

International Conference on Sustainable Concrete Pavements: Practices, Challenges, and Directions

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The majority of concrete pavements in the US and other countries are now routinely being designed to provide a service life of at least 40 years without requiring significant repair/rehabilitation treatments. While the new pavements are being designed and constructed using sound technical know-how, it is not clear that adequate attention is being paid to ensure that these new pavements are being implemented in a sustainable manner. A reason for this is that the Best Practices guidance on sustainable practices is not readily available to pavement design engineers, specifiers, and constructors. Sustainable construction is of recent origin. However, its importance in the future evolution of our civilization cannot be denied. As resources diminish globally and the environment comes under increasing stress, the adoption of sustainable design and construction practices is being considered as an important strategy to meet the needs of the present without compromising the ability of future generations to meet their needs.

Currently, increasing attention is being paid to balance the economical needs for infrastructure development and the engineering strategies to be employed with the needs for sustainable environmental stewardship. With respect to pavement construction, many new terms and phrases have been introduced in the everyday lexicon of the concrete pavement and concrete materials technologists - green highways, environmentally responsible solutions, LEED (Leadership in Energy and Environmental Design), life-cycle energy and emissions analysis/assessment, social/environmental benefits, carbon footprint, and ecological footprint. For concrete pavements, sustainability related considerations can be introduced at the design/engineering phase, in material selection, during construction, while in service, and ultimately at the end of the pavement's life. In fact, the sustainability related considerations must be integrated through the whole life-cycle of a pavement. Although there is a strong desire, and in some cases mandates, to incorporate sustainability considerations in new concrete pavement design and construction and for management of existing concrete pavements, there are not widely accepted and/or clearly understood procedures and guidelines for doing so.

This Special Edition of the journal includes seven papers presented at the International Conference on Sustainable Concrete Pavements: Practices, Challenges, and Directions, held in Sacramento, California, USA, September 15 to 17, 2010. The conference was organized as a part of technology transfer activities for the US Advanced Concrete Pavement Technology (ACPT) Program that operates within the US Federal Highway Administration. The conference objective was to provide an international forum to discuss the sustainable attributes of concrete pavements by presenting existing technologies, emerging research, approaches to measuring energy consumption and environmental impact, user considerations, and international practices and experience. It is hoped that the discussion at the conference and the selected papers presented in the journal will help us set directions as to how we implement sustainable concrete pavement technologies. It is also hoped that transportation agencies (as facility owners) and industry worldwide will pay attention to the importance of balancing the economical considerations and engineering strategies of infrastructure development with the need for environmental stewardship.