Sustainable Roadways
Design, Construction and Maintenance

Overview

In recent times, India has invested heavily on the development of both urban and rural roads. Road construction is a critical driver of infrastructure development, which supports industries, and a key to lifeblood of the economy. Pavement construction requires a significant amount of raw materials, mostly from natural resources, energy and water. In addition, emissions are unavoidable in pavement construction activities. Challenges are being faced by the industry in the view of maintaining economic and technological advances in spite of population growth and the explosive use of non-renewable natural resources. For the transportation industry, the balance to be attained will be between human needs for safety and mobility with the ability for the natural and economic environment to provide the resources necessary to achieve those goals. Therefore, adopting sustainable pavement engineering practices will be an important step towards the implementation of the principles of sustainable development.

The key areas of pavements with maximum impact on sustainability include reduced energy consumption, reduced GHG emission and noise, improved safety, mobility and aesthetics, and reduced construction, preservation, rehabilitation and vehicle operating costs. Life cycle analysis of materials and processes should be made to select alternatives that can improve sustainability of pavements. In the recent times, a number of assessment methods have been developed, primarily in the form of life cycle analysis (LCA) tools. Such tools contain, in addition to the cost benefit analysis (CBA), analysis of the impact on the environment, in the form of indicators. There is a critical need for dissemination of these information for capacity building in the area of sustainable road construction.

Specifically, the following topics need to be addressed: what is sustainable road construction? How can sustainability be measured? What are the materials, design, construction, user phase and maintenance impacts on sustainability? What are the innovative materials and techniques for achieving sustainability? How is life cycle assessment conducted? How can pavement projects be rated and certified for sustainability?

Sustainability related policies and provisions in the form of code guidelines in India are still in infant stage and the progress in many developed countries are no way comparable. This course is proposed considering the experience and expertise of the international professor, need for such study on sustainability in India and available reasonable resources at SJCE Mysuru.

Objectives

The primary objectives of the course are:

- To expose the participants to the concepts of sustainable development
- To expose participants to the impacts of road construction
- To build an understanding of the basic principles that tie design, construction, maintenance and user phase to sustainability
- To develop an understanding of the use of principles and tools for assessing sustainability and rating of projects
- To show and develop interest, and motivate self-learning in the various technologies of using innovative construction materials, equipment and steps for ensuring sustainable road construction
- To develop capacity among the participants to utilize state of the art techniques, with full understanding thereof
- To enhance the ability of the participants to identify research, development and implementation needs for specific sustainable technologies in road construction

Date	**July 23rd to August 3rd, 2018**
Who can attend?	➢ Students at all levels (BTech/MSc/MTech/PhD) or Faculty from academic institutions and technical institutions ➢ Executives, engineers and researchers from service and government organizations including R&D laboratories
Registration Fees	The participation fees for taking the course is: • **Students/Industry/Academic Institution/ Research Organization : Rs. 2,000.00** • **Participants from abroad : US $ 200.00** • **Participants from host institution : Rs. 1,000.00** The above fee includes all instructional materials and laboratory usage charges.
General Information	➢ **Number of participants for the course will be limited to fifty.** ➢ Selected candidates will be intimated through e-mail. ➢ Participants are encouraged to bring their own laptop. ➢ Participants are expected to make their own arrangements for accommodation. ➢ In case of any queries, please feel free to contact the Course coordinator.

The Faculty

Dr. RAJIB B. MALLICK is a Ralph White Family Distinguished Professor in Worcester Polytechnic Institute (WPI), Massachusetts, USA. His research experience and interests are on sustainable development, resilient infrastructure, specifically related to the pavement (highway/ rural roads/airport) industry, System Dynamics, Impact of extreme events on pavements. Dr. Rajib was involved in 38 sponsored projects as a principal investigator receiving over 3 million US dollars in funding from agencies like DOTs, NSF, FHWA, FAA. With over 28 years of experience in highway and airport pavement engineering teaching, research and consultancies, he has supervised 5 Doctoral and 12 Masters. He is the author of text book "Pavement Engineering: Principles and Practice" published by Taylor and Francis/CRC Press LLC and contributed book chapters in 6 books published by reputed publishers. He has made over 80 publications in refereed international journals, 60 publications in conferences of repute and 33 Research Reports. He has made numerous presentations at the Transportation Research Board (TRB) meetings, US and Foreign Universities and Laboratories, departments of transportation, Transportation Research Board and Industry Groups on design, construction, maintenance, recycling and rehabilitation, and lowering of temperature of asphalt pavements, and harvesting heat energy from pavements. He was recognized with several awards for his accomplishments as a researcher, consultant, mentor, advisor and teacher which includes International Road Federation (IRF) Global Road Achievement Awards (2016), Sigma Xi Award for Outstanding Researcher (2016), US State Department Fulbright Fellowship (2014), University chaired professorship (2012), Provost's award for four capstone (Major Qualifying Project) projects, Teaching Technology Fellowship (2002-2004), President's Teaching Development Award, Worcester Polytechnic Institute (1998). Prof. Rajib is professionally very active and a member of several professional organizations, including TRB, ASCE, ASTM, ISAP, AAPT, ICNet and IRC. He served as the member of several technical committees.

Dr. P. Nanjundaswamy is a Professor of Civil Engineering in Sri Jayachamarajendra College of Engineering (SJCE), Mysuru, India. His research interests are in the areas of Highway Engineering and Road Safety Engineering. He has Conducted sponsored research projects from AICTE, India. He has supervised 16 Masters and over 30 undergraduate thesis. Presently supervising 2 doctoral and 3 M.Sc. (Engg) by research candidates. He has published over 25 research articles in various reputed conferences and peer reviewed journals. He is a Certified Road Safety Auditor and Engineer from MoRTH. He is nominated as a member of the M-TRAC committee to assist Mysuru city traffic police department in implementing the project for control and management of city traffic. He is meber of several professional organisations.

Course Coordinator

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