

CURRICULUM VITAE

1. **Name** : Abhishek Mittal
2. **Designation and complete address including email id.**

Senior Scientist
Room No. 155-A
Flexible Pavement Division
Central Road Research Institute
Delhi Mathura Road, P. O. CRRI, New Delhi – 110025
Email : mushimittal@gmail.com



3. **Areas of Interest**

Bituminous materials, pavement design and modelling

4. **Educational Qualification**

- Master Degree (Honours) in Transportation Engineering from Malaviya National Institute of Technology (formerly known as M.R.E.C), Jaipur in 2003.
- Bachelor Degree in Civil Engineering from M.B.M. Engineering College, Jodhpur in 2001.

5. **Professional Experience**

Position Held	Employer	Period	Nature of Duties
Senior Scientist	CSIR-CRRI	Nov. 2013 – Till Date	Research and Consultancy
Scientist	CSIR-CRRI	Nov. 2009 – Nov. 2013	Research and Consultancy
Scientist-B	CSIR-CRRI	Nov. 2006 – Nov. 2009	Research and Consultancy
Senior Research Fellow (SRF)	IIT, Roorkee	Feb 2004 – Sep. 2006	Worked on DST sponsored research project and consultancy projects
Associate Transportation Engineer	M/s Wilbur Smith Associates Pvt. Ltd., Jaipur	Oct 2003 to Jan 2004	Traffic Studies for Toll Plaza
Design Engineer	M/s Theme Engineering Services Pvt. Ltd., Jaipur	June 2003 to Oct 2003	DPR preparation
Engineer Trainee	M/s Punj Lloyd Ltd., New Delhi	March 2003 to June 2003	Quality control and laboratory testing

6. **Membership of Professional Bodies**

- Life Member, Indian Society for Construction Materials and Structures (ISCMS)
- Life Member, Indian Geotechnical Society (IGS)
- Life Member, Indian Geotechnical Society, Delhi Chapter

- Associate Member, The Institution of Engineers (India)
- Member, Indian Roads Congress (IRC)
- Life Member, Indian Science Congress (ISC)
- Life Member, Indian Society for Technical Education (ISTE)
- Life Member, Institute of Urban Transport (IUT)
- Life Member, Transportation Research Group of India (TRG)

7. Fellowships Awarded

Senior Research Fellowship (SRF) of Department of Science and Technology (DST), New Delhi for the period from 16th February, 2004 to 30th September, 2006 at Indian Institute of technology, Roorkee, Uttarakhand.

8. Patents

- (a) Hard grade bitumen for the formation of asphalt surfacing for roads and airfields pavements and the process thereof (patent filed on 09th September, 2016, Patent application number : 2837DEL2015)
- (b) High performance highly modified hybrid bitumen and the process thereof (patent filed on 11th October, 2017, Patent application number : 0188NF2017)

9. Technology Transferred

- ◆ Technology on “Hard grade bitumen for the formation of bituminous surfacing for roads and airfields pavements and the process thereof” has been transferred to the following three Industrial partners :
 - (a) M/s Tikki Tar Industries India Limited, Vadodara, Gujarat
 - (b) M/s Juno Bitumix Pvt. Ltd., Noida, UP
 - (c) M/s A. R. Thermosets Pvt. Ltd., Kanpur, UP

The Memorandum of Understanding (MoU) signing ceremony with the industrial partners was held during the India International Trade Fair (IITF) in Hall No. 12 on 16th November, 2016.

- ◆ The technology has been transferred to M/s Jalnidi Bitumen Specialities Pvt. Ltd., Kolkata, West Bengal. The Memorandum of Understanding (MoU) signing ceremony was held on 08th March, 2017 at CSIR-CRRI, New Delhi.
- ◆ The technology has been transferred to M/s Bitumen Corporation (India) Pvt. Ltd., Mumbai. The Memorandum of Understanding (MoU) signing ceremony was held on 28th February, 2018 at CSIR-CRRI, New Delhi.

10. Research Publications

(A) Journal Publications

- ◆ Abhishek Mittal, Khusboo Arora, Gajendra Kumar and P.K. Jain, “*Comparative Studies on Performance of Bituminous Mixes Containing Laboratory Developed Hard Grade Bitumen*”, ASTM Journal on Advances in Civil Engineering Materials, 2018.
- ◆ S. K. Ghosh, T. Sanyal, T. and Abhishek Mittal, “*Laboratory Simulation Study of Bituminized Jute Paving Fabric for its Commercialization and Potential Applications in Road Constructions*”, Indian Highways, Volume 44, No. 9, Indian Roads Congress, New Delhi, pp. 27-34, September 2016.
- ◆ Abhishek Mittal and Sunil Bose, “*Damaging Effects of Super Single Tyres : An International Experience*”. Indian Highways (Special Number), Volume 41, No. 8, Indian Roads Congress, New Delhi, August, 2013, pp. 17-28.
- ◆ Abhishek Mittal, P. K. Jain and Amit Kumar, “*Laboratory Performance Evaluation of a Ready-to-use Patch Mix*”, Indian Highways (Special Number), Volume 41, No. 8, Indian Roads Congress, New Delhi, August, 2013, pp. 29-37.
- ◆ Abhishek Mittal and Sunil Bose, “*The Warm Alternative*”, Construction Opportunities, Volume 1, No. 3, April 2014, pp. 38-41.
- ◆ P. K. Jain and Abhishek Mital, “*Rugged Pavers*”, Construction World, Volume 15, No. 12, September 2013, pp 130-132.
- ◆ P. K. Jain and Abhishek Mital, “*Recent Developments and Technologies for Construction and Maintenance of Bituminous Pavements*”, Cover Story in Traffic Infra Tech, Volume 3, Issue 6, June-July, 2013, pp 20-29.
- ◆ P. K. Jain and Abhishek Mital, “*Maintenance and Rehabilitation of Metropolitan City Roads : Issues, Strategies and Technologies*”, Civil Engineering and Construction Review, Volume 26, No. 05, ISSN 0975-9034, May 2013, pp 46-53.
- ◆ Abhishek Mittal, P. K. Jain, J. B. Sengupta and Dinesh Ganvir, “*New and Emerging Road Technologies for Future*”, New Building Materials and Construction World, Volume 18, Issue 3, ISSN 0973-0591, September 2012, pp. 132-139.

(B) Other Publications

- ◆ Abhishek Mittal and A. K. Swamy, “*The Effect of Model Uncertainty on the Reliability of Asphalt Pavements*”, 4th Conference of Transportation Research Group of India (4th CTRG), IIT Bombay, December 17-20, 2017.
- ◆ Abhishek Mittal, Dinesh Ganvir and M. N. Nagabhushana, “*Overlay Thickness Estimation using Falling Weight Deflectometer and Benkelman Beam Method – A Case Study*”,

Proceedings, A National Conference on Roads and Transport (NCORT-2017), IIT Roorkee, October 14 – 15, 2017.

- ◆ Abhishek Mittal and A. K. Swamy, “*Design of Asphalt Pavements Considering Variability of Design Parameters*”, Proceedings, 2017 International Conference on Maintenance and Rehabilitation of Constructed Infrastructure Facilities (2017 MAIREINFRA), South Korea, July 19-21, 2017.
- ◆ Khusboo Arora, Gajendra Kumar, Abhishek Mittal and P. K. Jain, “*Studies on Performance of Bituminous Mixes Containing Hard Grade Bitumen and Implications on Pavement Design*”, Proceedings, 16th Annual International Conference on Asphalt, Pavement Engineering and Infrastructure, organized by Liverpool Centre for Materials Technology, Liverpool John Moores University, UK, February 22-23, 2017.
- ◆ Nagabhushana, M.N., Khan, S., Mittal, Abhishek and Tiwari, D. “*Potential Benefits of APTF for Evaluation of Flexible Pavement for its Permanent Deformation Behaviour*”, J. P. Aguiar-Moya et. al. (eds.), *The Roles of Accelerated Pavement Testing in Pavement Sustainability*, Part III, Springer International Publishing, Switzerland, pp. 227-239, September 2016.
- ◆ P. K. Jain and Abhishek Mital, “*New Materials and Technologies for Bituminous Pavements*”, National Conference on ROADTECH : Sustainable Roads and Highways, Role of New Technologies and Value Engineering in Construction, Maintenance and Safety, organized by The Associated Chambers of Commerce and Industry of India (ASSOCHAM), October 09, 2015.
- ◆ Abhishek Mittal and A. K. Swamy, “*Uncertainty Issues with Usage of RAP*”, Souvenir and Pre-Seminar Proceedings, National Seminar on Recycling of Bituminous Pavements (NASERBIP), organized by Central Road Research Institute, New Delhi, January 15-16, 2014, pp 61-64.
- ◆ Anil Pradyumna, Abhishek Mittal and P. K. Jain, “*Characterization of Reclaimed Asphalt Pavement (RAP) for use in bituminous road construction*”, 2nd Conference of Transportation Research Group of India (2nd CTRG), *Procedia Social and Behavioral Sciences*, Vol. 104, December 2013, pp. 1149-1157.
- ◆ Abhishek Mittal and P. K. Jain, “*Recent Advances in Road Technologies for Sustainable Development*”, 27th Indian Engineering Congress, organized by Institution of Engineers (India) at Vigyan Bhawan, New Delhi, December 13-16, 2012. The theme of the congress was Engineering for Sustainable Development and Inclusive Growth : Vision 2025.
- ◆ Anil Pradyumna, Abhishek Mittal and P. K. Jain, “*Recycling of Pavements – An Approach Suitable for Sustainable Development*”, Proceedings of Twenty-Eighth National Convention of Civil Engineers and National Seminar on Role of Infrastructure for Sustainable

Development, ISBN 9789382062615, organized by The Institution of Engineers (India), Roorkee Local Centre, Roorkee, Uttarakhand, October 12 -14, 2012, pp 753-759.

- ◆ P. K. Jain and Abhishek Mittal, “*Potholes Repair – Fast and Environment Friendly Technologies*”, Souvenir, Seminar on Recent Trends in Highway Development, organized by Indian Roads Congress, New Delhi, October 10 – 11, 2012, pp 81-88.
- ◆ Abhishek Mittal, P. K. Jain, J. B. Sengupta and Dinesh Ganvir, “*New and Emerging Road Technologies for Future*”, Souvenir, CSIR-CRRI Diamond Jubilee, July 16, 2012, pp 94-97.
- ◆ Abhishek Mittal and Panchanan Hembram, “*Accelerated Pavement Testing Facility in India – Features and Capabilities*”, Souvenir of CSIR-CRRI Diamond Jubilee, July 16, 2012, pp 58-63.
- ◆ Abhishek Mittal, “*Accelerated Pavement Testing Facility in India – An Overview*”, 26th Indian Engineering Congress, organized by Institution of Engineers (India) at Bangalore, December 15-18, 2011.
- ◆ Abhishek Mittal, “*Accelerated Pavement Testing – An Advanced Tool for Assessing Pavement Performance*”, 2nd International Conference on Current Trends in Technology (NUiCONE 2011), organized by Institute of Technology, Nirma University, Ahmedabad, December 08-10, 2011.
- ◆ Abhishek Mittal, Sunil Bose, Gajendra Kumar and Girish Sharma, “*Economic Analysis of a Soyabean Based Asphalt Polymer for Preventive Maintenance of Roads*”, International Seminar on Reducing Carbon Footprints in Road Construction, jointly organized by Indian Roads Congress and World Road Association (PIARC) at India Habitat Centre, New Delhi, February 17 – 19, 2011
- ◆ Abhishek Mittal and Sunil Bose, “*Quality Control During Construction of Roads*”, National Workshop on Road Infrastructure and Traffic Planning in Jaipur City, Organized by Kautilya Institute of Technology, Jaipur, January 29, 2011.
- ◆ Abhishek Mittal, Sunil Bose and M. N. Nagabhushaha, “*Recycling of Pavements – An Approach Suitable for Sustainable Development*”, (in Hindi), Nirman Surbhi, Rashtriya Sangoshti – 2010, Nirman Samagriya – Vision 2030, Central Road Research Institute, New Delhi, May 12 -13, 2010.
- ◆ Abhishek Mittal, M. N. Nagabhushana and Sunil Bose, “*Sustainable Roads for Future with New and Innovative Technologies*”, (in Hindi), Nirman Surbhi, Rashtriya Sangoshti – 2010, Nirman Samagriya – Vision 2030, Central Road Research Institute, New Delhi, May 12 -13, 2010.
- ◆ Abhishek Mittal and P. K. Jain, “*Use of Fly Ash and Waste Plastic in Bituminous Mixes – Laboratory Study*”, (in Hindi), Nirman Surbhi, Rashtriya Sangoshti – 2010, Nirman Samagriya – Vision 2030, Central Road Research Institute, New Delhi, May 12 -13, 2010.

- ◆ Sunil Bose, M. N. Nagabhushana, Abhishek Mittal and Ambika Behl, “*New and Innovative Technologies for Bituminous Construction Specifications in India*”, National Get-together on Road Research and its Utilization (NGT-2010), Central Road Research Institute, New Delhi, March 5 - 6, 2010
- ◆ Abhishek Mittal, M. Parida & S. S. Jain, “*Conceptual Approach for Intelligent Transport System Architecture*”, National Conference on Advances in Road Transportation (ART-2005), Department of Civil Engineering, National Institute of Technology, Rourkela, Orissa, February 12 - 13, 2005.
- ◆ Abhishek Mittal, M. Parida & S. S. Jain, “*Research and Development Needs for Design of Low Volume Concrete Roads*”, Technical Papers of Seminar on Design, Construction and Maintenance of Cement Concrete Pavements, Indian Roads Congress, New Delhi, October 8 - 10, 2004.
- ◆ S. S. Jain, M. Parida, Abhishek Mittal & D. T. Thube, “*Hill Roads Maintenance Problems & Solutions*”, Indian Roads Congress Souvenir, 172nd Mid-Term Council Meeting, Nainital, June 12 - 13, 2004.

11. Major Project Details (as Project Leader)

- (i) Investigation for design of flexible pavement of internal Ring Road, Jhajjar, Haryana
- (ii) Laboratory and Field evaluation of Replay (A Soyabean based road polymer)
- (iii) Evaluation and Periodic Monitoring during Hot Recycling and Analysis of Mix Design
- (iv) Laboratory Evaluation of PR Plast S and PR Plast Module in Bituminous Mixes
- (v) Laboratory Evaluation of waste plastic in bituminous mixes
- (vi) Feasibility study on use of Soil Tech MK III f or use in in-situ stabilization of soil
- (vii) Advisory consultancy for the distress developed on newly constructed flexible pavement (about 7 km) of NH-2 between Allahabad and Varanasi
- (viii) Investigation for flexible pavement design for construction of bituminous road from Live stock market to NH-24 via existing approach road of SLF site, Ghazipur
- (ix) Evaluation of Inssta Patch (a pressure sensitive compound for instant repairs of potholes)
- (x) Performance evaluation (one-time) of stabilized layer on NH-1
- (xi) Investigation for strengthening and improvement of DSC road stretches between underpass sector-37 to Kesar garden, Noida (as Co-PL)
- (xii) Review of flexible pavement design in weak subgrade and high altitude for Theog-Kharapathat-Harkoti road
- (xiii) Investigations and design of pavement for Saraswati Hi-Tech city, Naini, Allahabad
- (xiv) Compliance of pavement design and supervision of construction of Bandh road between GT road and Meerut road

- (xv) Vetting of Crust Design for Master Roads from Sector-68 to 80 in Gurugram, Haryana
- (xvi) Study on Validation of IRC Pavement Design Method using Heavy Vehicle Simulator (HVS) (In-house Research Project)
- (xvii) Evaluation of Pavements Identified by PWD for Strengthening / Resurfacing by Benkelman Beam Method
- (xviii) Design of Flexible Pavement for 30 m ROW roads in Sector 37, Rohini Phase-V
- (xix) Investigations for Evaluation of Strengthening Requirements for roads Identified by PWD M-212
- (xx) Investigations for Design of Cement Concrete Pavement for Ramnagar Sites – I and II, Varanasi
- (xxi) Pavement design for Northern Peripheral road starting from NH-58 to Hindon river

12. Students Guided

(A) Post Graduate

- ◆ M. Tech. (Dissertation) on “*Laboratory Performance Oriented Optimization of Warm Mix Additive for Reclaimed Asphalt Material*”, Academy of Scientific and Innovative Research (AcSIR), CSIR-CRRI, New Delhi, August 2016 to June 2017.
- ◆ M. Tech. (Dissertation) on “*Mechanistic Characterization of Bituminous Mixes containing Reclaimed Asphalt Pavement*”, Academy of Scientific and Innovative Research (AcSIR), CSIR-CRRI, New Delhi, July 2012 to July 2013.
- ◆ M. Tech. (Dissertation) on “*Laboratory Study on CRMB Modified Bituminous Mixes with Titan Polymer*”, Malaviya National Institute of Technology, Jaipur, January to June 2013.
- ◆ M. Tech. (Dissertation) on “*Laboratory Study on SBS Modified Bituminous Mixes with Titan Polymer*”, Malaviya National Institute of Technology, Jaipur, January to June 2013.
- ◆ M. Tech. (Dissertation) on “*Laboratory Performance Evaluation of Stone Matrix Asphalt (SMA) using Warm Mix Additive*”, Sardar Vallabhbhai National Institute of Technology, Surat, August 2011 to May 2012.
- ◆ M. Tech. (Dissertation) on “*Comparative Laboratory Performance Evaluation of Conventional Hot Mixes and Recycled Mixes*”, Malaviya National Institute of Technology, Jaipur, August 2011 to May 2012.
- ◆ M.Tech. (Summer Training) on “*Comparative Study of Laboratory Performance of PMB 40 with Warm Mix - Adhesion Promoter in Bituminous mixes*”, National Institute of Technology, Surat, June 10 – July 06, 2011.

(B) Graduate / Diploma

- ◆ B. Tech. (Summer Training) on “*Laboratory Performance Evaluation of Dense Bituminous Macadam (DBM) modified by an additive*”, National Institute of Technology, Patna, May 28 - July 08, 2012. Two B. Tech. students have done their summer training on this.
- ◆ Diploma (Training) on “*Testing of Highway Materials and Bituminous Mix Design*”, Kasturba Polytechnic for Women, New Delhi, July 01 – August 12, 2011.
- ◆ B. Tech. (Summer Training) on “*Design of Bituminous Mix Using Reclaimed Asphalt Pavement (RAP) Material*”, National Institute of Technology, Kurukshetra, June 13 – July 15, 2011. Two B. Tech. students have done their summer training on this.
- ◆ B. Tech (Summer Training) on “*Laboratory Study on Use of Warm-Mix Additive in Bituminous Mixes*”, National Institute of Technology, Patna, May 25 – July 11, 2011.
- ◆ B.Tech. (Winter Training) on “*Laboratory Testing of Highway Materials*”, Malaviya National Institute of Technology, Jaipur, December 23, 2010 – January 14, 2011.
- ◆ B. Tech. (Winter Training) on “*Laboratory Characterisation of Materials and Studies on Reflection Cracking*”, National Institute of Technology, Tiruchirappalli, December 08 – December 28, 2010.
- ◆ B. Tech. (Summer Training) on “*Study of Mechanical and Hydraulic Components of Heavy Vehicle Simulator (HVS)*”, Ideal Institute of Technology, Ghaziabad, June 09 – July 22, 2010.
- ◆ B. Tech. (Summer Internship) on “*Prevention of Reflection Cracking in Flexible Pavements using Jute Geofabric*”, Indian Institute of Technology, Kharagpur, May 04 – July 01, 2010.

13. International Exposure

- (a) Two months (30th May, 2009 to 01st August, 2009) at Built & Environment Unit, Council for Scientific and Industrial Research (CSIR), Pretoria, South Africa regarding “**Training on Technical Aspects and Applications of Heavy Vehicle Simulator (HVS)**”. The training included the various aspects including experimental design for HVS, quality management procedure for HVS, instrumentation, data collection and data analysis, preparation of first & second level reports and finally the development of a new guideline document after a series of HVS experiments. The training also included detailed and elaborate sessions on the instrumentation part including installation of Multi Depth Deflectometers (MDD), Strain Gauges, CSIR Road Profilometer, Road Surface Deflectometer (RSD), Joint Measuring Deflection Devices (JDMD) and thermocouples.
- (b) The undersigned visited the Civil Engineering Department of Kansas State University, Manhattan, Kansas, US in 2012 and has seen the various facilities available for testing of

asphalt and hot mix including the full-scale Accelerated Pavement testing facility at the Civil Infrastructure System Laboratory.