

## Dr. Rakesh Kumar

PhD, Indian Institute of Technology, Delhi, 2004.

Associate Professor  
Transportation Engineering and Planning Section

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### Areas of interest

- 🚧 Highway Pavement Engineering
- 🚧 Highway Economics Analysis
- 🚧 Traffic Forecast analysis
- 🚧 Road Safety, Pedestrian including Elderly and NMV
- 🚧 Road Construction Materials like Flyash, Slag's and others Non-Conventional Materials
- 🚧 Innovation of Material Testing Equipments for Road Construction

Dr. Rakesh Kumar, a graduate in Civil Engineering, post-graduate & Doctorate in Sustainable Engineering, have around 15 years of professional experience in the field of Transportation & Highway Engineering. He is interested in factors that lead to a more efficient, equitable and Sustainable Urban and Regional Transportation System, with a focus on optimal spatial allocation of public resources, regulation of land uses, and regional variations in NMV and pedestrian planning.

Have worked for various projects encompassing Highway Planning and Design, Engineering and Traffic Surveys & Data Analysis, Traffic Forecast, Development of Traffic Management Plan, Accident study and Analysis, Road Safety Audit and Review, Parking (Design and Analysis) Facilities, Pedestrian Facilities (Analysis & Design), Toll Rate Analysis, Toll Plaza Analysis and Design, Highway & Urban Road Capacity Analysis, Intersection/ Roundabout / Signal Design, Assisting in Financial / BOT analysis, Flexible and Rigid Pavement Design, Preparation of Detailed Project Report (DPR), Interaction with clients, Engineers, Professionals, Presentation at various Stages of Highway Projects.

He works on different goal oriented research projects funded by Department of science of Technology (DST), Ministry of Science and Technology, GOI.

### Current Research Projects

- “Environmental and Socio-economic assessment of Bio-monitoring of Water filter in mitigating water borne diseases” Duration: 2007-2010. Funding agency: SSD, DST, GOI. Status: **Completed.**
- “Mapping and Monitoring of Water Resource Data and Modeling water System in Selected Watershed”, Duration: 2010-2013. Funding agency: NRDMS, DST, GOI. Co-PI, Status: **Ongoing.**
- “Design and Development of Dynamically Controlled Walker System” Duration: 2012-2015. Funding agency: SEED, DST, GOI. Co-PI, Status: **Ongoing.**
- “Utilization of Copper slag and Flyash for Road Construction and Building Materials” Duration: 2012-2015. Funding agency: FAU, DST, GOI. Status: **Ongoing.**
- “Development of Guideline for Preventing Elderly Users Injuries at Intersection” Duration: 2012-2015. Funding agency: SEED, DST, GOI. Status: **Ongoing.**

### Current PhD Thesis Mentoring

- Mr. Jagdish Prasad Mandawra (Reg. No D10CE104) Theme: Modular Concrete Blocks for Flexible Pavement in Cold Climate
- Mr. Sabyasachi Roy (Reg. No D10CE102) Theme: Spatio-temporal Accident Prediction Model for Indian National Highway

- Mr. Anurag Tiwari (Reg. No D10CE103) Theme: Decision Support System for National Highway Construction Management
- Ms. Trivedi Jyoti Snehal (D11CE001) Theme: Online Quality Control of Flyash for Road Construction and Building Industries

### **Current M. Tech Thesis Themes (2011-2012)**

- Development of Traffic Growth Rate Methodology for Rural Roads
- Reliability analysis of Flexible Pavement using KENPAVE and Mechanistic - Empirical Software's
- Design and Development of Methodology for Driving Cycles for Indian Urban Roads
- Sub-grade Soil Stabilization using Rediset and Consolid System

### **Past M. Tech Thesis Themes (2009-2010)**

- Traffic Congestion Analysis on Hybrid Intersection
- Economic Appraisal of Flexible Pavement
- Traffic Coordination in Network Road
- BRT System Analysis and Design
- Pedestrian Traffic
- Roundabouts
- Effect of Shoulder on Speed for National Highway

### **Selected Publications (International Journals/National/Conferences)**

- √ Impacts of Bus Rapid Transit Lanes on Traffic and Commuter Mobility, ASCE Urban Transportation Planning, Volume 133, number 2, 2007. Vaishali M. Patankar, Rakesh Kumar and Geetam Tiwari.
- √ Heating and cooling potential of earth-to-air heat exchanger system using artificial neural network, International Journal of Renewable Energy, Volume 31 Page no. 1505-1511, 2005 Rakesh Kumar and S.C. Kaushik
- √ Dynamic Earth-Contact Building: A sustainable Low Energy System, International Journal of Building and environment, Volume 42 page no. 2450-2460, 2006. Rakesh Kumar, Shweta Sachdeva and S.C.Kaushik. Rakesh Kumar
- √ "Design Optimization Tool of Earth-To-Air Heat Exchanger using Genetic Algorithm", International Journal of Renewable Energy, Vol 33/10 pp 2282-2288. 2008.
- √ "Impact of Model shift from private users to proposed BRTS on Surat ecological footprint", Rakesh Kumar 10-12, October, 2010, CISTUP, IISc, Bangalore
- √ "Ridership Impact on Proposed Jaipur Metro Route of Intra-aligned urban Network modes" Rakesh Kumar and Mansa Swami, 21st January, 2011, Road infrastructure and Traffic condition in Jaipur City National Conference, KITE, Jaipur.
- √ "Ridership Impact on BRT using feeder Services" Rakesh Kumar and Mansa Swami. 3rd December, 2011, UMI-IUT Research Symposium, Ministry of Urban Development, New Delhi.
- √ "Community response to quality of feeder services" 23-24 December, 2011 International conference CONIAPS, SVNIT, Surat.

### **Expert Lectures**

- "A methodology to evaluate renewable energy projects", National Seminar on Renewable Energy Technology: Issues and Prospects (RETIP-2010), September 24-25, 2010, NERIST, Itanagar, India
- "Urban Storm Drainage Design: Highway Prospective", National Seminar on Urban Storm Drainage Design Analysis and Management, SVNIT, 9th January, 2011, Surat, India
- "Use of Polymer and Rubber Modified Bitumen in flexible pavement", Gujarat Engineering Research Institute (GERI), Vadodara, 5 March, 2011, Gujarat, India
- "BRT System for Indian Conditions", NIT Raipur, 24th March, 2011, Chhattisgarh, India
- "Highway Infrastructures: Concepts to Implementation", IPS Academy, SRUJAN -2011, 14-15 October, 2011 Indore, M.P, India

**Patent:** Two Design Patent in Process