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Editorial

This issue of *Bridge Structures* leads off with a study of "Construction stages of cable-stayed bridges with composite deck". In their paper, Granata et al. present sequence of stay stressing in cable-stayed bridges with composite deck for construction by the cantilever method. Initial cable forces are found through partial elastic schemes of construction stages. Different stay stressing procedures are implemented to evaluate the differences in terms of deformed shape and internal force distribution of the deck and the pylon. Results are useful for practitioners in dealing with stay stressing sequences of composite cable-stayed bridges. The densely populated corridor along the Atlantic coast of the United States, between Boston and the capital of Washington, DC, is home to many important bridges. The regional geology is very old, tracing the history of the earth, with bedrock formed more than a billion years ago and surface geology that is very complex and variable. A thorough understanding of the local geologic and tectonic environment is essential to bridge foundation design, which has evolved tremendously from the underwater hand excavation of the caisson foundations of the Brooklyn Bridge to the sophisticated design of the new Woodrow Wilson Bridge. In "Overview of geology and foundations of bridges on the East Coast of USA", Nikolaou and Lacy present local issues of subsurface conditions, seismic hazard, foundation solutions of old and new bridges, and retrofit schemes for seismic protection of historical bridges based on experience collected over more than a century. In "Analysis of heating and cooling methods for assembly of steel fulcra in bascule bridges", Garapati and Kaw present a study of two procedures for assembling steel fulcra of simple-trunnion bascule bridges. In the assembly procedure called AP3-A, only the girder is heated to shrink-fit the trunnion-hub assembly in the girder, while the alternative assembly procedure, called AP3-B, applies shrink-fitting where the heating of the girder is combined with cooling the trunnion-hub assembly in dry-ice/alcohol mixture. The paper presents a study conducted on AP3-B to find the influence of parameters like hub radial thickness, and radial interference at trunnion-hub interface on the design parameter of critical crack length; which is a measure of likelihood of fracture. Critical crack lengths during the assembly procedure AP3-B are quantitatively compared with currently used assembly procedures. The authors suggest that increasing the hub radial thickness decreases the likelihood of fracture significantly. For hubs with large radial thickness, heating the girder combined with cooling the trunnion-hub in dry-ice/alcohol mixture, assembly procedure AP3-B is recommended but for hubs with high radial thickness, multistage cooling of the trunnion-hub assembly in dry-ice/alcohol mixture followed by dipping in liquid nitrogen (AP1-multistage cooling) is recommended. Displacement capacity verification analysis is usually used to evaluate the level of displacement at which structural elements reach their inelastic deformation capacities. In engineering practice, a modified version of displacement capacity analysis is used in the seismic performance assessment of bridge structures as an alternative to ductility and drift based approaches. In "Target damage level assessment for seismic performance evaluation of two-column reinforced concrete bridge bents", Yilmaz and Caner propose a seismic performance evaluation for a given target damage level, top bent displacement demand, which should not exceed a certain fraction of displacement capacity under safety evaluation earthquake level. A limited amount of study is available in the literature addressing the limiting values used in setting target damage levels. The focus of this study is to investigate target damage levels by defining a relationship between displacement capacity to demand ratio and strain based damage levels for seismic performance assessment of two-column reinforced concrete bridge bents over flexible foundations.

Khaled M. Mahmoud, PhD, PE
Editor-in-Chief
Bridge Technology Consulting
New York, NY, USA

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