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Preface for “historic bridges: heritage, technology, and future perspectives”

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Historic bridges stand as enduring testaments to human ingenuity, aesthetic vision, and cultural identity. Beyond their utilitarian purpose, these structures embody the collective memory of societies, connecting not only places but generations. As invaluable cultural and engineering heritage, historic bridges reveal the evolution of design, materials, and craftsmanship that have shaped transportation infrastructure throughout history. Yet, these remarkable monuments are increasingly vulnerable to natural deterioration, environmental challenges, and the pressures of modern development. Their preservation is therefore not only an engineering responsibility but also a cultural imperative, one that safeguards the tangible links between past achievements and future innovation.

In recognition of this significance, the 2025 International Conference on Historic Bridge (ICHB 25) was organized in Sept. 20 - 21, 2025 in Quanzhou, Fujian, China by the Committee for the Study and Protection of Historic Bridge, Peking Mao Yi-sheng Science and Technology Education Foundation; the Fujian University of Technology, the Quanzhou Jiaofa Group; the Quanzhou Normal University; and the University of Cagliari, Italy.

Taking the opportunity of the ICHB 25, the *Journal of Highway and Transportation Research and Development* (English Edition) (HTRD), as a co-organizer, proposed a *Special Column on Historic Bridges: Heritage, Technology, and Future Perspectives*. This special column primarily features keynote and invited papers presented by experts at the conference, along with carefully selected contributed papers. Following rigorous peer review and careful revisions by the authors, a total of 6 papers have been accepted.

Of the six papers, two provide an overview of the current state of

conservation and research on historic bridges in China and Nepal, and propose an integrated conservation framework from a multidisciplinary perspective. Two other papers focus on two specific bridge types—historic Melan arch bridges and masonry arch bridges—reviewing their developmental history, structural behavior, experiences, and lessons learned, as well as future conservation prospects worldwide. The remaining two papers conduct in-depth and systematic analyses of the protection of specific bridges and bridge sites, and put forward targeted conservation recommendations.

The papers in this special column reflect the latest advances and achievements in the field of historic bridges conservation and research. They foster interdisciplinary dialogue and showcase cutting-edge research that bridges the gap between tradition and modernity in bridge engineering and heritage conservation. This special issue will lead to theoretical innovation and technological development in the field, and promote the continuous progress of historic bridge conservation and research.

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