

Editorial

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This is my third editorial for *Proceedings of the Institution of Civil Engineers – Transport* and I would like to express my delight at the opportunity to share this transport research from colleagues around the world. This issue is well balanced and reflects current research and industry activities in the field. The research presented here is critical to inform the field and provide further detail and expand the state-of-the-art knowledge for academics, practitioners, designers and operators in supporting transport matters as we respond to continually changing societal needs. This issue contains seven diverse studies that examine different aspects of transport from bus rapid transit services to road markings and driving style, pavements and box-girders, and rail ballast.

In the paper by Akbulut *et al.* (2022) aspects of bus rapid transit systems (BRTSs) with regard to safety and serviceability are discussed. It further investigates the types and occurrences of adverse accidents, incidents and service failures experienced in the BRTS in Istanbul, Turkey as a case study. They question the suitability of the BRTS as the main commuter service along congested arterial routes, and they state that the choice of BRTS is not solely a matter of the capacity per hour offered by the system, but also a matter of reliability, safety, serviceability and manageability. The second paper is also in the area of public transport, but in this case a rail overhead box-girder and floating slab track is analysed for noise and vibration using a 'train-track system coupling model' in the frequency domain by Li *et al.* (2022). The results indicate that the isolator stiffness influences the noise characteristics of the box-girder most, followed by the floating slab thickness. The floating slab length and fastener stiffness appear to have little influence on noise radiation. This is an important finding considering the noise and vibrations issues associated with such mass rail transit systems in urban areas.

In the paper by Crescenzo *et al.* (2022), an alternative to the speculative visibility level method that uses the diameter of an 'equivalent' disc is proposed. The proposed method uses speculative hypotheses to calculate the equivalent area, perimeter and width of road markings. In order to test and compare the methods, a psychophysical experiment was conducted in a laboratory with eight participants and 120 stimuli. The experimental results showed that above 0.1°, all hypotheses gave good results with the equivalent area producing the best result, whereas below 1.0°, the equivalent hypothesis was more accurate. This is an important finding because visibility of road markings is critical in road safety and optimal traffic flow. Another paper, by Bazlamit *et al.* (2022), is also interested in

looking at safety aspects of roads, but in this case the thermal changes in concrete pavement skid resistance. Concrete 'briquettes' were created and textured in the laboratory and their skid resistance was measured using a portable British pendulum tester. Water and liquid hand soaps were used as lubricants to determine the adhesion and hysteresis components of friction. Wear and ageing of concrete 'briquettes' was undertaken by polishing the surface. The skid resistance tests were carried out at different temperatures, and it was demonstrated that there is a correlation between the friction components and temperature. This is very useful when planning and managing concrete paving maintenance. It is recommended that skid-resistance maintenance is seasonally adjusted. Over-simplification of assumptions and homogeneity of driver behaviour is another safety issue inadequately considered in models that predict operating speeds (OSs) when calculating highway geometry. In the paper by Cartes *et al.* (2022), the effect of driving styles on OS in crest vertical curves (CVCs) of two-way highways was assessed based on the behaviour of 16 drivers using the multidimensional driving style inventory. Cartes *et al.* (2022) recommend not assuming homogeneity of drivers' individual characteristics as a modelling hypothesis when separating the study population by driving style groups, because the OS was sensitive to the vertical curvature. This is a very important point to note when designing highways, considering safety and performance.

Next, we have work that investigates the advantage of controlled preheating of an excavated asphalt surface prior to hot-mix asphalt patch repair, referred to as 'dynamic repair' by Byzyka *et al.* (2022). In their experimental work the dynamic repair method is compared with the traditional 'static repair' method. The experimental results showed enhanced shear strength at the bottom and vertical interfaces with the dynamic repair method. Immersion wheel tracking tests also showed higher resistance to water-related damage. Overall, it was clear that the infrared preheating of a pothole excavation prior to repairing increases bonding strength and durability. This is very relevant research work for industry, and it highlights new methods that could improve repair performance and thus reduce maintenance costs for road agencies and local government.

Finally in this month's issue, we had a wonderful book review from Sakdirat Kaewunruen of *Ballast Railroad Design: SMART-UOW Approach* by Indraratna and Ngo (2018). This book was funded by the Australian Rail CRC and it was produced to provide advice and guidance to rail and geotechnical engineers on approaches to mitigate deterioration of ballast

and track foundations. According to Kaewunruen, it is a comprehensive and rational book on railroad ballast. It not only provides theoretical background but also practical case studies and field experience to aid rail practitioners, postgraduate students and researchers in railway engineering. The book also resulted in new software based on the SMART-UOW approach, which was verified by field trials in Australia.

In summary, the papers contained in this issue of *Proceedings of the Institution of Civil Engineers – Transport* are important for researchers and practitioners working in rail and highway design, operations and maintenance, and road safety to ensure better designs and maintenance. Please feel free to email me any comments on this issue.

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