Dr. Pradip Sarkar

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EDUCATION

- IIT Madras, Chennai, Ph.D. in Structural Engineering, 2009
- BE College (Presently IIEST) Shibpur, M.E. in Engineering Mechanics, 2002
- BE College (Presently IIEST) Shibpur, B.E. in Civil Engineering, 1999

PROFESSIONAL EXPERIENCE

- NIT Rourkela, Professor (2020 to Present)
- NIT 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

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

AWARDS AND RECOGNITION

- Best Teacher Award (2018-2019) by NIT Rourkela
- Functional Recognition (July 2008) by Bechtel New Delhi
- GC Mitra Memorial Gold Medal (2002) by BE College Shibpur
- University Silver Medal (2002) by BE College Shibpur

JOURNAL ARTICLES

1. Zade, N.P.; Bhosale, A.; Sarkar, P. and Davis, R. (accepted), "In-plane Seismic Response of AAC Block Masonry Infilled RC Framed Building", ACI Structural Journal, American Concrete Institute.
2. Panda, S.; Zade, N.P.;Sarkar, P. and Davis, R. (accepted), "Variability of Waste Copper Slag Concrete and its Effect on the Seismic Safety of RC Building: A Case Study", Frontiers of Structural and Civil Engineering, Springer.
3. 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
4. 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
5. Zade, N.P.; Bhosale, A.; Dhir, P.K. **Sarkar, P.** and Davis, R. (2021), "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
6. 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.jobe.2020.101987
7. 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

8. 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
9. 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
10. 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
11. 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
12. 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
13. 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
14. 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
15. 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.jobe.2019.100843
16. 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
17. 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.
18. 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.
19. 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
20. 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
21. 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.
22. 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.
23. 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.
24. 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.

25. 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.
26. 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.
27. 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.
28. 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.
29. 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.
30. 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.
31. 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.
32. **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.
33. Sahoo, K.K.; Arakha, M.; **Sarkar, P.**, Davis, R. and Jha, S. (2016), "Enhancement of Properties of Recycled Coarse Aggregate Concrete using Bacteria", *International Journal of Smart and Nano Materials*, Taylor and Francis, DOI: 10.1080/19475411.2016.1152322.
34. 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.
35. 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.
36. **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.
37. **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.
38. 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.
39. **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.
40. **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.

SPONSORED RESEARCH PROJECT

1. Vibrations of functionally graded nano structural members (2017-20), DRDO, Govt. of India (with Prof. S. Chakraverty, NIT Rourkela)
2. Fly ash utilisation in structural applications for sustainable construction (2015-18), Office of the Chief Engineer, RDQP, Govt. of Odisha (with Prof. S. K. Sahu, NIT Rourkela)
3. Wavelet Transform Methods for the Solution of Fractional Differential Equations Arising in Real Physical Models (2012-15), SERB, DST, Govt. Of India (with Prof. S. Saha Ray, NIT Rourkela)
4. Pushover analysis of reinforced concrete setback buildings (2010-13), SERB, DST, Govt. Of India

INDUSTRIAL CONSULTANCY PROJECT

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

PROFESSIONAL SOCIETY MEMBERSHIPS

- Fellow, Institution of Engineers (India)
- Life Member, Indian Road Congress
- Life Member, Indian Concrete Institute