

Dr. Pradeep Kumar, Senior Principal Scientist

Post-graduation in Science (M.Sc.) and Instrumentation Engineering (M. Phil.) and doctorate (Ph.D.) in Geomatics Engineering on the topic “**Pavement Surface Condition Evaluation and Classification Using Geospatial Tools**” from Civil Engineering Department, Indian Institute of Technology Roorkee, Roorkee.



Joined CSIR as Scientist 'B' in 1995 at National Physical Laboratory and from 1997 onwards holding various grades of Scientist (B, C, EI, EII and F) at CSIR-Central Road Research Institute, New Delhi.

More than 25 years' experience in R&D activities. The various projects undertaken are related to Non Destructive Testing Techniques for Pavement Evaluation, Road Maintenance Management System and Airfield Pavement Management System.

Key person for successfully implementation of modern pavement evaluation technologies in India, mainly the Network Survey Vehicle System first time in the country for road inventory and pavement condition monitoring of road network.

Area of Specialization: Pavement Evaluation

Area of Expertise/Work:

- Non Destructive Test Techniques for Pavement Evaluation
- Pavement Maintenance Management Systems (Roads and Runways)
- Geospatial Techniques for Pavement Evaluation

Membership of Professional Bodies:

- Indian Roads Congress – Life Member (e-LM100731)
- Instrument Society of India, Indian Institute of Science, Bangalore – Life Member (LM-925, 10.06.2000)
- Indian Society of Remote Sensing, Dehradun-Life Member (L-4100, 01.01.2013)
- Geotechnical Society of India- Life Member (LM-1169, 23.03.2018)
- Alumni Association-University of Roorkee, Roorkee (LM-10258)
- American Society of Civil Engineers (ASCE memberID#10011198)

National Committee:

- Member of the technical committee constituted for inclusion of new weights and measures (weighing in motion road weighbridges) in the Legal Metrology (General) Rules, 2011, Ministry of Consumer Affairs, Food & Public Distribution, Government of India.
- Co-opted Member in Road Maintenance and Asset Management Committee for 2015-2017, Indian Roads Congress, India
- Invitee in Road Asset Management System (RAMS) Facilitation Committee, Ministry of Road Transport and Highways, Government of India.
- Invitee for the development of Code of Practice for Maintenance of Bituminous Road Surfaces, IRC 82-2015 document.

- Member of H-6 Committee: Road Maintenance and Asset Management Committee for 2018-2020 (3 years), Indian Roads Congress, New Delhi
- CSIR-CRRI Representation as Principal Member for Resource Management Sectional Committee, MSD 12, Management and Systems Division Council (MSDC), Bureau of Indian Standards, India

Major Projects:

(M-Member, TL-Team Leader, PL-Project Leader)

Completed Projects

1. Development of a Model Highway. (M)
2. Development of Road Survey System for the Measurement of Road Geometrics and Surface Characteristics. (TL)
3. Evaluation of Delhi Roads for Maintenance & Rehabilitation Strategies. (M)
4. Evaluation of Pavement and Database Development for Selected Road Network of Mizoram State. (TL)
5. Assessment of Pavement Surface Condition of Golden Quadrilateral Road Network under NHDP. (TL)
6. Assessment of Riding Quality of Core Road Network in the State of Uttar Pradesh. (TL)
7. Determination of Pavement Classification Number of the Runways at Indira Gandhi International Airport, New Delhi using Falling Weight Deflectometer. (M)
8. Determination of Pavement Classification Number (PCN) and Suitability of Existing Runway for use at Surat Airport. (M)
9. Evaluation of Serviceability of Pavement Surface of Eastern and Western Express Highways in Mumbai Region from traffic safety point of view by assessing / measuring Roughness Index and Skid Resistance. (PL)
10. Evaluation of ARRB Roughometer-II under Indian Conditions. (PL)
11. Evaluation of Intelligent Transport Systems (ITS) for Indian Conditions. (M)
12. Evaluation of Electronic Toll Collection System using Radio Frequency Identification based on Dedicated Short Range Communication Technology. (M)
13. Development of GIS Based National Highways Information System (TL-SSP4444-2006-2011)
14. Development of National Document /Guidelines on Use of Weigh-In-Motion System in India for Axle Load Monitoring. (PL)
15. Feasibility Study to Examine the Possibility for Installation of Weigh-In-Motion (WIM) System at Various Entry Points of Delhi (M)
16. Functional and Structural Evaluations of Delhi-Noida-Delhi Flyway and MayurVihar Link Road Towards Determining the Maintenance and Strengthening Requirements (PL)
17. Quality Audit of Lucknow-Muzzaffarpur National Highway Project (LMNHP) Works
18. Consultancy Services for Conducting Road Safety Audit for PPP Projects on DBFO Basis. (M)
19. Development of Management System for Maintenance Planning and Budgeting of High Speed Road Corridors (TL-SIP30-2007-2013)
20. Road Inventorisation and Pavement Condition Survey on the Selected Road Stretches on National Highways using Vehicle Mounted Digital Video System Integrated with Global Positioning System (PL-CNP1928-2014-15)
21. Assessment of Orissa Road Network Using Falling Weight Deflectometer (FWD) and Automated Road Survey System (ARSS) (PL-CNP1929-2014-15)
22. Development of Database Management System for Delhi PWD Roads (Inner Ring Road and Outer Ring Road) (PL-CNP1857-2013-2014)

23. Evaluation of Economic Loss Due to Idling of Vehicles at Signalized Intersection and Mitigation Measures (M-ESC0204-2012-2017)
 - Development of Models between Fuel Loss and Emission
24. Development and Application of Technologies for Sustainable Transportation (M-ESC0106-2012-2017)
 - Design of Advanced Public Transport Information System using ITS Technologies
 - Development & Design of Advance Driving Simulator
25. Development of Indian Highway Capacity Manual (M-ESC0304-2012-2017)
26. Bicycle based Road Asset Management system (PL-OLP0583-2017-2018)
27. Impact of Road Condition on Fuel Consumption of Vehicle (M-GAP4564-2017-2018)
28. Self-healing Technology for Bituminous Pavements through Induction Energy (M-OLP0585-2016-2018)
29. Water Harvesting Using Porous Flexible Pavements (M-OLP0592-2016-2019)
30. Assessment of Odisha Road Network (Works Department) Using Modern Data Collection Techniques Such as Automated Road Survey System and Falling Weight Deflectometer (CoPL-CNP2323-2017-2020)
31. Assessment of Rural Road Network of Odisha Using Modern Data Collection Techniques Such as Automated Road Survey System and Falling Weight Deflectometer (CoPL-CNP2512-2019-2020)

Ongoing Projects

32. Development of Airfield Pavement Management System (PL-CNP2507-2019-2021)
33. Development of Road Maintenance Management System for Kerala PWD Roads (M-SSP4631-2019-2020)
34. Study on Decay in Modulus of Stabilized Aggregate in Flexible Pavement (M-SSP4618-2019-2022)
35. Development of Pavement Structural Health Index for Network Level Evaluation of Flexible Pavement (M-OLP-0634-2021-2022)

Research Papers

Published 45 research papers in National and International Journals, Conferences / Seminars. (<https://scholar.google.com/citations?user=XaatYkkAAAAJ&hl=en>)

Contribution for Books/Code of Practice/Guidelines

1. Published “Manual on Pavement Evaluation Techniques”, Kindle Direct Publishing, 2021.
2. Published Book on “Condition Evaluation and Classification Using Geospatial Tools”, LAMBERT Academic Publishing, ISBN (978-620-2-92358-3), 2020.
3. “Guidelines for Road Asset Management System”, IRC 130:2020, 2020.
4. “Guidelines on Measuring Road Roughness and Norms”, IRC SP16: 2019 (third revision), 2019.
5. “Code of Practice for Maintenance of Bituminous Road Surfaces”, IRC 82: 2015 (first revision), 2015.
6. “Model Contracts for Maintenance of Roads (Based on single Percentage Rate)”, IRC SP124:2019

Other Important Positions/Contributions

- Head, Pavement Evaluation Division, CSIR-CRRI from 01.05.2018 to 30.04.2020.
- Development of Indigenous Mobile Cold Mixer Cum Paver
- Course coordinator for Training Program on “Pavement Evaluation Techniques and Their Applications for Maintenance and Rehabilitation” at CSIR-CRRI, New Delhi
- Course coordinator for Training Program on “Capsule on Airfield Engineering” for the Officers of BRO, New Delhi at CSIR-CRRI, New Delhi
- Associated with Academy of Scientific and Industrial Research as Guest Faculty for PGRPE Course on “Health Monitoring of Road Infrastructure” for M.Tech. and Ph.D. Students
- Guided more than 41 B.Tech./M.Tech. students of various universities for their dissertation work and guiding one Ph.D. student.

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Google Scholar: <https://scholar.google.com/citations?user=XaatYkkAAAAJ&hl=en>