

# RAVI KANTH SRIWASTAV, PhD

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## RESEARCH INTERESTS

- Ground motion characterization
  - Seismic hazard analysis
  - Seismic vulnerability assessment
  - Performance-based earthquake engineering
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## ACADEMIC QUALIFICATION

### Institute Post Doctoral Fellow [Civil Engineering]

Indian Institute of Technology, Madras (Jan 2024 onwards)

Mentor: Prof. STG Raghukanth

### Doctor of Philosophy (PhD) [Civil Engineering]

Indian Institute of Technology, Gandhinagar (Aug 2017 – July 2023)

Supervisor: Dr. Dhiman Basu

Dissertation Title: Multi-component ground motion: Characterization and its Effect on Structures

### Master of Technology (MTech) [Civil & Infrastructure Engineering] (Topper)

Indian Institute of Technology, Patna (2014 - 2016)

Supervisor: Dr. Avik Samanta

Dissertation Title: Seismic response, damage, and vulnerability of tall buildings in Patna for future earthquakes.

### Bachelor of Technology (BTech), [Civil Engineering] (Topper)

SIEM, Siliguri, West Bengal University of Technology (2010 - 2014)

Dissertation Title: Design, detailing and Estimation of RCC Auditorium

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## JOURNAL PAPERS

1. **Sriwastav, R.K.** and Basu, D., 2023. Selection and scaling of 3-component ground motion suite for scenario-and intensity-based assessment of buildings and structures. *Bulletin of Earthquake Engineering*, pp.1-36. DOI: <https://doi.org/10.1007/s10518-023-01623-z>
2. **Sriwastav, R.K.** and Basu, D., 2022. Vertical spectra consistent with horizontal seismic hazard. *Soil Dynamics and Earthquake Engineering*, 157, p.107242. DOI: <https://doi.org/10.1016/j.soildyn.2022.107242>
3. **Sriwastav, R.K.** and Basu, D., 2022. Characterisation of design spectra for vertical ground motion. *International Journal of Earthquake and Impact Engineering*, 4(1), pp.1-29. DOI: <https://doi.org/10.1504/IJEIE.2022.122818>
4. **Sriwastav, R.K.**, 2022. Seismic vulnerability assessment of RC high-rise building considering soil–structure interaction effects. *Asian Journal of Civil Engineering*, pp.1-24. DOI: <https://doi.org/10.1007/s42107-022-00443-x>
5. Sharma, S., Gurjar, N., Menon, A., **Sriwastav, R.K.** and Basu, D., 2022. Developing axial force–bending moment interaction charts for the seismic design of RC slender shear walls with boundary elements. *The Indian Concrete Journal*, Vol. 96, No. 5, pp. 29-58.
6. **Sriwastav, R.K.** and Basu, D., 202\*. Rotational spectra consistent with horizontal seismic hazard. *Earthquake Engineering and Structural Dynamics*, (under review).

## Conference Papers:

1. **Sriwastav, R.K.**, Basu, D. 2022. Damping modification factor for the vertical response spectra. In *Proceedings of the 17th Symposium on Earthquake Engineering, Roorkee, India*.
2. Samanta, A. and **Sriwastav, R.K.**, 2018. Building Response and Fragility Curves for a High-rise Building with and without Soft Storey with Soil-Structure Interaction. In *Proceedings of the 4th International Conference on Civil Engineering for Sustainable Development, Khulna, Bangladesh*.
3. **Sriwastav, R.K.**, 2023. Effect of Strong Ground Motion Duration on the Structural Performance. *13th Structural Engineering Convention, VNIT Nagpur, 9<sup>th</sup> Dec, 2023*.

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## PROFESSIONAL MEMBERSHIPS

- American Society of Civil Engineers, ASCE
- American Concrete Institute, ACI
- Institution of Civil Engineers, ICE
- The Indian Association of Structural Engineers, IASTRUCTE
- Society for Earthquake and Civil Engineering Dynamics, SECED
- Seismological Society of America, SSA

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## PROFESSIONAL /TEACHING EXPERIENCE

### Senior Research Fellow, Indian Institute of Technology, Gandhinagar (July -Dec 2023 onwards)

Project name: Accidental Eccentricity due to Torsional Ground Motion—Understanding and Developing Design Recommendations.

### Assistant Professor, National Institute of Science & Technology, Odisha (June 2016- June 2017)

Courses taught: Basics of civil engineering, Advanced mechanics of materials, Bridge engineering, surveying, Engineering drawing. Additional responsibilities: Development of i) Civil engineering materials lab, ii) Basic civil engineering lab. Guided 9 B.Tech students for their final project.

### Independent teaching experience during PhD

Twice awarded the prestigious ‘Graduate Teaching Fellowship’ for independent teaching and lab sessions for the course ‘Civil Engineering materials lab (CE306)’ at IIT Gandhinagar.

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## SKILLS

Proficient: SAP2000, ETABS, Matlab, R, Etabs, Staad Pro, C, AutoCAD

Beginner: CSiBridge, SAFE, Abaqus, Primavera Project management, Opensees, Ansys, ArcGIS

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## CERTIFICATIONS/ SHORT COURSES/WORKSHOPS ATTENDED

### Technical

1. “Workshop on Analysis and Design of Seismically Isolated Structures”, February 27-28, 2023, held at **IIT Gandhinagar**.
2. "Understanding the Linkage: From Seismic Hazard to Ground Motion Characterization for Seismic Design" January 20-21, 2023, held at **IIT Gandhinagar**.
3. Workshop on Emerging Approaches in Earthquake Occurrence and Risks, July 5-12, 2022, held at **IIT Gandhinagar**.

4. Refresher Course on Seismic Rehabilitation and Retrofitting of Buildings by Indian Association of Structural Engineers (**IAStructe**), September 4 - October 2, 2021.
5. Certification in Scientific Writing by **IIT Gandhinagar**, September 2019-November 2019.
6. Advanced Course on “Performance Based Design of Structures (PBDS). January 23-25, 2019. **CSIR-SERC Chennai**.
7. Two weeks GIAN course titled “Seismic Performance Assessment of Structures through Numerical and Hybrid Simulations” at **IIT Hyderabad** (July 2 – 12, 2018).
8. **FEMA P-2018**, Seismic Evaluation of Older Concrete Buildings for Collapse Potential, July 1, 2021
9. A. Earthquake Early Warning System: Its Relevance for India. B. Seismic response of retaining walls Organized by the Indian Society of earthquake engineering (**ISET**), June 2020.

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#### **INVOLVEMENT IN CONSULTANCY WORKS (Completed)**

- **Review and assessment of design and construction of sewage pumping station, sewage treatment plant including well sinking design, design of inlet and screen chambers for L&T, Dholera, Gujarat. Project PI: Dr. SR Gandhi, CO PI: Dr. Dhiman Basu**  
Model development of the entire sewage treatment plant in SAP2000, assessment of stability of as-designed structure and evaluation of as-constructed with tilting.
- **Review and approval of construction methodology of pile wall system for a scale pit including connection design for L&T, Hazira, Gujarat. Project PI: Dr. SR Gandhi, CO PI: Dr. Dhiman Basu**  
Review and assessment of the FEM analysis of the excavation scheme and design carried out in Plexis 2D using SAP2000.
- **IOCL Ambawadi Residential Colony, Gujarat: Part 1- Structural Audit and Expert Opinion (2022), Project No.: CNS/IOCL/CE/P0121/2223/0005. Project PI: Dr. Dhiman Basu**  
Preparation of the numerical models of the buildings and assessment of the current strength of the building. Providing basic retrofitting methodology along with sufficient details such as the material grade, member dimensions, reinforcement details etc.
- **Collapse of part of the wet section of the Soda Ash plant of Nirma Ltd. (Saurashtra Chemicals), Porbandar, Gujarat (2019)—Root Cause Identification. Project PI: Dr. Dhiman Basu CO PI: Dr. Manish Kumar**  
Conducted onsite survey, test/measurement, and analysis of the data.  
Prepared a report outlining the possible root cause(s) of the collapse.
- **Structure Stability & Retrofitting Scheme for existing single Storey buildings at Sabarmati, Ahmedabad, Gujarat. - RITES (2019). Project PI: Dr. Dhiman Basu**  
Arranged and supervised onsite NDT and core testing at the lab followed by assessment of structural health. A retrofitting scheme was designed to improve the structural strength/integrity of the building.
- **Site Visit and Extend Opinion Regarding Admissibility of New Construction of Retrofitting/ Strengthening / Repairing of ESI Corporation Regional Office Building at Ashram Road, Ahmedabad (2018). Project PI: Dr. Dhiman Basu**  
Site visit and review of the proposed retrofit scheme generated by a third party.