

(Resume)



1. NAME AND PHOTOGRAPH: Dr RAJEEV KUMAR GARG

2. DESIGNATION AND COMPLETE ADDRESS

**Professor Emeritus**

Department of Civil Engineering  
Delhi Technological University, Bawana Road, Delhi 110042

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**<https://orcid.org/0000-0003-1331-3105>**

3. IMMEDIATE PAST DESIGNATION

Chief Scientist, Bridge Engineering and Structures Division,  
CSIR-Central Road Research Institute, Mathura Road, New Delhi –110025.  
and

Professor, Engineering Sciences, Academy of Scientific and Innovative Research (AcSIR)  
Since Feb 2014 (AcSIR@CRRI, New Delhi) (<https://acsir.res.in/fa-tab/> ) up to Jul 2023.

AcSIR Faculty List.

AcSIR Faculty List							
Sl. NO.	Scientist's Name	UID	Designation	Laboratory	AcSIR Faculty Designation	Discipline	Guiding/Teaching Faculty
675	Dr. Rajeev Kumar Garg	140002	Senior Principal Scientist	CSIR-Central Road Research Institute (CSIR-CRRI)	Professor	Engineering Sciences	Guiding Faculty

4. AREAS OF INTEREST

- Structural Engineering –specialisation in Dynamics including Wind & Earthquake Engineering and Vibration Analysis;
- FE Modeling for Risk & Reliability and Multi-hazard modelling;
- Masonry Arch Bridges;
- Maintenance and Management of Bridges including- Structural Health Monitoring, Remaining Life Assessment & Failure Analysis and MBIU.
- Advanced software (MATLAB, Nvgate, FEMTools, SAP, CSI, ARTEMIS (Modal analysis).

5. EDUCATIONAL QUALIFICATION

S. N	Degree/Certificate	Year of passing	University/Institute	Subjects	Percentage
1	Ph.D.	1997	I.I.T. Delhi*	Dept. of Applied Mechanics (Wind Engineering)	NA

2	German	1992	Goethe Institute, Mannheim, Germany	Language Grundstufe 1,2 (Basics-1, Basics-2)	NA
4	M. Tech.	1987	I.I.T. Madras	Engineering Mechanics	81.10
5	B. Tech.	1985	G.B.Pant Univ. of Agri. & Tech., Pant Nagar	Civil Engineering (CGPA 4.622/5.000)	84.33
5	B.Sc. (Hons.)	1981	DN College, Meerut (Ch.Ch.Univ, Meerut)	Phy., Chem., Maths.	56.00
6	Intermediate (XII)	1979	BAV Inter College, Meerut (UP Board of Edu)	Phy., Chem., Maths., Eng., Hindi	63.00
7	Highschool (X)	1977	BAV Inter College, Meerut (UP Board of Edu)	Sci, Maths., Bio, Eng., Hindi	68.60
8	Special Training	1988 (Jan-Mar)	Dept. of Aerospace Engg., IISc Bangalore	Industrial Aerodynamics by Prof. G.N.V. Rao	Audited
9	Studentship- DAAD- Sandwich fellow	1992-1994	Aerodynamik im Bauwesen, Ruhr University, Bochum, Germany	Building aerodynamics by Prof. H.J. Niemann	Degree by IIT Delhi *
* Part of research carried out at Ruhr Univ., Bochum, Germany under DAAD fellowship.					

## 6. Professional Experience- in reverse chronological order

Sl. No	From	To	Name of Organisation	Position held
1.	Aug. 2024	Till date	Delhi Technological University, Bawana Road, Delhi	Professor Emeritus
2.	Feb. 2014	Jul 2023	Fac. Engineering Sciences, AcSIR (coterminalous with CSIR-CRRI)	Professor
3.	2014	Jul 2023	CSIR-Central Road Research Institute, Mathura Road, New Delhi	Chief Scientist (Sc. G)
4.	2008	2014	-do-	Sr. Principal Scientist (F)
5.	2001	2008	-do-	Scientist "E2"/
6.	1997	2001	-do-	Scientist "E1"
7.	1992	1997	Structural Engineering Research Centre, Ghaziabad	Scientist "C"
8.	Sep.1987	Sep.1992	-do-	Scientist "B"
9.	Jan. 1987	Sep. 1987	IIT Delhi	Res. Ass. (PG study)

## 7. Membership to Professional Bodies

- Member European IABSE- group for International- IABSE task group T1.5 on “Performance-Based Design Founded on Lessons from Bridge Failures”.
- Member, *Disaster Management Committee* (G-5), Indian Roads Congress, (2021-2023).
- Member, *Steel and Composite Structures Committee* (B-5), Indian Roads Congress, (2021-2023).

- Member, *Technical Committee: Cyclone Resistant Structure*, CED 57, Bureau of Indian Standards, (2021-2023).
- Member, *Mechanization and Instrumentation Committee (G4)*, Indian Roads Congress, (2015-2017).
- Member, *Special Structures Sectional Committee CED38*, Bureau of Indian Standards, (2012-2017).
- **Member Secretary, Instrumentation Committee (G5)**, Indian Roads Congress, (2006-2008 and 2009-2011, 2012-2015).
- Member, *Maintenance and Rehabilitation Committee - B8*. Indian Roads Congress (2005-08).
- Member, Executive Committee of Indian Society for Wind Engg. (ISWE) for two terms (2002-06).
- Member, International Centre for Urban Safety Engineering (a society) (ICUS/ INCEDE), The University of Tokyo, Tokyo.
- Member of the advisory board “*Skill Council*” of Haryana Vishwakarma Skill University (HVSU). (2017-2019)
- Member, *Ececutice Committee* (2021-2023), Indian Concrete Institute –Western UP chapter.

**Life member** of various **technical societies** in professional field namely,

- a) Sr. P.E. (Eng. Council of India, SrPE00077/16);
- b) Institution of Engineers (I), (M60503/9);
- c) Indian Society for Wind Engineering (ISWE, LM 161);
- d) Indian Concrete Institute (ICI, LM4647);
- e) Indian Society for Earthquake Technology (ISET, LM719);
- f) Computer Society of India (CSI, LM 10002265);
- g) Aeronautical Society of India (AeSI, M 2653);
- h) The Society of Power Engineers (SPE, LM4277);
- i) Indian Society for Construction Material & Structures (ISCMS, LM443);
- j) Indian Geo-technical Society (IGS-Delhi Chapter-LM765);
- k) Indian Roads Congress (IRC, LM25117); I
- l) Indian Institution of Bridge Engineers (IIBE, LF1355).

## 8. ACHIEVEMENTS

### A. HONOURS AND AWARDS

- Commendation certificate **as reviewer** by the Journal of the Institution of Engineers -Series A, Mar 2024.
- Outstanding **Research Paper** in Civil Engineering, CE&CR (Civil Engineering & Construction Review) 2023.
- Indian Concrete Institute –Western UP, “**Outstanding Concrete Technologist of Western-UP Award for the year 2021**”.
- Construction Industry Development Council (**CIDC**) has awarded Achievement **Vishwakarma Award 2017** (category- Scientist) on 7th March 2017.
- National Research Development Corporation of India (**NRDC of DSIR**) has awarded **Innovation Award-2014** to the technology “Design and Development of an Indigenous Mobile Bridge Inspection Unit (MBIU)” developed by CSIR laboratories (namely CSIR-CRRI, New Delhi and CSIR-CMERI-CoEFM, Ludhiana) on 24<sup>th</sup> March 2017. This award carried a prize of Rs five lacs for the team. Dr. Rajeev Kumar Garg led the team (Principal Investigator) of this technology which was funded by CSIR and DST, New Delhi.
- **CSIR-DAAD fellowship** to carry out R&D work in the field of Wind Engineering at Ruhr University, Bochum, Germany from June, 1992 to Sep. 1994.
- **Commendation Certificate** from IRC for outstanding Performance as Member- Secretary, Instrumentation Committee (G-5) for Jan 2009 to Dec 2011.

## B. INTELLECTUAL PROPERTY RIGHTS (IPR)

- i. The **Patent** awarded entitled “Vehicle mounted automatic controlled mobile bridge inspection device”. **Indian Patent No. 338725** dated 18.6.2020. (Role as team leader of the project jointly with CSIR-CMERRI-CoEFM, Ludhiana).  
[Commercialised and technology is transferred to two companies who have manufactured and sold in market over three units having imported unit cost at Rs 240 lacs each].
- ii. **Copyright awarded**. Rajeev Kumar Garg et al. on “CSIR\_CRRRI\_Database of Failure of Bridges in India from 2018 to 2021”. **Indian Copyright**. ROC Number [L-119188/2022](#), Diary Number 16962/2020-CO/L. dated 16.2.2021.
- iii. **Copyright awarded**. Rajeev Kumar Garg on “CSIR\_CRRRI\_Database of Failure of Bridges in India from 1977 to 2017”. **Indian Copyright**. ROC Number [L-99523/2021](#), Diary Number 16962/2020-CO/L. dated 16.2.2021.
- iv. **Trademark awarded** (3569337, 3569339, 3569340, 3577030). For “*FiboStrain* and *FibroStrain*”, for Fiber bragg grating strain sensors developed jointly with CSIO, Chandigarh.
- v. **Trademark awarded** (3571371, 3571372). For “*SetuCare*”, and “*BridgeCare*” for MBIU (jointly with CSIR-CMERRI-CoEFM, Ludhiana).

## C. PUBLICATIONS

Published research papers in several International & national journals and conferences. **For details pl. see next sections.**

- In journals: SCI -6, WOS/Scopus-10, Peer Reviewed- 12;
- In Conf. 55, In Hindi-8, Books/Codes-5

## D. TECHNOLOGY TRANSFER AND ROYALTY

Technology transfer and Royalty		
Item	Agency	Role
Technology transfer-MBIU (MiscTT02, 2014-15), (1,02,000)	Two licensees	PL
Premia for MBIU, ROY0007 (2014, Rs 10,00,000)	Guj. Apollo	PL
Premia and royalty for MBIU, ROY0011 (2015, Rs 22,00,000)	Gemini, Mumbai	PL
Royalty for MBIU, ROY0023 (2020, Rs 3,00,000)	Guj. Apollo	PL

## E. RESEARCH PROJECTS:

Several projects are completed as PI and team members and are summarised below. For details pl. see next sections.

### As PI/CoPI/ Project Leader

Grant and sponsored research (including DST)	- Rs 5,80,11,034/-
Inhouse R&D (Institutional)	- Rs. 92,98,000/-
Royalty & premia of technology transferred	- Rs. 38,36,000/-
Consultancy Projects	- Rs. 4,28,67,672/-
<b><u><math>\Sigma</math> Rs. 11,40,12,706/-</u></b>	

As Team member ~       $\Sigma$  Rs. 22,00,00,000/-

#### **F. Number of Books authored/edited:**

- (i) IRC:SR-22- “*SOAR on Areas of Application and Techniques of Instrumentation in Traffic Engineering*”. Indian Roads Congress, New Delhi. (As the Member-Secretary of IRC-Instrumentation Committee (G5) written several chapters, compiled & editing).
- (ii) IRC: SP:80. “*Guidelines for Corrosion Prevention, Monitoring and Remedial Measures for Concrete Bridge Structures*”. (As a Member of the Maintenance and Rehabilitation Committee -B 8 of IRC).
- (iii) IRC:SR-24- “*SOAR on Areas of Application and Techniques of Instrumentation in Highway Engineering*”. Indian Roads Congress, New Delhi (Under print).(Role-As the Member-Secretary of IRC-Instrumentation Committee (G5) written several chapters, compiled & edited the draft).
- (iv) One Chapter in “*Guidelines for planning and Construction of Roads in Cyclone Prone Area*”. (Guideline considered by Indian Roads Congress; sponsored & uploaded on its website for use of public by NDMA, New Delhi).
- (v) BIS Handbook **SP 64 (S & T): 2001** “Explanatory Handbook on IS Code of Practice for Design Loads (Other Than Earthquake) for Buildings & Structures, Part3- Wind Loads [IS875(Part3):1987]. (Role as a member of the project sponsored by BIS and responsible for all the solved examples).

#### **G. ACADEMICS**

Guiding students: Several B. Tech, M. Tech and **Ph. D. students** are successfully guided.

##### **Ph. D. students**

- Mr Kashif Q.I. is awarded Ph.D. by AcSIR, Sep. 2022, thesis entitled “Seismic reliability analysis of bridges subjected to aftershocks using Incremental Dynamic Analysis “.
- Guiding Mr Alok Rathore, AcSIR-CRRI, for Ph.D thesis (2019-contd) “Assessment of bridges on a road network to improve seismic resilience towards smart city “, completed course work and progressing well.

##### **M. Tech. students:**

- i. Non-linear static analysis of typical short and medium span bridges in urban area. Parimal Godse, DTU, 2008.
- ii. Interference study on cooling towers in wind tunnel by Davy Mohan (Reg. No. 080918003). Manipal University, 2010
- iii. Seismic risk analysis of typical urban bridges using pushover analysis including SSI. Kashif Q.I., AcSIR, 2014.
- iv. Structural health monitoring by modal analysis. P. Thankachan, SBCE, Pattoor, 2016.
- v. Pushover analysis of RC frame building considering SSI. Nishant, GBU, Gr. Noida, May 2016.

- vi. Wind interference effects on thermal power plant RC chimneys. Mohit Bisht, GBU, Gr. Noida, May 2017.
- vii. Vibration based damage detection and analysis RCC buildings. Ajay S. Patel, GBU, Gr. Noida, May 2018.

**Courses Taught at DTU, New Delhi for UG/PG students**

- Advance Numerical Analysis
- Design of RC structures
- Basic Civil Engg.

**Courses Taught at AcSIR-@CRRI, New Delhi for PG students as Professor, AcSIR**

- Analysis of bridges (a part-FEM),
- Dynamics of structures,
- Finite element analyse.

**H. Training/ Lecture Imparted to professionals (Selected)**

- Delivered keynote lecture 2024\_Conference of the Siberian Research Institute of Bridges, “*Methodology for Resilient and Sustainable Bridges - Effects of Heavy Vehicular Traffic on Urban Flyover: Noise and Vibrations Impact on Surrounding Buildings*”.
- Delivered lecture on NITTR, Chandigarh,
  - *Seismic Risk Assessment of Bridge* on 28 May 2024,
  - *Life Cycle Assessment Studies for Structures* on 28 May 2024.
  - *Advance materials and techniques for construction and maintenance of bridges* (jointly with Mr GK Sahu) 27 July 2023
- Coordinator for CSIR-CRRI Training Courses “*Bridge Distress Diagnostics, Performance Evaluation & Rehabilitation*”, 2013, 2014, 2015, a regular course conducted at CSIR-CRRI.
- Delivered lecture entitled “Load Carrying Capacity and Residual Life Assessment of Concrete Bridges” in the training program on Bridge Diagnostic, Performance Evaluation and Rehabilitation on June 2010, 2011, 2012 and 2013 conducted by CRRI.
- Delivered lectures “Load Carrying Capacity and Residual Life Assessment of Concrete Bridges” and “Performance Monitoring and Health Assessment of Highway Bridges through Instrumentation” short course engineers of state PWD, March 11-13, 2013 at Patna.
- Delivered lectures for the PGRPE programme under AcSIR, New Delhi (M. Tech) for two courses namely (i.) Bridges and Tunnelling, and (ii). Health monitoring (sessions 2012/ 2014).
- Delivered lectures on “Analysis of Bridges” in a short course entitled Bridge Design and Construction, for engineers/professionals organized by CRRI (during 25 - 29 Nov., 2013).
- Panel member as an expert in Panel Discussion on “Failure in bridge construction”, organized by CIDC & CE&CR, on 16.4.2021 at 3-5 pm, New Delhi (online).
- Members of IABSE task group T1.5 on “Performance-Based Design Founded on Lessons from Bridge Failures”.
- Member, Technical Expert Committee of the Conference - VCDRR2021 'Conference Civil Engineering for a Disaster Resilient Society'.
- Chaired a technical session, “Seismic evaluation & retrofitting of structures” at 17 Symp. Eq. Engg. (17SEE), IIT Roorkee on 16.11.2022.
- Reviewer for Asia Pacific Symp Wind Engg at SERC, Chennai.
- Reviewer for IEEE 2021; Journal Inst of Engg (Part A).

### **Training Received (Selected):**

- Science for Rural Societies, IIPA, New Delhi, Nov. 2015
- Empanelment for Evaluator Accreditation (Engg. & Tech.) May 2011, NBA, New Delhi.
- “Leadership Program” 2007, Sponsored by CSIR, New Delhi.
- Training on Equipment-“Structural Testing System” at BDI, Boulder (USA), Dec. 2005.
- Attended training “Internal quality audit as per ISO 9001:2000” May 2003, BIS.
- Attended workshop “Structural health monitoring” 1999, ISSS-SPIE at IISc Bangalore.
- 10th Int. Wind Engg. Conf. at Copenhagen, Aug. 1996.
- German language - Basics 1 & 2, Goethe Institute, Mannheim, Germany (June –Sep. 1992).
- CSIR-DAAD fellowship at Ruhr University, Bochum (Germany) from June 1992 to Sep. 94.
- Conference at First Euro-Afro. Wind Engg. Conf. at Guernsey (UK) 1993,
- Training “Industrial Aerodynamics”, Dept. Aero. Engg., IISc Bangalore (Jan-Mar, 1988).

### **Recent selected Symposia/ Committee/ Conference attended (all online):**

- World IP Day /IP Convention, CII on April 2021;
- Sustainable, Resilient & Green Infrastructure, Organised by NITTR, Chandigarh, August 2021;
- 3rd W/S SIRMA Res. Project- (Strengthening Infrastructure Risk Management in Atlantic Area), Uni. Minho, Sep. 2021;
- Fourth Industrial Revolution (4IR) Tech. for Sustainable Development, APCTT/ Nov. 2021;
- Delta Resilience & Risk Governance Expert Forum, AIT, Dec 2021;
- Intern. Ass. Bridge and Structural Engineering (IABSE), Task Group 1.5 (TG 1.5), Jan 2022.
- Life-cycle reliability and risk assessment of coastal infrastructure subjected to tsunamis under non-stationary sea-level rise, M. Akiyama, IABSE, Jun 22, 2023.

### **Assistance to Institutional Management:**

- Being senior most staff member (since Sep 2022) Officiating Director in absence of the Director of the Institute (Sep. 2022-May2023);
- HOD of the Bridge Engineering & Structures division (2013-2016);
- Chairman of the Standing Disposal Committee (SDC);
- Chairman of the Investment Committee;
- Member for PMS Collegiums for the scientist colleagues;
- Chairman of the Normalisation Committee of Group-3 S&T staff,
- A member of the promotion committee of CSIR-CBRI, Roorkee, CSIR-CSIO, Chandigarh and NCCBM, Ballabgarh.
- Chairman (and member), FFC on several Institutional matters.

### **RESEARCH PROJECTS – IN THREE GROUPS**

<b>Participation in the “R&amp;D activities” of the Laboratory/Institute/CSIR</b>			
<b>Title of Project</b>	<b>Project Category</b>	<b>Role in Project</b>	
Development of Management System for Maintenance Planning and Budgeting of High Speed Road Corridors.	SIP30 11 FYP- (CRRI)	Sub-module Leader & Team member	

Innovative Technologies for Health Assessment and Damage Mitigation of Structures (I-HEAL).	12 FYP- ESC-0110(SERC)	Activity Leader (T5.6), Alternate nominee for Task Force Committee
Development of Robot for Underwater Inspection and Damage Detection of Bridges (UnWAR)	12 FYP- ESC-0113 (CMERI)	Team Member
Seismic Resistant Design of bridges- Comparative study of codal provisions	In-house R&D OLP2302	Project Leader
Seismic resistant design of bridges: Performance of concrete bridges under seismic forces	In-house R&D OLP0401	Project Leader
Upgradation of R&D and testing facilities in the area of Bridges and Structural Engineering.	In-house Capability OLP477	Procurement of vibration system (accelerometres, velocity, hammers, DAQ), wireless sensors etc.
Study of fatigue of rail fasteners used in urban track induced vibration.	OLP0569	Project Leader
Redesigning of mobile bridge inspection unit	OLP0598	Project Leader
Evaluation of elastic properties of concrete using vibration analysis	OLP0435	Project Leader

#### **Participation in the R&D activities, sponsored by other Govt. Organizations**

<b>Title of the Project</b>	<b>Sponsoring Agency</b>	<b>Role in Project</b>
Distress diagnostic, performance evaluation and bridge management system for concrete bridges, GAP 4413	DST/TSG/STS/20 04/50	CO-PI and PI (Later)
Development of Critical Infrastructure Information System in GIS Environment for Maintenance of Bridges on National & State Highways. GAP 4456.	DST/TSG/STS/20 05/7	Team member
Development of Mobile Bridge Inspection Unit (Jointly with CSIR-CMERI-MERADO, Ludhiana) GAP 4470.	DST/TSG/STS/20 06/76	PI/ Project Leader
Construction of Roads In Cyclone Prone Areas.	NDMA, Delhi	Contributed one chapter on bridges
Development of Fiber Bragg Grating based Distributed Strain Sensor System for Concrete Bridges (Jointly with CSIO, Chandigarh) GAP 4492.	DST (DST/TSG/NTS/2 009/32)	Co-PI & Project Leader for CRRI
Intelligent Remote Health Monitoring (IRHM) for Bridge System (Jointly with SERC, Chennai). GAP 4539.	DST DST/TSG/STS/20 11/43 G	CoPI and PL for CRRI
Mission Mode Project. Technologies for Robust Structural Health Monitoring of Critical Infrastructure (Vertical 1) and Conservation & Restoration of Heritage Structure- (Vertical 2). For vertical-2 (V2)- HCP0018 (Task No. 3F- studies on arch bridges).	CSIR/ CBRI/Planning Commission	CoPI and PL for CRRI
Collection and Analysis of bridge condition and inventory data by Mobile Bridge Inspection Unit on National Highways of Jharkhand State. As SSP4681 @ Rs 267 lacs	JV of CRRI and ICT Ltd. for Ministry of Road Transp. & Highways (MoRTH)	Co-PL(& authorized signatory)

Wind tunnel test of scaled microwave tower	Dept. of Telecom (DOT)	PL
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### **Participation in the R&D activities, sponsored by Industry**

Title of the Project	Sponsoring Organization	Category Project	Role in project
Investigation on three spans of collapse bridge at km 2.850 of NH785 from Madurai to Chettikulam in the state of Tamil Nadu	JMC Projects (I) Ltd, Madurai/ NHAI	<b>SSP4681</b> 23.60 LACS	Project Leader
External Technical Audit of 4-laning of Rewa-Katni-Jabalpur Section of NH-7 of Package-1 (km 242.600 to km 311.000) and Package-2 (km 311.000 to km 359.500 & km 378.500 to km 397.000) in the state of Madhya Pradesh under NHDP-IV on EPC Mode	NHAI M.P.	SSP4641	Member, Dec 19-Jun 21
Condition Assessment, Structural Evaluation and Suggestion for remedial measures of Ganga Bridge at Varanasi	Soma-Roadis Pvt. Ltd)	SSP4654	Member, Nov 20-Oct 21
Condition survey, Structural Evaluation and remedial measures of 9 no. of completed/ ongoing bridge projects under Rural Development Department, Odisha	Rural Dev. Dep. Govt of Odisha	SSP4656	Member, Dec 20-Mar 22
Impact on vibration levels on railway bridge between Andul-Sankrail during construction process	South Eastern Railway, Kolkata	CNP 2542	Project Leader Vibration monitoring & safety of existing bridge during construction
Quality Audit of structures of the 4 Lanning of Jetpur-Somnath Section NH 8D from km 0 to km 127/000 (Gujarat) on DBFOT Toll Basis under NHDP-Phase-III" and also test on 14km distressed road stretches of the section.6	NHAI	CNP2550	team Member / Vibration monitoring in field and FEM analysis July 19-Mar 21
Structural safety Audit of major bridges at km 114+759 and at 64+047 of Four-Lanning of Porbander-Jetpur Section on NH 88 in the state of Gujarat	Safeway Tollway Pvt Ltd	CNP2563	team Member / Vibration monitoring in field and FEM analysis
Structural Safety Audit of major bridges at km 938+485 over the river Godavari near Rajamundry in the state of Andhra Pradesh	Safeway Tollway Pvt Ltd	CNP2572	team Member Vibration monitoring in field and FEM analysis Nov 19-Dec 20
Structural Safety Audit of Structures on 4-Lane NH connectivity to ICTT Vallarpadam , stretch between Kalamassery (Chainage 0) to Vallarpadam (Ch. Km 17.150 ) on NH 966 A - Kerala.	NHAI Govt	CNP2564	team Member Vibration monitoring in field and FEM analysis
Investigation of Major Bridges at Km 38+800 of 4-Laned Section of Tuticorin-Tirunelveli, NH-7A	NHAI	CNP 2635	team Member Sep 20 -Aug 21

Third party Technical Assistant for two bridges on Agra Canal at Ch km 17.000, 22.515 near Faridabad	UP Irrigation	CNP 2651	team Member Oct 20-Nov 22
Assessing Condition of Distressed Bridge at Kangsabati Bridge on NH6 (Completed May 2009),	ICT Pvt. Ltd., New Delhi	CLP1563	Project Leader
Evaluation of Bridges for Increase in Axle Load of Freight Wagons for South-Eastern Railway	South-Eastern Railway	SSP 4461	Project Leader (for later half)
Evaluation of Bridges for Increase in Axle Load of Freight Wagons for West Central Railway- Bhojakho	West Central Railway	SSP 4474	Project Leader
Evaluation of Bridges for Increase in Axle Load of Freight Wagons for Eastern Railway	Eastern Railway	SSP 4467	Project Leader (for later half)
Study Of Vibrations Due to Movement Of Heavy Vehicular Traffic On The Munirka Flyover, Delhi	<i>Delhi PWD</i>	CLP1819	Project Leader
Investigation for the use of Structural Steel Products in Transportation and Facility sector	Nippon Steel & Sumitomo Metal Co., Japan	SSP-4518	Project Leader
Assurance of quality construction of corridor of elevated road on outer Ring Road from Madhuban Chowk to Mukarba Chowk, New Delhi	<i>Delhi PWD</i>	CLP-1918	Project Leader
Assurance of quality construction of corridor of elevated road on outer Ring Road from Mangol Puri to Madhuban Chowk, New Delhi	<i>Delhi PWD</i>	CLP-1919	Project Leader
Independent QA During Construction and Subsequent Performance Evaluation of Road and Bridges for Link Road Connecting NH-24 and NH-58	Ghaziabad Development Authority (GDA)	SSP-4521	Project Leader
Visual inspection of bridge at Janakpuri, Delhi	<i>MCD-IV, Delhi</i>	TSP372	PL
Noise and vibration assessment at DMRC corridor (Completed May 2014)	DMRC	CLP1992	Co-Project Leader
An Independent review of Signature Bridge project for technical and contractual issues.	DTTDC, Delhi	SSP 4560	team Member
Collection and Analysis of bridge condition and inventory data by Mobile Bridge Inspection Unit on National Highways of Jharkhand State (JV)	MoRTH/ ICT Pvt Ltd	SSP 4551	Co-Project Leader
Load Testing Of “Gheroli Bailey Bridge” In Betalghat Block, Nainital, Uttrakhand	PWD, Nainital	CNP 2296	Project Leader Completed
Quality Assurance of Construction of structures of Inner Ring Road (Phase-I), from Kuberpur to Fatehabad road, Agra	ADA, Agra	CNP 2045	team Member
Evaluation of condition of Ranjit Singh Flyover Connecting Barakhamba Road and Mata Sundari Road, New Delhi	NDMC, Delhi	CNP 2184	team Member
Security Audit regarding the structural stability of existing Bridge & Flyover in New Town Kolkata.	PWD 2.30 Lacs	CNP 2200	team Member
Evaluation of the quality of construction of the Two 4-lane bridges and one 6-lane bridge across Agra canal at km 10.15,13.3,30.118 Faridabad.	Haryana Irrigation 34.35 Lacs	CNP 2202	team Member

Assessment of concrete strength of abutment of Kermanshah and Durgawati bridge on NH-2 Near Varanasi with core extraction and non-destructive testing.	NHAI 7.9 Lacs	CNP 2203	team Member
Assessment of damages in distressed span P1-P2 (outer carriageway) of bridge on 4-lane divided carriageway connecting NH-24 and NH-28 around Lucknow City using NDT	PWD UP 23.0 Lacs	CNP 2208	team Member
Detailed investigation of existing bridges/flyovers regarding the structural stability security audit in New Town, Kolkata.	PWD WB 32.19 Lacs	CNP 2223	team Member <b>(Completed)</b>
Technical audit of seven numbers bridge of NTPC Vindhyanchal as per Railway Manual	PWD WB 14.95 Lacs	CNP 2224	team Member
Inventory and condition survey on the Project High way of conversion of Delhi-Gurgaon Section of NH-8 Access Controlled Eight/Six Lane Highway from RaoTulaRam Marg	NHAI/ Mill 40.25 Lacs	CNP 2236	team Member
Study of Seven Spans of Grade Separator in km 9&10 (Govt. Polytechnic Junction) in Lucknow, U.P.	PWD UP 87.40 Lacs	CNP 2255	team Member
Instrumentation scheme, review of data observed during instrumentation and suggestion of remedial measures for three bridges under Lumding-Silchar B G Rail line	PWD UP 13.80 Lacs	CNP 2256	team Member
Project Monitoring and Assurance of Quality Construction of Additional Two-lane Bridge Over Hindon on NH58E in Ghaziabad	GDA UP 24.15 Lacs	CNP 1989	team Member
Evaluation of Bridges for Increase in Axle Load of Freight Wagons for West Central Railway-at Rohari/ Ganjal/Kalisindh/ Northern Railway	West Central Railway	SSP – 4473, 4475, 4476 4463	Team member
Quality assurance and instrumentation of road over Palam Drain, Dwarka, New Delhi	DDA	CLP 1095	Team member
Distress diagnostics and rehabilitation measures for a PSC girder bridge on Maskararo river (Saharanpur) <i>(Completed Mar 2012)</i>	UP PWD	CLP 1792	Team member
Preliminary Investigation of Arch Bridge On Upper Gang Canal, Meerut	UP Irrigation	CLP 1790	Team member
Proof Checking of Design And Drawing Of PSC Bridge Over River Hindon On NH58E	Ghaziabad Dev. Authority(GDA)	CLP 1779	Team member
Quality Assurance Of PSC Bridge Over River Hindon On NH58E	GDA	CLP 1780	Team member <b>(Completed)</b>
Construction of RPS drain cover Khanpur	MCD	TSP691	Team member
Quality audit of Lucknow –Muzaffarpur National Highway Project (LMNHP- 8 Contracts), NHAI, <i>(Completed Dec. 2012)</i>	NHAI	CLP 1825	Team member
Assurance of quality construction of bridges over Agra canal in Faridabad	U.P. Irrigation.	CLP-1948	Team member
Partially Constructed Bridge near NTPC for field investigation	U.P. Irrigation,	CLP- 1900	Team member

Performance evaluation of protective surface coatings for cement concrete	Wacker Silicones, Mumbai	SSP 4519	Team member
Design of Pedestrian Subway (Completed)		CLP 1959	Team member
Proof checking structural design pedestrian foot over bridge, PWD Delhi (Completed 2011)	TCPL, Delhi	CLP1659	Team member
Performance evaluation of the four spans of a grade separator and two spans of a ROB connecting National Highways 24 and 28 at Lucknow through load testing (March 2009)	PWD, Lucknow	CLP 1540	Team member
Technical inspection of the ROB and RUB Road No.68 Nand Nagri, Delhi-93, under construction by the DTTDC	DTTDC	CLP 1930	Team member
Detailed investigation of bridge over river Damodar -Burdwan (Krishak Setu)	WB PWD	CLP 2068	Team member
Other <b>small projects</b> on bridge design & investigation (6 nos.) and material testing e.g. bearings, steel bars, bolts etc. <b>CLP2025</b> -KrishakSetu/WBPWD/2014. <b>CLP2032</b> -InvBridge/VOCPortT/2014. <b>CLP2038</b> -BridgeMathura/UPSBC/ 2014. <b>CLP2055</b> - LoadTGangaAraCh/ SPSingla/ 2015. <b>TSP815</b> -Bearing/DMRC/4.2014. <b>TSP845</b> -MSBolt/L&T/01.2015.	DMRC, UPSBC, L&T, SPSingla, WBPWD, VOC PortTrust	CLP/ TSP completed	Team member
Quality Assurance of Construction of structures of Inner Ring Road (Phase-I) from Kuberpur to Fatehabad road, Agra	ADA	CLP 2045	Team member
Structural analysis, design and drawings of foot over bridge on Palam drain road Dwarka, New Delhi	DDA	CLP 2039	Team member
Design of pedestrian subway	MES, New Delhi	CLP 1959	Team member
Aerodynamic studies of proposed 4-lane Cable Stayed Bridge over Burdwan yard	CES	CLP 1833	Team member
Design of 6 lane single span bridge on Gurgaon canal Faridabad	YWS, Irrigation, Faridabad	CLP1910	Team member
<b>WIND ENGINEERING STUDIES (Selected)</b>			
Wind tunnel tests for scaled RC chimneys	Different Agencies	-	PL/Member
Analysis of a multi-storeyed building	Agency	-	Member
Aerodynamic interference studies on the natural draught cooling towers of unit-5 of 1x210MW thermal power station; chimneys of unit-7 of 1x210MW thermal power station at Gandhinagar	GEB, Gujarat	CNP 1014-1017	PL and member
Checking the design of foundation of several microwave towers at various places in country	Pvt. Agencies	-	PL and team member
Design check of 100/120 m guyed tower	ECIL	-	PL
Design check of 100 m microwave tower	Pvt. Agency	-	PL
Analysis and design of modular microwave tower	CEGELEC	-	PL
Analysis of a building	GDA	-	Team member

Full scale test of atomic power plant shell (ICW) (Kakrapar) 1988	NPCL	-	Team member
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a. **RESEARCH PUBLICATIONS** (in two parts, Papers in Journals and in Conferences)

JOURNAL PAPERS

SCIE

1. Rajeev Kumar **Garg**, Satish Chandra & Aman Kumar (2022): Analysis of bridge failures in India from 1977 to 2017, **Journal Structure and Infrastructure Engineering** (Taylor Francis/ SCIE 3.7), DOI: 10.1080/15732479.2020.1832539
2. Inqualabi, K.Q., **Garg**, R.K. & Rao, K.B. Reliability-Based Safety Amelioration of Bridge Corridors Considering Intersections under Earthquake Sequence. *J. Vib. Eng. Technol.* 11, 491–512 (2023). <https://doi.org/10.1007/s42417-022-00590-0> (SCIE 2.7 published 24 June 2022).
3. G.K. Sahu, **R.K. Garg** and Ram Kumar (2008). “Performance evaluation and rating of bridges under uncertain structural parameters using integrated load test”. **Journal Scientific & Ind. Res** (R&D), (SCIE 0.555) Vol. 67 (9), Pp. 703-707.
4. R.K. **Garg**, J.X. Lou, M. Kasperski (1997). Some Features of Modeling Spectral characteristics of Flow in Boundary Layer in Wind Tunnels. **Jn. of Wind Engineering and Industrial Aerodynamics**. Vol. 72, pp.1-12, 1997 (SCIE 4.437 current).
5. R.K. **Garg** (1995). High Reynolds No. Simulation Tech. & Their Application to Circular Shaped Structures Model Test, by C. Barre and G Barnaud, *Jn. W.E.I.A*, Vol. 57, 1995 **Jn. Wind Eng. Ind. Aero** Vol. 57, 1995, pp. 145-158. in the same vol. pp. 416.
6. R.K. **Garg** (1995). Wind Tunnel Study of an Oscillating Tall Building, by AAFediw et al, *Jn. W. E. I.A*, Vol. 57, 1995, pp. 249-160. **Jn. Wind Eng. Ind. Aero**, Vol. 57, 1995, in the same vol. pp.435.
7. Inqualabi, K.Q. R.K. **Garg**, and K. Balaji Rao. Value of Risk-Informed Decision based on Consequences of Failure of Bridge Corridors under Seismic Hazard-Aftershocks. Rejected at **J. Performance Constructed Facilities** (ASCE). Under revision and resubmission.

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8. RK Garg, S. Garg, GK Sahu, JK Goyal, and K.N. Ghosh (2023). Geotechnical considerations and vibration response during rotary piling for constructing bridges. Proc. COMPDYN 2023 & ECCOMAS, Athens, June 2023 (**Scopus**).
9. A Fragility Analysis of Retrofitted RC Bridge Damaged under Severe Earthquake by Alok Rathore and R KGarg, LNCE Vol.330- 2023 (**Scopus**).
10. Rathore, A. and **Garg**, R.K. Assessing Resilience of Transportation Networks under Multi-hazards: A Review. Lecture Notes in Civil Engineering (LNCE), Springer, Volume 183. March 2022 (**Scopus**). <https://link.springer.com/book/10.1007/978-981-16-5543-2>
11. Garg S., Singh P., Gupta B., **Garg** R.K. Manipulation of Standard Link Mechanism for Robotic Application Using Artificial Neural Network and *PID*. Machine Learning for

Robotics Application-Studies in Computational Intelligence, 960. April 2021 (eds) Bianchini et al. (Scopus) [https://doi.org/10.1007/978-981-16-0598-7\\_1](https://doi.org/10.1007/978-981-16-0598-7_1)

12. Inqualabi, K.Q., R.K. Garg and K. Balaji Rao. Seismic Vulnerability of Urban Bridges due to Liquefaction using Nonlinear Pushover Analysis and assessing parameters for Damage Detection. *Procedia Engineering*, Vol. 173C (2017) pp. 1739-1746. DOI: <http://dx.doi.org/10.1016/j.proeng.2016.12.211>, (CiteScore: 0.56/ Scopus).
13. Garg, R.K., Kashif QI, K. Balaji (2018) Towards Seismic Resilient Bridges on an Urban Mass Rapid Transport Network. Proc. **ASCE India Conference 2017**- Urbanization Challenges In Emerging Economies: Moving Towards Resilient Sustainable Cities and Infrastructure 12 - 14 December 2017, New Delhi (WOS).
14. R.K. **Garg**, M.Kasperski, H.-J.Niemann and K.K.Chaudhry (1999). Aspect Ratio Effects On The Aerodynamics Of Short Circular Cylindrical Structures, 10<sup>th</sup> Intl. Conf. on Wind Engineering, Copenhagen, Denmark. June, 1999 (WOS).
15. Mansoor Khan, Umesh Tiwari, Nishtha Panwar, Ravi Dhawan, Subhash C. Jain, R. Bhatnagar **Rajeev Garg**, Pawan Kapur (2012). “Uniaxial Fiber Bragg Grating based Accelerometer”. Proc. Conf.on Fibre Optics and Photonics Chennai, Dec. 9. Poster Session II (TPo 29).pp.795-800 (WOS).
16. N. Panwar, U. Tiwari, N. Chandel, M. Khan, S. C. Jain, R. **Garg**, P. Kapur, (2012). “Long Period Fiber Grating Humidity Sensor with Gelatin/Cobalt Chloride Coating”. Proc. Int. Conf. on Fibre Optics and Photonics, Chennai, Dec.9, Optical Fiber Devices & Sensors IV (Paper No. W2B.4) (WOS).

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17. Rajeev K. **Garg**, Rajesh Chak, Vinod R. Dahake, Ashwani Kumar and Abhijit Mahapatra (2021). Structural and Functional Design of a Low Cost Vehicle Mounted Mobile Bridge Inspection Unit (MBIU). **Journal Indian Highways** (Indian Roads Congress), Vol. 49(7), Pp. 29-35.
18. Rajeev Kumar Garg and Rajeev Sharma (2020). Technology Development of Mobile Bridge Inspection Unit at CSIR in India. *Swadeshi Vigyan Patrika*, The Vigyan Bharti (VIBHA), Delhi, India, Vol. 1 (2), Pp. 25-31, July-Dec, 2020 (Published 26.02.2021; [www.swadeshiscience.org](http://www.swadeshiscience.org)) (<https://drive.google.com/file/d/1ETCTBTGcv4SePDXW-r9SfLP68tRiTYV8/view>).
19. Design of All-Weather Rural Roads for Flood Prone Areas to Mitigate the Effects of Flooding by Kashif QI, Abhishek Mittal and R. K. Garg. (under review at the Journal of Indian Highways).
20. **R.K. Garg** and K. K. Chaudhry (2007). “Wind Induced Flow-Field around Complex Shaped Buildings”, Indian Concrete Institute Journal, Vol. 8 (1), pp.33-41.
21. **R.K. Garg**, Ram Kumar, G.K. Sahu and S. Garg (2006). “Sensors and Actuators for Bridge Management – Recent Trends” The Bridge & Structural Engineer, ING-IABSE Journal. Vol. 36(2), pp. 1-21.
22. Ram Kumar, G.K. Sahu, **R.K. Garg**, VV Rao and MVB Rao (2005). “Retrofitting of a three-span two-girder PSC bridge” The Bridge & Structural Engineer, ING-IABSE Journal. Vol. 36(2), pp.45-50.
23. Ram Kumar, **R.K. Garg**, G.K. Sahu, VV Rao and MVB Rao (2005). “Evaluation and rehabilitation of distressed PSC girder bridge” in Construction Journal of India (CJI), pp.45-50.

24. Ram Kumar, G.K. Sahu, R.K. **Garg**, VVLK Rao, MVB Rao (2004). Retrofitting of a three-span two-girder PSC bridge. The Bridge & Structural Engineer, ING-IABSE Journal. Vol. 34(4), Dec.2004, pp.57-70.
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- A Fragility Analysis of Retrofitted RC Bridge Damaged Under Severe Earthquake by Alok Rathore and Rajeev Kumar Garg, presented 17SEE-IITR, Nov. 2022.
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