

PRANJAL MANDHANIYA

Department of Civil Engineering, IIT Delhi

LinkedIn profile , Youtube profile , IIT Delhi student page, ORCID, ResearchGate

+91 7607454535

pranjalmandhaniya@gmail.com

EDUCATION

Duration	Degree/Certificate	College/School	CGPA (10)
July 2017 - March 2023	PhD (Geotechnical Engineering)	IIT Delhi	7.5
May 2010 - January 2016	B.Tech-M.Tech (Civil/Geotechnical Engineering) (Dual Degree)	IIT Kanpur	8.0
July 2008 - April 2009	10+2	MPBSE	7.8
July 2006 - April 2007	10	CBSE	8.3

PUBLICATIONS

Journals

- [1] P. Mandhaniya, J. T. Shahu, and S. Chandra, "Numerical analysis on combinations of geosynthetically reinforced earth foundations for high-speed rail transportation," *Structures*, vol. 43, pp. 738–751, 2022. DOI: 10.1016/j.istruc.2022.07.003.
- [2] P. Mandhaniya, J. T. Shahu, and S. Chandra, "An assessment of dynamic impact factors for ballasted track using finite element method and multivariate regression," *Journal of Vibration Engineering & Technologies*, pp. 1–15, 2022. DOI: 10.1007/s42417-022-00507-x.
- [3] P. Mandhaniya, J. Shahu, and S. Chandra, "Analysis of dynamic response of ballasted rail track under a moving load to determine the critical speed of motion," *Journal of Vibration Engineering & Technologies*, pp. 1–17, 2022. DOI: 10.1007/s42417-022-00741-3.
- [4] P. Mandhaniya, J. T. Shahu, and S. Chandra, "A Parametric Study of Embedded Slab Track System for High-Speed Applications on Cohesive Subgrade," *Transportation Infrastructure Geotechnology*, pp. 1–16, 2021. DOI: 10.1007/s40515-021-00206-2.
- [5] B. A. Malik, P. Mandhaniya, M. Y. Shah, and V. Sawant, "Experimental and numerical study on reinforcement of foundations using micropiles as a retrofitting measure," *Arabian Journal for Science and Engineering*, pp. 1–11, 2022. DOI: 10.1007/s13369-022-07454-5.
- [6] I. R. Sheikh, P. Mandhaniya, and M. Y. Shah, "A Parametric Study on Pavement with Geocell Reinforced Rock Quarry Waste Base on Dredged Soil Subgrade," *International Journal of Geosynthetics and Ground Engineering*, vol. 7, no. 2, pp. 1–11, 2021. DOI: 10.1007/s40891-021-00275-w.

Book Chapters and Conferences

- [7] P. Mandhaniya, M. Bakare, and J. T. Shahu, "Laying rigid large diameter buried pipelines: A case study of different approaches," in *7th International Conference on Civil Structural and Transportation Engineering, Niagara Falls, Canada*, Springer Singapore, 2022. DOI: 10.11159/iccste22.211.
- [8] P. Mandhaniya, J. T. Shahu, and M. Bakare, "Numerical study of dynamic loading on ballastless railway tracks," in *Lecture Notes in Civil Engineering*, Springer Singapore, 2021, pp. 327–336. DOI: 10.1007/978-981-15-9976-7_29.
- [9] Y. Grover, P. Mandhaniya, and J. T. Shahu, "Slope stability analysis for an airport runway in north-east india," in *Proceedings of the Indian Geotechnical Conference 2019*, 2021. DOI: 10.1007/978-981-33-6444-8_41.
- [10] P. Mandhaniya, S. Chandra, and J. T. Shahu, "Finite element analysis of moving load on ballastless rail track," in *Geotechnical Characterization and Modelling*, 2020. DOI: 10.1007/978-981-15-6086-6_66.

DOCTORAL THESIS

Finite element analysis of moving load on ballasted and ballastless rail tracks (Dr. J.T. Shahu and Dr. Sarvesh Chandra)

- Assessment of dynamic impact factors of ballasted rail tracks using finite element simulations (published)
- Estimation of critical speed of motion of high-speed railway tracks (published)
- Analysis of geosynthetically reinforced earth foundations for high-speed railway tracks. (published)

MASTERS' THESIS

Finite Element Analysis of Static and Dynamic Loading on Ballastless Rail Track (Dr. Sarvesh Chandra)

- Designed a model of discrete support BLT with encased sleepers in CBL in ABAQUS.
- Performed parametric studies on railway track model for different material properties.

AWARDS

- Research Scholar Excellence Award for future conferences *November 2022*
- Research Scholar Travel Award for the 7th International Conference on Civil, Structural and Transportation Engineering, Niagara falls (Virtual), Canada *June 2022*
- Best paper presentation in the 7th International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, IISc Bangalore (Virtual), India *July 2021*
- Selected for Sakura Science exchange program, University of Tokyo, Japan *December 2018*

TEACHING EXPERIENCE

- **Course Instructor, EasyTech Training and Solutions Delhi, India** *December 2021*
Curated and conducted an online faculty development program (FDP) on Behalf of EasyTech Training and Solutions, Delhi for the CSI-SAFE software training at KL University Guntur, India.
- **Course Instructor, Skill-Lync, Chennai, India** *November 2021-January 2022*
Curated course contents and recorded video lectures for topics of "ground improvement using anchors and nails" and "the basics of ground improvement methods".
- **Teaching Assistant, IIT Delhi, India** *July 2018-July 2020*
Supervised tutorials on basic geotechnical engineering to undergraduate civil engineering subjects in IIT Delhi.
- **Assistant Professor, ITER Bhubaneswar, India** *June 2016-July 2017*
Curated and taught undergraduate and postgraduate courses to students of the civil engineering department. Supervised the Master's thesis of two postgraduate students.

CONSULTANCY EXPERIENCE

- **As Research Scholar under Dr. J.T. Shahu, IIT Delhi** *July 2017 - July 2022*
 - Designing of highway and waterway crossing sections of a large diameter buried pipeline under KMP highway near Delhi, India. Applied guidelines from IS-783, IS-784, IS-3114, USFHWA codes (AWWA and ACPA) with FEM simulations.
 - Slope stability analysis of upper and lower slopes for Pakyong (Sikkim, India) airstrip widening using Geostudio. Applied guidelines from IS-14448, IS-13365, IS-14458 codes.
 - Site visit and bills of quantity (BoQ) preparation for capacity augmentation of GWS water supply canal in Haryana, India. Applied guidelines from IS-6403, IS-12288, IS-3873, IS-2911 codes.
- **As Project Associate under Dr. Priyanka Ghosh, IIT Kanpur** *March 2016 - May 2016*
 - Field plate load testing and data monitoring for foundation design.
 - ABAQUS-based FEM analysis of a viaduct on Jhansi-Kanpur railway gauge doubling.

PROFESSIONAL EXPERIENCE

- **Postdoctoral Fellow in Norwegian University of Science and Technology, Trondheim, Norway** *May 2023 - till date*
 - Application of artificial intelligence in railway management.
- **Design Geotechnical Engineer in Amberg Engineering AG, Gurgaon, India** *Nov 2022 - Feb 2023*
 - Preparation of geotechnical investigation report and ground deformation monitoring systems for Metro projects.
 - Preparation of slope reinforcement designs and Project BoQs.

TECHNICAL SKILLS

- Programming Languages : R (Data analysis), Python (Data extraction and analysis from ABAQUS ODBs), Fortran (ABAQUS subroutines), L^AT_EX (Journal articles and thesis writing)
- Academic/teaching softwares : ABAQUS/CAE (FEM simulations), Geostudio (Slope stability), PBS-HPC for ABAQUS (high-performance computing using PBS systems in IIT Delhi), CSI-SAFE
- Other softwares : AutoCAD (Drawing and importing into different softwares like Geostudio), Inkscape (Creating graphics for research and teaching purposes), Adobe creative suite

CONFERENCES

- **The 3rd International Conference on Environmental Geotechnology, Recycled Waste Materials and Sustainable Engineering, EGRWSE-2022, Izmir, Turkey** *September 2022*
Presented a paper on microscopic image-based particle size distribution to replace the hydrometer analysis
- **The 7th International Conference on Civil, Structural and Transportation Engineering, Niagara falls (Virtual), Canada** *June 2022*
Presented a paper on effect of highway load on large diameter buried pipelines.
- **The 7th International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, IISc Bangalore (Virtual), India** *July 2021*
Presented a paper on dynamic comparison of ballastless and ballasted railway track under moving load.
- **Indian Geotechnical Conference 2018, IISc Bangalore, India** *December 2018*
Presented a paper on finite element analysis of ballastless railway track under moving load.

MEMBERSHIPS

- Life Member, Indian Geotechnical Society
- Subscription Member, The International Society for Soil Mechanics and Geotechnical Engineering (2022-2025)
- Student Member, American Society of Civil Engineers

REFERENCES

Dr. Sarvesh Chandra Retired Professor IIT Kanpur, India PhD and Masters Supervisor sarviitk@gmail.com	Dr. J.T. Shahu Professor IIT Delhi, India PhD Supervisor shahu@civil.iitd.ac.in	Dr. Akshaya Kumar Verma Associate Professor SoA University, India Professional Colleague akshayakumarverma@soa.ac.in
--	--	---