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Asphalt Binder Aging in Perpetual Flexible Highway Pavements

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Reconstruction of highway pavements at the end of their service lives is not only costly, but also creates adverse social and environmental impacts. Therefore, highway agencies around the world tend to favor pavements with long service lives for heavily trafficked roads. “Perpetual pavements” that claim to have more than 50 years of usage lives are being constructed in recent years. The design of the perpetual pavements is currently focused on the control of load-induced tensile strain at the bottom of asphalt concrete (AC) layer and the compressive strain at the top of subgrade. A key assumption made in designing perpetual flexible pavements is that asphalt aging at the deep layers of the pavement is minimal. Our study shows that this assumption is probably erroneous and its implication on perpetual pavement design and construction will be discussed in the seminar.

Dr. Yuhong Wang is an Assistant Professor in the Department of Civil and Environmental Engineering at the Hong Kong Polytechnic University, where he has been employed since 2010. He earned his Bachelor’s and Master’s Degrees at Tongji University in China and a Ph.D. Degree at University of Kentucky. His main research areas include sustainable road transportation systems, pavement engineering, and infrastructural asset management. Since joining the Hong Kong Polytechnic University, he has secured over 0.5 million US dollars of research funding to support his research activities. He assisted the development of Pavement Preservation Guidance Notes and Long-life Pavement Design Guidance Notes for the Hong Kong Highways Department. He is currently actively pursuing research that assists the development of more sustainable road infrastructures in Mainland China.