

Dr. Mahesh Dhanajirao Gaikwad

SCIENTIST | RIGID PAVEMENT DIVISION | CSIR-CRRI NEW DELHI

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PERSONAL DETAILS

Scientist, Rigid Pavement Division
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EDUCATION

Degree	University/Institute	Subject	Year
Ph.D.	Academy of Scientific and Innovative Research (AcSIR), CSIR-Central Building Research Institute (CSIR-CBRI) Roorkee	Structural Engineering, Civil Engineering	2024
M.Tech.	Indian Institute of Technology (IIT) Roorkee	Structural Engineering	2018
B.E.	Government College of Engineering Karad, Shivaji University Kolhapur Maharashtra	Civil Engineering	2016

RESEARCH INTEREST

- Sustainable pavement materials
- Fiber-reinforced concrete
- Industrial, mining and agricultural waste in pavements
- Engineered cementitious composites
- High Performance concrete
- Pavement material characterization
- Design, and construction of rigid pavements
- Special concrete pavements (CRCP, ARCP and precast pavements)
- Pavement evaluation and maintenance
- Overlays and white topping
- Damage and condition assessment
- Repair and rehabilitation of rigid pavements

PROFESSIONAL EXPERIENCE

Scientist, CSIR-CRRI New Delhi

(Feb 2026 – Till date)

- Working on research and consultancy project.
- Involved in research on rigid pavements, concrete materials, and sustainable infrastructure through numerical and experimental studies, including laboratory and field investigations.

Research Associate, IIT Roorkee

(July 2025 – Dec 2025)

- Project sponsored by National Buildings Construction Corporation (India) Limited, New Delhi
- Involved in studying the mechanical and microstructural properties of Ultra-High Performance Fiber-Reinforced Concrete (UHPFRC).
- Developing design guidelines for UHPFRC.

Civil Design Engineer, Asian Energy Service Ltd.(Oilmax Group) Mumbai, India (Aug 2024 – May 2025)

- Designed and oversaw construction projects, prepared and reviewed structural and coal plant drawings and managed request-for-information
- Prepared design calculations and knowledge database for smart design checks

Project Associate, CSIR-CBRI Roorkee

(Jul 2021 – Jul 2024)

- Post-Earthquake Reconstruction of Schools in Nepal: Involved in planning, design, and project management for reconstruction.
- Contributed to developing design charts for reinforced concrete members.

Project Assistant, CSIR-CBRI Roorkee

(Oct 2020 – Mar 2021)

- Repair and rehabilitation of heat-damaged concrete members.
- Performed condition assessment, evaluated residual behaviour, and designed repair strategies for concrete structural members.

Junior Research Fellow (JRF), IIT Roorkee

(Jul 2018 – Oct 2018)

- Project sponsored by Bhabha Atomic Research Centre (BARC), Mumbai
- Evaluation of the performance of concrete members damaged by a multi-hazard environment.

PUBLICATIONS

Peer Review Journal Articles

- **Gaikwad, M.**, Singh, S., Gopalakrishnan, N., Chourasia, A., and Bhargava, P. (2025). Experimental and Numerical Study of Cooling Regimes Effect On Concrete Thermal Properties and Temperature Progression. *Journal of Material in Civil Engineering, American Society of Civil Engineers (ASCE)*, Vol. 37, No.10, pp. 04025350. <https://doi.org/10.1061/JMCEE7.MTENG-19168>
- **Gaikwad, M.**, Singh, S., Bhargava, P., and Kodur V. (2025). Effect of Humidity on the Thermal Properties of Normal and High Strength Concrete at Elevated Temperatures. *Journal of Material in Civil Engineering, American Society of Civil Engineers (ASCE)*. [10.1061/JMCEE7.MTENG-22530](https://doi.org/10.1061/JMCEE7.MTENG-22530)
- **Gaikwad, M.**, Chaturvedi, A., Singh, S., (2025). Stress-Strain Behaviour of Confined Concrete during Cooling after Heating to High Temperature. *Journal of Civil Engineering and Architecture*, Vol. 19, pp. 130-136. [10.17265/1934-7359/2025.03.003](https://doi.org/10.17265/1934-7359/2025.03.003)
- **Gaikwad, M.**, Singh, S., Gopalakrishnan, N., Bhargava, P., Chourasia, A. (2024). Numerical Analysis of Fire-Exposed Reinforced Concrete Sections for Assessing Post-Heating Axial and Flexural Capacity. *Journal of Structural Fire Engineering*, Vol. 15, No.4, pp. 557-581. <https://doi.org/10.1108/JSFE-10-2023-0039>
- **Gaikwad, M.**, Gopalakrishnan N., Singh, S., Bhargava, P. (2023). Non-dimensional Interaction Curves for Fire Exposed Reinforced Concrete Section. *Journal of Structural Engineering*, Special issue, Vol. 49, No.6, pp. 407-417. <https://jose.serc.res.in/index.php/jose/article/view/2526>
- **Gaikwad, M.**, Singh, H., Singh, S., (2022). Fundamental Behaviour of Concrete Constitutive Parameters in the Post-Heating State of Fire. *Structural Fire Safety*, Indian Association of Structural Engineers, Vol.12, Issue 4.

- Rokade, M., **Gaikwad, M.**, Singh, S., and Kadam, S. (2022). A Simplified Regression-based Approach for Concrete Mechanical Properties at Elevated Temperature. *Asian Journal of Civil Engineering*. Vol. 23, No.7, pp. 1065-1085. <https://doi.org/10.1007/s42107-022-00469-1>
- Tariq, F., **Gaikwad, M.**, Bhargava, P. (2021). Analysis of Behaviour of Corroded RC Beams Exposed to Elevated Temperatures. *Journal of Building Engineering*, Vol. 42, pp.102508. <https://doi.org/10.1016/j.jobbe.2021.102508>
- Chaturvedi, A., **Gaikwad, M.**, Banjara, N.K., Singh, S. (2025). Assessment of The Damage Behaviour of Concrete After Exposure to Elevated Temperatures Using Non-Destructive Testing. *Indian Journal of Engineering and Materials Sciences*, Vol. 3076, No.1, pp. 012006. <https://doi.org/10.56042/ijems.v32i03.16852>

International and National Conferences

- **Gaikwad, M.**, Singh, S., Bhargava, P. (2026, Feb. 9-10). *General Stress–Strain Response of Concrete during Cooling: Implications for Fire-Exposed Structures*. National Conference on Innovative Construction Machineries, Materials and Methods for Infrastructure Development (ICMMMID-2026), Dehradun (Uttarakhand).
- **Gaikwad, M.**, Singh, S., Bhargava, P. (2025, Oct. 12-16). *Interaction Curves for Evaluating the Ultimate Load Capacity of Reinforced Concrete Members During Cooling*. In: 14th International Symposium on Plasticity and Impact Mechanics (IMPLAST-2025), Indian Institute of Technology Roorkee (IIT Roorkee).
- **Gaikwad, M.**, Singh, S., Bhargava, P. (2024, Dec. 24-27). *Numerical Evaluation of the Impact of Steel Confinement on the Load Capacity of Fire-Exposed Reinforced Concrete Section*. In: 1st International Conference on Fire Safety Engineering Research and Practice (iCFSERP-2024), Sydney, Australia 2024.
- **Gaikwad, M.**, Gopalakrishnan N., Singh, S., Singh, H. (2024, Sept. 25-27). *Evaluation of Confined Concrete Stress-Strain Behaviour at Subsequent Cooling Temperature*. In: International Conference on Concrete Under Severe Conditions—Environment and Loading (CONSEC24), Indian Institute of Technology Madras (IIT Madras).
- **Gaikwad, M.**, Chaturvedi, A., Singh, S., Chourasia, A. (2023, Dec. 11-13). *Condition Assessment of Reinforced Concrete Beams After Exposed to Standard Fire*. In: International Conference on Condition Assessment Rehabilitation and Retrofitting of Structures, Indian Institute of Technology Hyderabad (IIT Hyderabad).
- **Gaikwad, M.**, Singh, H., Singh, S., Gopalakrishnan N. (2022, Dec. 9-11). *Numerical Investigation of a Concrete Stress Block in The Post-Heating State of a Parametric Fire Curve*. In: 8th International Congress on Computational Mechanics and Simulation (ICCMS), Indian Institute of Technology Indore.
- **Gaikwad, M.**, Singh, S. (2022, Dec.19-22). *Flexural Strengthening of Fire Damaged Reinforced Concrete Structural Member*. Structural Engineering Convention 2022, Malaviya National Institute of Technology (MVNIT) Jaipur.
- **Gaikwad, M.**, Singh, S. (2020, May 28-30). *Typical Strengthening Techniques for Reinforced Concrete Beams Under Fire: A State-of-The-Art Review*. Paper presented in the International Conference on Advances in Civil and Structural Engineering (ICACSE-2020).
- Jangpangi, L., **Gaikwad, M.**, Aashiya and Kumar, S. (2026, June. 4-6). *Performance Evaluation of Concrete Pavement Constructed with Fibre-Reinforced and Waste-Based Concrete Mixes*. Symposium on Advanced Technologies and Visionary Approaches for Sustainability (SATVA), Indian Institute of Technology Roorkee Palakkad.
- Sharma, A., **Gaikwad, M.**, and Ray, S. (2026, Feb. 9-10). *Influence of Constituent Materials On the Compressive Strength of Ultra-High-Performance Concrete*. National Conference on Innovative

Construction Machineries, Materials and Methods for Infrastructure Development (ICMMMID-2026), Dehradun (Uttarakhand).

- Chaturvedi, A., **Gaikwad, M.**, Banjara, N.K., Singh, S. (2025, Dec. 11-13). *Ann-driven assessment of residual compressive strength in heat-treated concrete*. In: 2nd International Conference on Condition Assessment Rehabilitation and Retrofitting of Structures, Indian Institute of Technology Roorkee (IIT Roorkee).
- Chaturvedi, A., **Gaikwad, M.**, Banjara, N.K., Singh, S. (2025, Oct. 12-16). *Prediction of Concrete Compressive Strength after Exposure to High Temperatures Using an Artificial Neural Network*. In: 14th International Symposium on Plasticity and Impact Mechanics (IMPLAST-2025), Indian Institute of Technology Roorkee (IIT Roorkee).
- Chaturvedi, A., **Gaikwad, M.**, Banjara, N.K., Singh, S. (2025, May 30-31). *Assessment of Damage in Concrete Due to Fire: A Review*. In: International Conference on Advances in Composites and Materials (ACM 2025), Government Polytechnic Bramhapuri, Maharashtra, India.
- Singh, S., **Gaikwad, M.**, Singh, S. (2020, May 23-24). *A Comparative Study of Thermal Analysis on Structural Elements*. In: International conference on "Heat Transfer and Fluid Flow (ICHTFF)". In: International Society for Engineers and Researchers (ISER).

Book Chapters and Conference Proceedings

- **Gaikwad, M.**, Singh, H., Singh, S., Gopalakrishnan N. Numerical Investigation of a Concrete Stress Block at the Post-Heating Stage. *Recent Trends in Computational Mechanics and Simulation: Select Proceedings of ICCMS 2022* (2026): 341. https://doi.org/10.1007/978-981-96-9416-7_23
- **Gaikwad, M.**, Singh, S., Bhargava, P. (2024, Dec. 24-27). Numerical Evaluation of the Impact of Steel Confinement on the Load Capacity of Fire-Exposed Reinforced Concrete Section. *Hassan MK, Tao Z, Hossain MD, Pathirana S, Todhunter A. (2024). Proceedings of the International Conference on Fire Safety Engineering Research and Practice (iCFSERP-2024), edited by Hassan et al., 24-27 Nov 2024, Sydney, Australia, ISBN: 978-1-7636843-0-0, 734 pp.*
<https://icfserp.org/index.php/publication/>
- Chaturvedi, A., **Gaikwad, M.**, Banjara, N.K., Singh, S. Assessment of Damage in Concrete Due to Fire: A Review. In *Journal of Physics: Conference Series*, vol. 3076, no. 1, p. 012006. IOP Publishing, 2025. [10.1088/1742-6596/3076/1/012006](https://doi.org/10.1088/1742-6596/3076/1/012006)
- **Gaikwad, M.**, Singh, S. Flexural strengthening of fire damaged reinforced concrete structural member." In *ASPS Conference Proceedings*, vol. 1, no. 4, pp. 1209-1215. 2022. <https://doi.org/10.38208/acp.v1.642>

AWARDS AND ACHIEVEMENTS

- **Best Poster Presentation Award** (2020)
Poster Presentation – Engineering and Sciences, AcSIR GYANTARANG 2020, CSIR-NEIST, Jorhat, Assam (2020)
- **MHRD Scholarship Recipient** (2016–2018)
Awarded scholarship by the Ministry of Human Resource Development, Government of India, during M. Tech in Civil Engineering (Structural Engineering)
- **Meritorious Performance** (2009) in Maharashtra Talent Search Examination
- **MS-CIT Certification** (2009) Maharashtra State Certificate in Information Technology
- **Sports Achievements**
- Basketball Championship Winner in Annual Sports Tournament (2013)
- Runner-up in the Carrom Championship at IIT Roorkee for two consecutive years (2017 & 2018)

MEMBERSHIPS

- Member of American Society of Civil Engineers (ASCE, 2026)
- Member of American Concrete Institute (ACI, 2020)

WORKSHOPS & SHORT-TERM COURSES

- Presented a **poster** at CSIR–CBRI during a Building Hackathon and poster session on “*Use of Micro-piles to Increase Seismic Resilience*” under the theme of disaster-resilient buildings, February 2023.
- Presented a **poster** at CSIR–CBRI, Roorkee (“One Week, One Lab”) on “*Prediction of Structural Behaviour Using a Virtual PINN-Based Model*”, February 2023.
- Attended a SAICE Fire Engineering Division **webinar** on “Fire safety associated with photovoltaic installations in the built environment”, July 2025.
- Attended the **short-term course** on “*Design of Fire Protection Measures for Mass Housing and Infrastructure Projects*”, CSIR-CBRI Roorkee, March 2019.
- Attended the **short-term course** on “*Building Design for Fire and Life Safety*”, IIT Gandhinagar, June 2019.
- Participated in the “**National Workshop** on “*Utilization of Bamboo as a Building Material in the North East Region*”, CSIR-CBRI Roorkee, February 2019.
- Attended **workshop** on “*Fire Safety of Civil Engineering Infrastructure*”, IIT Delhi, December 2019
- Completed **short-term course** on “*Design of Fire Protection Measures for Vital Installations and Buildings*”, CSIR-CBRI Roorkee, November 2019.

TECHNICAL EVENTS & LEADERSHIP ACTIVITIES

- **Participated** in *TECHNO-FAIR*, a national-level technical symposium at Dr. Daultarao Aher College of Engineering, Karad (Mar 2013).
- **Participated** in *Concrete Showdown*, a technical event at College of Engineering Pune (COEP) (Sep 2013)
- **Competed** in *ZENITH*, a non-technical aptitude event organized by the Association of Students in Electronics and Telecommunication, Government College of Engineering, Karad (Mar 2013).
- **Participated** in *PANDORA’S BOX*, a national-level technical event organized by the Electrical Engineering Department, Government College of Engineering, Karad (Mar 2012).
- **Head**, Food Committee, AAVISHKAR – National-level technical event, Government College of Engineering, Karad (Feb 2015).
- Served as **Council Member** for *ABHIYANTA KARANDAK*, a non-technical event under Shivaji University’s college scheme at Government College of Engineering, Karad (Feb 2014).
- **Coordinator**, Food Committee, INCARNO – National-level technical event, Government College of Engineering, Karad (Mar 2015).

RELEVANT KEY SKILL

- **Software & Tools** – Abaqus CAE, ETABS, KENPAVE, SAP, AutoCAD.
 - **Computer Languages** – MATLAB
 - **Design Codes** – IRC 58 | IRC 15 | IRC 44 | IS 456 | IRC SP 62 | IRC 76 | IRC 83
 - **Typesetting** – Microsoft Office (Word, Excel, PowerPoint, Outlook, OneNote), LATEX
 - **Online Instruction Tools** – Zoom, Google Classroom, Cisco Webex, Microsoft Teams
 - **Languages** – English, Hindi, Marathi
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