

# Pradip Sarkar

Mail: sarkarp@nitrrkl.ac.in

Phone: +91 (661) 246 2326 (off), 246 3326 (res) 9439429739 (Cell)

## EDUCATION

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- Indian Institute of Technology Madras, Chennai, Ph.D. in Structural Engineering, 2009
- Bengal Engineering and Science University, Shibpur, M.E. in Engineering Mechanics, 2002
- Bengal Engineering and Science University, Shibpur, B.E. in Civil Engineering, 1999

## PROFESSIONAL EXPERIENCE

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- National Institute of Technology Rourkela, Professor (2020 to Present)
- National Institute of Technology Rourkela, Associate Professor (2009 to 2020)
- Technip India Limited, Chennai, Senior Engineer (2008- 2009)
- Bechtel India Private Limited, New Delhi, Engineer (2007-2008)

## TEACHING AND RESEARCH INTEREST

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- Earthquake Analysis and Design of Structures
- Structural Properties of Building Materials

## AWARDS AND RECOGNITION

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- Best Teacher Award (2018-2019) by NIT Rourkela
- Functional Recognition (July 2008) for quality of work by Bechtel New Delhi
- GC Mitra Memorial Gold Medal (2002) for 1st rank in M.E. in the Faculty of Engineering and Technology, Bengal Engineering and Science University Shibpur
- University Silver Medal (2002) for the 1st rank in M.E. in the Department of Applied Mechanics, Bengal Engineering and Science University Shibpur

## JOURNAL ARTICLES

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1. Zade, N.P.; Bhosale, A.; Dhir, P.K. **Sarkar, P.** and Davis, R. (accepted), "Variability of Mechanical Properties of Cellular Lightweight Concrete Infill and its Effect on Seismic Safety", *Natural Hazards Review*, ASCE, DOI: 10.1061/(ASCE)NH.1527-6996.0000501 (SCIE)
2. John, S.T.; Mohan, A.; Philip, M.S.; Sarkar, P.; Davis, R. (accepted), "An IoT Device for Striking of Vertical Concrete Formwork", *Engineering, Construction and Architectural Management*, Emerald Publishing, DOI: 10.1108/ECAM-10-2020-0859 (SCIE)
3. Zade, N.P.; Das, B.; **Sarkar, P.** and Davis, R. (accepted), "Seismic Performance of a New Capacity Design Scheme for RC Framed Building", *Journal of Earthquake Engineering*, Taylor and Francis, DOI: 10.1080/13632469.2020.1838968 (SCIE)
4. Panda, S.; **Sarkar, P.** and Davis, R. (2021), "Abrasion Resistance and Slake Durability of Copper Slag Aggregate Concrete" *Journal of Building Engineering*, Elsevier, DOI: 10.1016/j.job.2020.101987 (SCIE)

5. Sahoo, K.K.; Dhir, P.K.; Teja, P.R.R.; **Sarkar, P.** and Davis, R. (2020), “Seismic Safety Assessment of Buildings with Fly Ash Concrete”, *Practice Periodical on Structural Design and Construction*, 25(3): 04020024, ASCE, DOI: 10.1061/(ASCE)SC.1943-5576.0000502 (Scopus)
6. Bhosale, A.S.; Zade, N.P.; **Sarkar, P.** and Davis, R. (2020) “Mechanical and Physical Properties of Cellular Lightweight Concrete Block Masonry”, *Construction and Building Materials*, Elsevier, DOI: 10.1016/j.conbuildmat.2020.118621 (SCIE)
7. Dhir, P.K.; Zade, N.P.; Basu, A.; Davis, R. and **Sarkar, P.** (2020), “Implications of Importance Factor on Seismic Design from 2000 SAC-FEMA Perspective”, *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering*, ASCE, DOI: 10.1061/AJRUA6.0001048 (SCIE)
8. Sahoo, K.K.; Dhir, P.K.; Teja, P.R.R.; **Sarkar, P.** and Davis, R. (2020), “Variability of Silica Fume Concrete and its Effect on Seismic Safety of Reinforced Concrete Buildings”, *Journal of Materials in Civil Engineering*, ASCE, DOI: 10.1061/(ASCE)MT.1943-5533.0003072 (SCIE)
9. Panda, S. and **Sarkar, P.** (2020), “Leaching Behavior of Copper Slag Aggregate Cement-mortar by Atomic Absorption Spectroscopy” *Materials Today: Proceedings*, Elsevier, DOI: 10.1016/j.matpr.2020.02.856 (Scopus)
10. Sahu, S.; **Sarkar, P.** and Davis, R. (2020), “Uncertainty in Bond Strength of Unreinforced Fly Ash Brick Masonry”, *Journal of Materials in Civil Engineering*, ASCE, DOI: 10.1061/(ASCE)MT.1943-5533.0003095 (SCIE)
11. John, S.T.; Roy, B.K.; **Sarkar, P.** and Davis, R. (2020), “An IoT Enabled Real-Time Monitoring System for Early Age Compressive Strength of Concrete”, *Journal of Construction Engr. & Management*, ASCE, DOI: 10.1061/(ASCE)CO.1943-7862.0001754 (SCIE)
12. Sahu, S.; Teja, P.R.R.; **Sarkar, P.** and Davis, R. (2019), “Effect of Brick Prewetting on Masonry Bond Strength”, *Journal of Materials in Civil Engineering*, ASCE, DOI: 10.1061/(ASCE)MT.1943-5533.0002866 (SCIE)
13. Sahu, S.; **Sarkar, P.** and Davis, R. (2019), “Quantification of Uncertainty in Compressive Strength of Fly Ash Brick Masonry”, *Journal of Building Engineering*, Elsevier, DOI: 10.1016/j.jobbe.2019.100843 (SCIE)
14. Bhosale, A.S.; Zade, N.P.; Davis, R. and **Sarkar, P.** (2019) “Experimental Investigation of Autoclaved Aerated Concrete Masonry”, *Journal of Materials in Civil Engineering*, ASCE, DOI: 10.1061/(ASCE)MT.1943-5533.0002762 (SCIE)
15. Mistri, A.; **Sarkar, P.** and Davis, R. (2019), “Column-to-beam Moment Capacity Ratio and Seismic Risk of Framed Building”, *Structures and Buildings*, Proceedings of the Institution of Civil Engineers, DOI: 10.1680/jstbu.17.00100. (SCIE)
16. Sahoo, K.K.; **Sarkar, P.**, and Davis, R. (2019), “Mechanical properties of silica fume concrete designed as per construction practice”, *Construction Materials*, Proceedings of the Institution of Civil Engineers, DOI: 10.1680/jcoma.16.00085. (Scopus)
17. Sahu, S.; Teja, P.R.R.; **Sarkar, P.** and Davis, R. (2019), “Variability in the Compressive Strength of Fly Ash Bricks”, *Journal of Materials in Civil Engineering*, ASCE, DOI: 10.1061/(ASCE)MT.1943-5533.0002592 (SCIE)
18. Sahu, D.K.; Nishanth, M; Dhir, P.K.; **Sarkar, P.**; Davis, R. and Mangalathu, S. (2019), “Stochastic Response of Reinforced Concrete Buildings using High Dimensional Model Representation”, *Engineering Structures*, Elsevier, DOI: 10.1016/j.engstruct.2018.10.083 (SCIE)
19. Sahoo, K.K.; Sathyan, A.K.; **Sarkar, P.**, and Davis, R. (2018), “Improvement of Mortar and Concrete Using Ureolytic Bacteria”, *Construction Materials*, Proceedings of the Institution of Civil Engineers, DOI: 10.1680/jcoma.16.00022. (Scopus)

20. Bhosale, A.S.; Davis, R. and **Sarkar, P.** (2018), “Seismic Safety of Building – Performance of Existing Indicators”, *Journal of Architectural Engineering*, ASCE, DOI: 10.1061/(ASCE)AE.1943-5568.0000319. (Scopus)
21. Bhosale, A.S.; Davis, R. and **Sarkar, P.** (2018), “A New Seismic Vulnerability Index for Vertically Irregular Buildings”, *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering*, ASCE, DOI: 10.1061/AJRUA6.0000973. (SCIE)
22. Dhir, P.K.; Davis, R. and **Sarkar, P.** (2018), “Safety Assessment of Gravity Load–Designed Reinforced Concrete–Framed Buildings”, *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering*, ASCE, DOI: 10.1061/AJRUA6.0000955. (SCIE)
23. Bhosale, A.S.; Davis, R. and **Sarkar, P.** (2017), “Vertical Irregularity of Buildings: Regularity Index versus Seismic Risk”, *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering*, ASCE, DOI: 10.1061/AJRUA6.0000900. (SCIE)
24. Kumari, C.; Das, B.; Jayabalan, R.; Davis, R. and **Sarkar, P.** (2017), “Effect of Nonureolytic Bacteria on Engineering Properties of Cement Mortar”, *Journal of Materials in Civil Engineering*, ASCE, DOI: 10.1061/(ASCE)MT.1943-5533.0001828. (SCIE)
25. Mistri, A.; Davis, R. and **Sarkar, P.** (2016), “Condition Assessment of Fire Affected Reinforced Concrete Shear Wall Building – A Case Study”, *Advances in Concrete Construction*, Techno-Press, DOI: 10.12989/acc.2016.4.2.089. (SCIE)
26. Balakrishnan, B. and **Sarkar, P.** (2016), “Efficacy of Code Provisions for Seismic Design of Asymmetric RC Building”, *Journal of the Institution of Engineers (India): Series A*, Springer, DOI: 10.1007/s40030-016-0156-0. (Scopus)
27. Sahoo, K.K.; **Sarkar, P.**, and Davis R. (2016) “Behaviour of Recycled Coarse Aggregate Concrete: Age and Successive Recycling”, *Journal of the Institution of Engineers (India): Series A*, Springer, DOI: 10.1007/s40030-016-0154-2. (Scopus)
28. Haran Pragalath, D.C.; Bhosale, A.S.; Davis, R. and **Sarkar, P.** (2016), “Multiplication Factors for Open Ground Storey buildings - A Reliability Based Evaluation”, *Earthquake Engineering and Engineering Vibration*, Springer, DOI: 10.1007/s11803-016-0322-4. (SCIE)
29. Sahoo, K.K.; Sathyan, A.K.; Kumari, C.; **Sarkar, P.**, and Davis, R. (2016), “Investigation of cement mortar incorporating Bacillus Sphaericus”, *International Journal of Smart and Nano Materials*, Taylor and Francis, DOI: 10.1080/19475411.2016.1205157. (Scopus)
30. **Sarkar, P.**; Meher Prasad, A. and Menon, D. (2016), “Seismic evaluation of RC stepped building frames using improved pushover analysis”, *Earthquakes and Structures*, Techno-Press, DOI: 10.12989/eas.2016.10.4.913. (SCIE)
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32. Mistri, A. and **Sarkar, P.** (2016) “Capacity Design of Reinforced Concrete Framed Building for Earthquake Loading” *Indian Journal of Science and Technology*, DOI:10.17485/ijst/2016/v9i30/99225. (Scopus)
33. Haran Pragalath, D. C.; Davis, R. and **Sarkar, P.** (2015). Comparison of fragility analysis for a RC frame by two major approaches, *Asian Journal of Civil Engineering (Building and Housing)*, Springer, 16(1): 47-66. (Scopus)
34. **Sarkar, P.**; Meher Prasad, A. and Menon, D. (2010), “Vertical geometric irregularity in stepped building frames”, *Engineering Structures*, Elsevier, DOI: 10.1016/j.engstruct.2010.03.020. (SCIE)
35. **Sarkar, P.**, Govind, M. and Menon, D. (2009), “Estimation of Short-term Deflection in Two-way RC Slab”, *Structural Engineering and Mechanics*, Techno-Press, DOI: 10.12989/sem.2009.31.2.237. (SCIE)

36. Govind, M.; **Sarkar, P.** and Menon, D. (2008) “Short-term Deflection in Two-way RC Slab”. *Journal of Structural Engineering*, CSIR-SERC, 35(4): 247-254. (Scopus)
37. **Sarkar, P.**; Agrawal, R. and Menon, D. (2007), Design of RC Beam-column Joints under Seismic Loading - A Review. *Journal of Structural Engineering*, CSIR-SERC, 33(6): 449-457. (Scopus)
38. **Sarkar, P.**; Dutta, S. C. and Nandi, N. (2003), “A Critical Review of Dam Analysis Methodologies”, *International Journal of Applied Mechanics and Engineering*, 8(3): 461-482. (Scopus)

#### CONFERENCE PROCEEDINGS

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1. Lalrinmawii, E; Sahu, S.; **Sarkar P.** and Davis, R. (2020) “Feasible use of Recycled Foam Concrete in Cement Mortar”, International Conference on Materials, Mechanics and Structures, July 14-15, 2020, NIT Calicut, India, IOP Conference Series: Materials Science and Engineering, 936: 012011, DOI:10.1088/1757-899X/936/1/012011
2. Panda, S.; **Sarkar P.** and Davis, R. (2020) “Effect of Water/Cement Ratio on Mix Design and Mechanical Strength of Concrete with Copper Slag as Fine Aggregate”, International Conference on Materials, Mechanics and Structures, July 14-15, 2020, NIT Calicut, India, IOP Conference Series: Materials Science and Engineering, 936: 012019, DOI: 10.1088/1757-899X/936/1/012019
3. Zade, N.; Koparde, S. A.; **Sarkar P.** and Davis, R. (2020) “Non-linear Behaviour of Infilled RC frame”, International Conference on Materials, Mechanics and Structures, July 14-15, 2020, NIT Calicut, India, IOP Conference Series: Materials Science and Engineering, 936: 012021, DOI: 10.1088/1757-899X/936/1/012021
4. John, S. T.; Sahu, D. K.; Sukumaran, S. and **Sarkar P.** (2020) “Enhancement of Seismic Performance of Open Ground Storeyed Building using X-Bracings”, International Conference on Materials, Mechanics and Structures, July 14-15, 2020, NIT Calicut, India, IOP Conference Series: Materials Science and Engineering, 936: 012029, DOI: 10.1088/1757-899X/936/1/012029
5. Karuthedath, P. L.; Davis, R. and **Sarkar P.** (2020) “Probabilistic Assessment of Torsional Buildings”, International Conference on Materials, Mechanics and Structures, July 14-15, 2020, NIT Calicut, India, IOP Conference Series: Materials Science and Engineering, 936: 012041, DOI: 10.1088/1757-899X/936/1/012041
6. Sahu, D. K.; **Sarkar P.** and Davis, R. (2019) “Analysis of RC Buildings by Metamodel Approaches”, International Conference on Advanced Research and Innovations in Civil Engineering, June 13-14, 2019, Kerala, India
7. Sahu, S.; **Sarkar P.** and Davis, R. (2019) “Correlation Establishment of Compressive Strength and Bond Strength of Fly Ash Brick Masonry”, International Conference on Advanced Research and Innovations in Civil Engineering, June 13-14, 2019, Kerala, India
8. Panda, S.; **Sarkar P.** and Davis, R. (2019) “Mechanical Strength, Voids and Sorptivity Evaluation of Copper Slag Based Standard Concrete”, International Conference on Advanced Research and Innovations in Civil Engineering, June 13-14, 2019, Kerala, India
9. Koparde, S. A.; Mourya, V. K. and **Sarkar, P.** (2018) “Non-linear Behaviour of Masonry Infill RC Frame: Influence of Masonry Mechanical Properties”, Conference on Next Frontiers in Civil Engineering: Sustainable and Resilient Infrastructure, November 30 - December 01, 2018, IIT Bombay, India.
10. Bhattacharjee, S. and **Sarkar, P.** (2018) “Engineering Damage Parameters for RC Framed Building Subjected to Earthquake Ground Motion”, 8<sup>th</sup> National Conference on Wave Mechanics and Vibrations, November, 26-28, 2018, NIT Rourkela, India.
11. Sahu, D.K.; **Sarkar, P.** and Davis, R. (2018) “Seismic Analysis of Concrete Buildings by Non-statistical Approaches”, 8<sup>th</sup> National Conference on Wave Mechanics and Vibrations, November, 26-28, 2018, NIT Rourkela, India.

12. Zade, N.P.; **Sarkar, P.** and Davis, R. (2018) “Seismic Behaviour of Unreinforced Masonry”, 8<sup>th</sup> National Conference on Wave Mechanics and Vibrations, November, 26-28, 2018, NIT Rourkela, India.
13. Sahu, D.K.; Davis, R.; **Sarkar, P.** and Patro, S.K. (2018) “Comparison of Energy Dissipation Devices in Response Reduction of Blast-induced Vibration of Buildings”, *12<sup>th</sup>fib International PhD Symposium in Civil Engineering*, August 29-31, 2018, Czech Technical University Prague; Czech Republic, Pages: 1047-1054
14. Sahu, S.; **Sarkar, P.** and Davis, R. (2018) “Probabilistic Models for Shear-bond Strength of Clay and Fly Ash Bricks”, *12<sup>th</sup>fib International PhD Symposium in Civil Engineering*, August 29-31, 2018, Czech Technical University Prague; Czech Republic, Pages: 649-656
15. Sahu, S.; **Sarkar, P.** and Davis, R. (2018) “Supplementary Cementitious Material from Recycled CLC and AAC Block Dust”, *International Conference on Advances in Construction Materials and Structures*, March 7-8, 2018, IIT Roorkee, India.
16. **Sarkar, P.**; Davis, R. and Haran Pragalath, D. C. (2017) “Seismic Fragility Curves using Natural and Synthetic Ground Motions”, *39<sup>th</sup>IABSE Symposium*; September 19-23, 2017; Vancouver, Canada
17. Sahoo, K.K.; **Sarkar, P.**, and Davis R. (2016) “Artificial Neural Networks for Prediction of Compressive Strength of Recycled Aggregate Concrete”, *International Conference on Environment, Agricultural and Civil Engineering*; March 24-25, 2016; London, United Kingdom
18. Paul, P.; Das, P.K. and **Sarkar, P.** (2014) “Studies on Identifying Critical Joints in RC Framed Building Subjected to Seismic Loading”; *Structural Engineering Convention*; December 22-24, 2014; IIT Delhi, New Delhi, India
19. Sar, D. and **Sarkar, P.** (2014) “Seismic Evaluation of Un-reinforced Masonry Structures”, *2<sup>nd</sup>International Conference on Advances in Civil, Structural and Environmental Engineering*; October 25-26, 2014; Zurich, Switzerland.
20. Davis, R.; Haran Pragalath, D.C. and **Sarkar, P.** (2014) “Open Ground Storey Buildings Designed as per Various International Codes – A Seismic Performance Comparison Study”, *National Conference on Recent Innovations in Civil Engineering and Technology*; September 24-25, 2014, Kerala, India.
21. Haran Pragalath, D.C.; Davis, R. and **Sarkar, P.** (2014) “Efficacy of Multiplication Factors Suggested by International Codes for Open Ground Storey Buildings – A Reliability-based Evaluation”, *8<sup>th</sup>National Frontiers of Engineering*; INAE and IIT Gandhinagar; September 5-6, 2014; Gandhinagar, India.
22. Ganesh, R.; Haran Pragalath, D.C.; Davis, R.; **Sarkar, P.** and Singh, S.P. (2013) Seismic Fragility Analysis of Axially Loaded Single Pile”, *International Conference on Structural Engineering and Mechanics*; December 20- 22, 2013; Rourkela, India
23. Priyadarshini, M.; Davis, R. Haran Pragalath, D. C. and **Sarkar, P.** (2013) “Seismic Reliability Assessment of R/C Stepped Frames”, *International Conference on Structural Engineering and Mechanics*; December 20- 22, 2013; Rourkela, India
24. Sahoo, K.K.; **Sarkar, P.**, and Davis R. (2013), “Behaviour of recycled aggregate concrete”, *International Conference on Structural Engineering and Mechanics*; December 20- 22, 2013; Rourkela, India
25. Agrawal, V. and **Sarkar, P.** (2013) “Effect of Irregularity on the Fundamental Period of Setback Buildings”, *11<sup>th</sup>International Conference on Recent Advances in Structural Dynamics*, July 01-03, 2013, Pisa, Italy.
26. Sahoo, K.K.; **Sarkar, P.**, and Davis R. (2013); Analysis of Self-supported Steel Chimney with Manhole”, *International Conference on Innovations in Civil Engineering*; May 09-10, 2013; Kerala, India.

27. Priyadarshini, M.; Davis, R. Haran Pragalath, D. C. and **Sarkar, P.** (2013) "Seismic Reliability Assessment of Typical Soft-storey RC Buildings in Manipur Region"; *International Conference on Innovations in Civil Engineering*; May 09-10, 2013; Kerala, India.
28. Haran Pragalath, D C;**Sarkar, P.** and Davis; R.(2013)"Comparison of Fragility Analyses for a RC Frame by Two Major Approaches";*National Conference on New Horizons in Civil Engineering*; April 12-13, 2013, Manipal, India.
29. Kumar, C.R.; Davis, R. and **Sarkar, P.** (2013) "Seismic Performance of Typical Open Ground Storey Framed Buildings"; *National Conference on New Horizons in Civil Engineering*; April 12-13, 2013; Manipal, India.
30. Sar, D. and **Sarkar, P.** (2012), "Seismic evaluation of existing un-reinforced masonry building", *International Symposium on Engineering under Uncertainty: Safety Assessment and Management*, January 04-06, 2012, Bengal Engineering and Science Univ, India.
31. **Sarkar, P.**; Menon, D. and Meher Prasad, A. (2012) "Seismic evaluation of RC stepped building frames" *International Symposium on Engineering under Uncertainty: Safety Assessment and Management*, January 04-06, 2012, Bengal Engineering and Science Univ, India
32. Bijily, B. and **Sarkar, P.** (2012) "critical evaluation of torsional provision in IS-1893: 2002", *International Conference on Advances in Materials and Techniques for Infrastructure Development*, January 04-06, 2012; MNIT Jaipur, India.
33. Patel, S. and **Sarkar, P.** (2012) "Earthquake resistant design of open ground storey framed building", *International Conference on Advances in Materials and Techniques for Infrastructure Development*, January 04-06, 2012; MNIT Jaipur, India.
34. Sahoo, K.; **Sarkar, P.** and **Asha, AV** (2012) "Effect of geometry on the design of self-supporting steel chimney as per IS 6533:1989", *International Conference on Advances in Materials and Techniques for Infrastructure Development*, January 04-06, 2012; MNIT Jaipur, India.
35. Bijily, B. and **Sarkar, P.** (2011) "Seismic evaluation of asymmetric RC buildings designed in accordance with IS-1893: 2002", *Fourth International Conference on Structural Stability and Dynamics*, June 22-24, 2011; NIT Calicut, India, Paper# S083
36. Sethy, K. and **Sarkar, P.** (2011) "Application of Pushover Analysis to RC Bridges", *National Conference on Advances in Materials and Structures*, Feb 03-04, 2011, Puducherry, India
37. Tripathy, R. and **Sarkar, P.** (2010) "Improved Displacement Coefficients for Target Displacement Estimation of Setback Building" *International Conference on Innovative World of Structural Engineering*, December 25-27, 2010, Aurangabad, India.
38. **Sarkar, P.**, Davis, R., Meher Prasad, A. and Menon, D. (2007) "Seismic Performance of Y shaped 10-storeyed Delhi Secretariat Building" *9<sup>th</sup> Canadian Conference on Earthquake Engineering*, June 27-29, 2007, Ottawa, ON, Canada.
39. **Sarkar, P.**, Davis, R., Meher Prasad, A. and Menon, D. (2007) "Pushover Analysis of a Ten-storeyed Y-Shaped Building (Delhi Secretariat)" *International Conference on Civil Engineering in the New Millennium: Opportunities and Challenges*, January 11-14, 2007, Bengal Engineering and Science University Shibpur, India.
40. **Sarkar, P.**, Govind, M. and Menon, D. (2006) "Estimation of Short-term Deflection in Two-way RC Slab", *Second International Congress on Computational Mechanics and Simulation*, December 8-10, 2006; Indian Institute of Technology Guwahati, India.
41. Meher Prasad, A., Menon, D. **Sarkar, P.** and Davis R. (2006), "Studies on Seismic Performance of RC Buildings" proceedings of *National Conference on Earthquake Analysis and Design of Structures*, February 2-3, 2006, PSG College of Technology Coimbatore, India.
42. **Sarkar, P.**, Meher Prasad, A. and Menon, D. (2005) "Strength Distribution in Asymmetric Building: Review of Code Provision" *Structural Engineering Convention*, December 14-16, 2005, Indian Institute of Science Bangalore, India.

43. **Sarkar, P.**; Menon, D. and Patir, B. K. (2004) “Survey and Assessment of Seismic Safety of Multi-storied Buildings in Guwahati, India” *13<sup>th</sup> World Conference on Earthquake Engineering*, August 1-6, 2004, Vancouver, BC, Canada
44. Menon, D.; Sengupta, A. K. and **Sarkar, P.** (2004), “Seismic Evaluation and Retrofit of Existing Multi-storeyed Buildings”, *World Congress on Natural Disaster Mitigation*, February 19-21, 2004, New Delhi, India.
45. Menon, D.; Meher Prasad A.; Sengupta, A. K. and **Sarkar, P.** (2004), “Assessment of Seismic Vulnerability and Retrofit of Existing Multi-storeyed Buildings: Two Case Studies”, *2nd Indo-German Workshop on Seismic Safety of Structures, Risk Assessment and Disaster Mitigation*, February 15-16, 2004, Indian Institute of Technology Madras, India.
46. Dutta, S. C.; **Sarkar, P.** and Nandi, N. (2002). “Example Based Study on Behaviour of Earthen Embankment”, *National Seminar on Recent Challenges in Civil Engineering-2002*, July 2002, ACCE, Hyderabad, India.
47. **Sarkar, P.** and Dutta, S. C. (2002), “Performance of Various Analysis Methods in Predicting the Behaviour of an Earthen Embankment”, *First National Seminar on Role of IT in Fire and Disaster Management*, February 23-24, 2002, IES, IPS Academy, Indore, India
48. Nandi, N., **Sarkar, P.** and Dutta, S. C. (2001), “Study on Behaviour of a Few Indian Dams and Embankments”, *Second International Conference on Theoretical, Applied, Computational and Experimental Mechanics*, December 27-30, 2001, Indian Institute of Technology Kharagpur, India

#### BOOK CHAPTERS

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1. Patro S.R., Sasmal S.K., Suneel Kumar G., **Sarkar P.**, Behera R.N. (2021), “Seismic Analysis of Vertical Geometric Irregular Building Considering Soil–Structure Interaction”, In: Patel S., Solanki C.H., Reddy K.R., Shukla S.K. (eds) *Proceedings of the Indian Geotechnical Conference 2019. Lecture Notes in Civil Engineering*, vol 138. Springer, Singapore. DOI: 10.1007/978-981-33-6564-3\_46
2. Sahu, D.; **Sarkar, P.** and Davis R. (2021), “Analysis of RC Buildings by Metamodel Approaches”, In: Singh R.M., Sudheer K.P., Kurian B. (eds) *Advances in Civil Engineering. Lecture Notes in Civil Engineering*, 83: 817-829, Springer, Singapore, DOI: 10.1007/978-981-15-5644-9\_65
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5. Bhattacharjee, S. and **Sarkar, P.** (2020), “Seismic Evaluation of Vertically Irregular RC Buildings”, In: Chakraverty, S., Biswas, P. (eds) *Recent Trends in Wave Mechanics and Vibrations. Lecture Notes in Mechanical Engineering*, Pages 287-294, Springer, Singapore, DOI: 10.1007/978-981-15-0287-3\_21
6. Zade, N. P.; **Sarkar, P.**, Davis, R. (2020), “Seismic Behaviour of Unreinforced Masonry”, In: Chakraverty, S., Biswas, P. (eds) *Recent Trends in Wave Mechanics and Vibrations. Lecture Notes in Mechanical Engineering*, Pages 151-164, Springer, Singapore, DOI: 10.1007/978-981-15-0287-3\_13
7. Paul, P., Das, P.K. and **Sarkar, P.** (2015), “Studies on Identifying Critical Joints in RC Framed Building Subjected to Seismic Loading”, In: Matsagar V. (eds) *Advances in Structural Engineering*. Springer, New Delhi. DOI: 10.1007/978-81-322-2193-7\_77

8. **Sarkar, P.**, Menon, D. and Prasad, A.M. (2013), “Seismic Evaluation of RC Stepped Building Frames”, In: Chakraborty S., Bhattacharya G. (eds) Proceedings of the International Symposium on Engineering under Uncertainty: Safety Assessment and Management (ISEUSAM - 2012). Springer, India. DOI: 10.1007/978-81-322-0757-3\_82
9. Sar, D. and **Sarkar, P.** (2013), “Seismic Evaluation of Existing Unreinforced Masonry Building”, In: Chakraborty S., Bhattacharya G. (eds) Proceedings of the International Symposium on Engineering under Uncertainty: Safety Assessment and Management (ISEUSAM - 2012). Springer, India. DOI: 10.1007/978-81-322-0757-3\_88

## **STUDENT GUIDANCE**

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### Ph. D. Thesis

1. Santosini Sahu (2021) Structural characterization and modelling of fly ash brick masonry
2. Bhosale Avadhoot Shivaji (2018) Studies on vertical irregular RC infilled frame buildings
3. Kirtikanta Sahoo (2016) Studies on concrete made of recycled materials for sustainability
4. Haran Pragalath D C (2015) Reliability-based seismic design of open ground storey framed buildings

### M. Tech. (by research) Thesis

1. Prateek Kumar Dhir (2017) Seismic performance assessment of RC multi-storeyed gravity load designed frames
2. Peri Raghava Ravi Teja (2016) Studies on mechanical properties of brick masonry
3. Debranjana Sar (2015) Seismic evaluation of un-reinforced masonry structures
4. Rasmitha Tripathy (2014) Pushover analysis of R/C setback building frames

### M. Tech. Project

1. Abhijeet Kumar (2021) IoT based real-time strength monitoring system for silica fume concrete
2. Anishkumar Mukesh Vekariya (2021) Seismic fragility analysis of RC bridge pier
3. Bethamsetty Sai Kiran (2021) Seismic fragility analysis of setback building frames
4. Manisha Purohit (2020) Properties of concrete incorporating copper slag as fine aggregate
5. Athul Mohan (2020) Development of an IoT based real-time monitoring system and methodology for formwork stripping
6. Amir Kumar Rath (2020) Maximum credible global damage of RC framed building under bidirectional earthquake
7. Sayanti Bhattacharjee (2019) Natural period of setback buildings -assessment of IS 1893: 2016 guidelines
8. Shivprasad Anil Koparde (2019) Non-linear behaviour of infilled RC framed building using N2 method
9. Bijoya Das (2019) Simplified method for capacity design of RC framed building
10. Jitendra Prajapat (2019) Metamaterials used as seismic shields
11. Philip Luke K (2018) Seismic Performance of Asymmetric Buildings
12. Vishal Kumar Mourya (2018) Non-linear behaviour of masonry infill RC frame: Influence of masonry mechanical properties



13. Amit Kumar Raj (2018) Natural Period of Setback Buildings -Assessment of IS 1893: 2016 Guidelines.
14. Bijoy Krishna Roy (2018) Evaluation of concrete strength using maturity method
15. Nikhil P Zade (2017) Behaviour of Unreinforced Masonry
16. Fareed Ahmad (2017) Enhancement of properties of recycled coarse aggregate concrete using non-ureolytic bacteria.
17. Pranab Halder (2017) Cementitious Material from Recycled CLC and AAC Block Dust
18. Evangeline Lalrinmawii (2017) Study on properties of cement mortar using recycled aggregates
19. Abhijit Mistri (2016) Capacity design of reinforced concrete framed building for earthquake loading
20. M Santosh Madhav (2016) Three-dimensional finite element analysis of flexible pavements
21. K Mahesh Babu (2015) Lateral load resisting behaviour of existing railway bridge piers
22. Samrat Biswas (2015) Seismic connection for steel square hollow beam-to-square hollow column joint
23. Aparna K Sathyan (2015) Study on mechanical properties of cement mortar by the addition of Ureolytic bacteria
24. Nikhilesh Bhatt (2015) Evaluation of the code provisions for asymmetric buildings
25. Smaranika Nath (2015) Stress wave propagation in split Hopkinson pressure bar
26. K Suresh Chowdary (2014) Effect of diaphragm discontinuity in the seismic response of multi-storeyed building
27. MD Zeeshan Ali (2014) Shear demand in exterior beam-column joints
28. Sushree Sunayana (2014) Moment capacity ratio at beam-column joint in a regular RC framed building
29. Vinay Mohan Agrawal (2013) Effect of setback on fundamental period of RC framed buildings
30. C Ranjith Kumar (2013) Implications of major international code design provisions for open ground storey buildings
31. Kisan Jena (2012) Passive vibration control of framed structures by base isolation method using lead rubber bearing
32. Bijily Balakrishnan (2012) Critical evaluation of torsional provision in IS-1893: 2002
33. Avadhoot Bhosale (2012) Seismic evaluation of RC framed building using shear failure model
34. Kirtikanta Sahoo (2012) Analysis of self-supported steel chimney as per Indian standard
35. Snehash Patel (2012) Earthquake resistant design of low-rise open ground storey framed building
36. Haran Pragalath D C (2011) Support optimization tool for an aero-engine configuration system
37. Kaliprasanna Sathy (2011) Application of pushover analysis to RC bridges

#### B. Tech. Project

1. Satya Prakash Sahoo (2021) Assessment and reduction of greenhouse gas emission in buildings
2. Rishabh Bajaj (2020) Internet-of-things based method for prediction of setting time of fresh concrete
3. Ishan Jee Dhruv (2020) Effect of silica fume on bleeding and plastic shrinkage cracking of the concrete
4. Subham Agarwal (2019) Prediction of plastic shrinkage drying cracks on the concrete surface
5. Aman Kumar Singhal (2019) Prediction of early age shrinkage in cementitious materials

6. Biswabhanu Puhan (2019) Free and forced vibration analysis of SDOF system with fractional order damping
7. Nishant Thacker (2018) Use of micro-concrete in the rehabilitation of damaged reinforced concrete structures
8. Jhasketan Behera (2018) Use of plastic waste as a coarse aggregate in concrete
9. Rashmi Ranjan Sahoo (2017) Development of design aid for bridge superstructure
10. Rahul Kumar (2017) Development of design aid for bridge substructure
11. Khairullah (2016) Seismic evaluation of existing RC framed building in Afghanistan
12. Sasanapuri Sarat (2016) Free vibration analysis of Timoshenko Beams
13. Roshan Kumar Tarai (2016) Strength improvement of fly ash brick using plastic fibre
14. Avula Ravi Teja Reddy (2015) Capacity design of RC framed building as per various international codes
15. Ahmad Milad (2015) Response of structure subjected to earthquake ground motions.
16. Pratik Patra (2014) Improved methodology for seismic design of concrete gravity dam
17. Jagajyoti Panda (2013) Analysis and design of vertical vessel foundation
18. M. S. Srikanth (2013) Analysis and design of vertical vessel foundation
19. Ankush Bansal (2012) Performance-based earthquake design
20. Praval Priyaranjan (2012) Seismic evaluation and retrofit of an RC frame structure
21. Bikash Kumar Pati (2011) Development of the nonlinear model for RC beams
22. Anirban Sengupta (2011) Development of the nonlinear model for RC beams

#### **SPONSORED RESEARCH PROJECT**

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1. Pushover analysis of reinforced concrete setback buildings (2010-13), SERB, DST, Govt. Of India
2. Fly ash utilisation in structural applications for sustainable construction (2015-16), Office of the Chief Engineer, RDQP, Govt. of Odisha (Prof. SK Sahu – Principal Investigator)

#### **INDUSTRIAL CONSULTANCY PROJECT**

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Consultancy projects on originating/proof-checking of structural design, condition assessment of existing structures, structural retrofit and rehabilitation design received from all the industry majors including the followings:

- |  |                                      |
|--|--------------------------------------|
| 1. Bhubaneswar Municipal Corporation     | 17. Sahara City Homes                |
| 2. Bridge and Roof Company (India) Ltd.  | 18. Simplex Infrastructures Limited  |
| 3. Govt. of Odisha                       | 19. South Eastern Railway            |
| 4. Indian Rare Earths Ltd.               | 20. State Bank of India              |
| 5. Infosys Ltd.                          | 21. Steel Authority of India Limited |
| 6. IRCON International Ltd.              | 22. Sterlite Energy Ltd.             |
| 7. JMC Projects (India) Ltd.             | 23. Tata Steel                       |
| 8. Larsen & Toubro Ltd.                  | 24. Water Corporation of Odisha      |
| 9. Mahanadi Coalfields Ltd.              |                                      |
| 10. National Highways Authority of India |                                      |
| 11. NTPC-SAIL Power Company Limited      |                                      |
| 12. Odisha Mining Corporation Limited    |                                      |
| 13. Ordnance Factory Badmal              |                                      |
| 14. Power Grid Corporation of India Ltd. |                                      |
| 15. Rail Vikas Nigam Limited             |                                      |
| 16. RITES Limited                        |                                      |