in concrete and presents results describing ambient temperature variations and inspection timing requirements for conducting thermal inspections.

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