

Dr. Niraj Singh Parihar

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EDUCATION

<u>Degree/Certificate</u>	<u>Institute/university</u>	<u>Year</u>
Ph.D	Jaypee University of Information Technology Waknaghat(HP)	2023
M-Tech	Department of Civil Engineering, IIT Kanpur (Specialization-Geotechnical Engineering)	2012
B.E(Civil)	R.G.P.V., Bhopal	2009

Teaching Experience:

- **Currently working as Assistant Professor in Department of Civil Engineering, Jaypee University of Information Technology, Waknaghat (HP) since July 26th 2013.**
- Worked as Assistant Professor in Department of Civil Engineering, K. L. University, Vaddeswaram (Andhra Pradesh) from Aug.13th, 2012 to May 30th, 2013.
- Worked as a teaching assistant for laboratory and field experiments in Soil mechanics and Foundation lab for 3rd year B. Tech and 1st year M. Tech students at IIT Kanpur (2011-12).
- **Courses Taught:** Soil Mechanics, Foundation Engineering, , Dams and Reservoir Design, Water Resource and Irrigation Engineering, Environmental Engineering, Project Estimation and Contracts, Engineering Mechanics (B.Tech); Sustainable Design and Construction, Construction Techniques (M.Tech).
- **Labs Handled:** Soil Mechanics and Foundation Laboratory, Environmental Engineering Laboratory, Surveying Lab, Fluid Mechanics Lab, Engineering Drawing and CAD Lab, Workshop Lab.
- **Fields of Interest:** Soil stabilization and ground improvement, soil investigation, geosynthetics, slope stability, industrial waste application, environmental impact assessment, micro-structural analysis.

Research Experience:	
Ph.D Topic	Stabilization of expansive soil using leather industry waste ash
Ph.D Supervisor	Dr. Ashok Kumar Gupta, Prof.(CE) and Dean, Academic and Research, JUIT Waknaghat(HP)
Brief Description:	A novel study has been conducted on the potential usage of two highly polluting leather industry wastes i.e. liming waste and blue leather waste in ash form for the remediation of problematic expansive soils. A thorough assessment of the engineering parameters including the strength and volumetric change characteristics have been done to check the ability of the chosen stabilizers in enhancing the engineering suitability of the soils for their usage as suitable bearing material under structural foundations and highway pavements. An environmental impact assessment has also been done through physical modelling to check any ill-effects of the stabilized soil mix on the ground water quality.
M. Tech. Thesis	Seismic Slope Stability Analysis of Indian ports
Thesis Supervisor:	Dr. Prishati Ray Chowdhury, CED (IIT Kanpur)
Brief Description:	The project deals with the slope stability analysis of three selected ports namely Kandla, Navlakhi and Adani in the Gujrat state coming in the <i>Zone-V</i> seismic region. The slopes at these ports have been selected based on their past damage records during Bhuj 2001 earthquake keeping the future damage susceptibility of the ports and their functionality in mind and the stability of the slopes has been analyzed on the static and dynamic grounds. The dynamic slope stability has been analyzed on the finite element based modeling approach keeping residual displacement and liquefaction susceptibility of the slopes as the basic criteria.

Research Interest:	Subjects of interest:
<ul style="list-style-type: none"> • Liquefaction • Slope Stability • Soil Stabilization • Industrial waste application 	<ul style="list-style-type: none"> • Soil Mechanics and Foundation Engineering • Environmental Engineering • Fluid Mechanics • Irrigation and Water Resource Engineering

Projects guided:
<ul style="list-style-type: none"> • Liquefaction potential assessment of Vijayawada soils. • Strength behaviour of fibre reinforced river sand. • Design and slope stability analysis of proposed ash pond for waste to energy plant in Shimla. • Effect of Geotextiles on engineering properties of soil.

- Study of effect of addition of KCL on Dumehar soil.
- Stabilization of Black cotton soil using Ultrafine slag.
- Traffic solutions in Chandigarh city.
- Reinforcement of soft soil with natural and synthetic fibers.
- Hydrological design of Jakhol Sankri hydroelectric project.
- Hill road safety audit: JUIT Waknaghat to Kandaghat.
- Stabilization of expansive soils using leather industry wastes.

▪ **PUBLICATIONS:**

➤ **JOURNAL PUBLICATIONS:**

1. Shukla, R.P, **Parihar, N.**, Tiwari, R.P., Agrawal, B.K. (2014), Black Cotton Soil Modification using Sea Salt, Electronic Journal of Geotechnical Engineering, Vol. 19, Bundle Y, pp 8807-8816. (SCOPUS)
2. **Parihar, N.S.**, Shukla, R.P., Gupta, A.K. (2015). Unconfined compressive strength of sheet reinforced soil. Int. Journal of Earth Sciences and Engineering, Vol. 08, No. 03, pp. 1379-1385. (SCOPUS)
3. **Parihar, N.S.**, Shukla, R.P., Gupta, A.K. (2015). Effect of Reinforcement on Soil. Int. Journal of Applied Engineering Research. A special issue on ICAAET-2015, Vol. 10 No.55, pp 4147-4151.
4. Shukla, R.P. ,**Parihar, N.S.** and Sood, A.K.(2015). Effect of potassium chloride on black cotton soil. Journal of Discovery, Special Issue on: International Conference on Geo-Engineering and Climate Change Technologies for Sustainable Environmental Management, October 9-11, 2015, Motilal Nehru National Institute of Technology Allahabad, India,40(184), pp241-245.
5. Dhawan, S., **Parihar,N.S.** and Shukla, R.P.(2015). Performance of geotextile reinforced soil. Journal of Discovery, Special Issue on: International Conference on Geo-Engineering and Climate Change Technologies for Sustainable Environmental Management, October 9-11, 2015, Motilal Nehru National Institute of Technology Allahabad, India, 40(184), pp 279-285.
6. **Parihar, N.S.**, Shukla, R.P., Singh, R. (2015). Traffic characteristics study and solutions for traffic problems in Chandigarh city. Journal of Discovery, Special Issue on: International Conference on Geo-Engineering and Climate Change Technologies for Sustainable Environmental Management, October 9-11, 2015, Motilal Nehru National Institute of Technology Allahabad, India, 40(184), pp 97-103.

7. Shukla, R.P. and **Parihar, N.S.(2016)**. Stabilization of Black Cotton Soil Using Micro-fine Slag. Journal of Institution of Engineers, India Ser. A (September 2016) 97(3):299–306. (SCOPUS)
8. **Parihar, N.S.**, Shukla, R.P. and Gupta, A.K. (2018) Shear strength of expansive soil reinforced with polyester fibers. Slovak Journal of Civil Engineering, 26(2),1-8. (SCOPUS)
9. Shukla R.P., **Parihar,N.S.** and Gupta, A.K.(2018). Stabilization of expansive soil using potassium chloride. The Civil Engineering Journal,1, 25-33.
10. **Parihar, N.S.** and Gupta, A.K.(2020). Strength and microstructural behavior of expansive soil treated with limed leather waste ash. International Journal of Innovative Technology and Exploring Engineering, 9(4), 604-609. (SCOPUS)
11. **Parihar, N.S.** and Gupta, A.K.(2020). Chemical stabilization of expansive soil using liming leather waste ash. International Journal of Geotechnical Engineering, 14(5),1-13. (SCOPUS, IF=2)
12. Shukla R.P., **Parihar,N.S.** and Gupta, A.K.(2020). Effect of potassium chloride on efficiency of fine slag used for treatment of expansive soil. Bulletin of the Tomsk Polytechnic University, Geo Assets Engineering, 331(7), 87-94. (SCOPUS/ESCI)
13. **Parihar, N.S.** and Gupta, A.K.(2021). Improvement of engineering properties of expansive soil using liming leather waste ash. Bulletin of Engineering Geology and the Environment, 80, 2509–2522 (SCI/SCOPUS, IF=4.1).

➤ **CONFERENCE PUBLICATIONS:**

1. **Parihar, N.S.**, Shukla, R.P., Gupta, A.K. (2015). Effect of Reinforcement on Soil. Int.conference on Advances in Applied Engineering& Technology, May 14-16, 2015, Tamil Nadu, India.
2. **Singh, N.** and Shukla, R.P. (2015). Unconfined compressive strength of reinforced soil. 5th Young Indian Geotechnical Engineers Conference, March 14-15, 2015, Vadodara, India, pp 30-35.
3. Shukla, R.P. ,**Parihar, N.S.** and Sood, A.K.(2015). Effect of potassium chloride on black cotton soil. International Conference on Geo-Engineering and Climate Change Technologies for Sustainable Environmental Management, October 9-11, 2015, Motilal Nehru National Institute of Technology Allahabad.
4. Dhawan, S., **Parihar, N.S.** and Shukla, R.P.(2015). Performance of geotextile reinforced soil. International Conference on Geo-Engineering and Climate Change Technologies for Sustainable Environmental Management, October 9-11, 2015, Motilal Nehru National Institute of Technology Allahabad, India.

5. **Parihar, N.S.**, Shukla, R.P., Singh, R. (2015). Traffic characteristics study and solutions for traffic problems in Chandigarh city. International Conference on Geo-Engineering and Climate Change Technologies for Sustainable Environmental Management, October 9-11, 2015, Motilal Nehru National Institute of Technology Allahabad, India.
6. Rajesh P. Shukla, **Niraj S. Parihar**, Rahul Singh, Bal Krishna Agrawal, Rajendra P. Tiwari (2015). Innovation in teaching of geotechnical exploration and laboratory testing. 50th Indian Geotechnical Conference, 17th – 19th December 2015, Pune, Maharashtra, India.
7. **Niraj S. Parihar**, Rajesh P. Shukla, Ashok K. Gupta and Shivom Dhawan, Compaction Parameters Of Geotextile Reinforced Soil. 50th Indian Geotechnical Conference, 17th – 19th December 2015, Pune, Maharashtra, India.
8. **Parihar, N.**, Shukla, R.P., Yadav P. and Mankotia, N. (2015). Problems and treatment of black cotton soil. Indian Geotechnical Conference 2015, 17th – 19th December 2015, Pune, Maharashtra, India.
9. Shukla, R.P., **Parihar, N.S.** and **Gupta A.K.** (2016). The effect of geotextiles on low plastic sandy clay. 6th Asian Regional Conference on Geosynthetics – Geosynthetics for Infrastructure Development, 8-11 November 2016, New Delhi, India pp. 251-259.
10. **Parihar, NS** and Gupta, A.K. (2021). Effect of curing on compressive and shear strength parameters of liming waste ash stabilized expansive soil. Advances in Construction Materials and Sustainable Environment, June 3-4, 2021, Wagnaghat (H.P.)

➤ **BOOK CHAPTERS:**

1. **Parihar, N.S.**, Garlapati, V.K. and Ganguly,R (2018). Stabilization of black cotton soil using waste glass.In: Hussain, C.M. editors.Handbook of Environmental Materials Management:Springer International Publishing AG;2018.p. 1-16.
2. **Parihar, N.S.** and Gupta, A.K. (2021). Effect of curing on compressive and shear strength parameters of liming waste ash stabilized expansive soil. Lecture Notes in Civil Engineering- Advances in Construction Materials and Sustainable Environment, 1035-1046.

➤ **PATENTS:**

Parihar NS, Gupta A.K., Microfine slag amended blue leather waste ash as a novel material of treating expansive soil, STC/HPPIC/F-991, National patent filed through HIMCOSTE/DST/TIFAC ,Filed March 2023, Initiated Oct 2021.

➤ **CONSULTANCY WORKS:**

1. Soil investigation and foundation design for multiple places in Shimla and Solan subdivision in Himachal Pradesh.
2. Deep soil exploration, bearing capacity recommendation and foundation design for construction of 55 m long bailey bridge in Kalpa subdivision, Kinnaur (H.P.).
3. Design of abutment and its raft foundation for 55 m long bailey bridge at flash flood site in Kalpa subdivision, Kinnaur (H.P.).
4. Pavement bearing strength evaluation for approach roadway for proposed JW Marriott Hotel near Paughat, Solan (HP).
5. Testing for drinking and construction water quality parameters at JW Marriott construction site on periodical basis (2020-present).
6. Periodical mix design and compressive strength testing of concrete specimen for JW Marriott and IT Park, Solan (HP).
7. Testing for quality of reinforcement steel for JW Marriott and IT Park, Solan (HP).
8. Testing for in-situ noise and air quality parameters for IT Park, Solan (HP).
9. Consultant for design assessment of retaining walls at multiple locations in Solan district with NHAI.

Educational Achievements:

- Filed a patent over use of leather industrial wastes for soil stabilization.
- Three times GATE qualified and recipient of MHRD scholarship.
- Obtained 99.03 percentile in GATE-2010 and cracked multiple competitive examinations.
- Member of Indian Geotechnical Society and Society of Civil Engineers.
- Active member of IGS Shimla (as adjoining secretary) and other IGS chapters.
- Reviewer of many top tier Journals of geotechnical and environmental engineering.
- Member of panel of experts for remediation of landslide zones in Solan region (HP).
- Regular consultant for soil investigation and foundation design for HPPWD since 2021.
- Faculty-in-charge for regular testing of in-house water quality parameters for JUIT Wagnaghat(HP).

Internships and Industrial Visits:

- Bansagar Multipurpose River Valley Project, Devlond (M.P.)
- Water Treatment Plants (PHE), Rewa (M.P.)
- Tatapani Wastewater Treatment Plant (H.P.)
- Ultratech Cement Manufacturing Plant, Dadlaghat (H.P.)
- Highway over-bridge construction, Kandaghat and Solan (H.P.)
- NHAI Vijaywada (A.P.)

Technical Skills:

- Softwares used: Geo-5, AutoCAD, SEPL:ESR-GSR, Opensees, Pro-E and Hypermesh, Origin Pro, X'PERT Highscore Plus
- Tools/Instruments used: XRD, SEM, XRF,AAS, DTA/DTG, MPAES, ICPMS, Matlab and Microsoft Office

Technical Events Organized:

- Organized six-day workshop on 'Mix design methodology for concrete and bitumen' (Sep 2-7, 2019).
- Organized six-day workshop on 'Mix design methodology for concrete and bitumen' (Sep 23-28, 2019).
- Organized a five week webinar series on 'Advanced testing technologies for geotechnical investigation' (Sep18-Oct16 2021)
- Contributed as technical resource person in Faculty Development Program on 'Advances in civil engineering' (Jan 14-19, 2019).
- Contributed as technical resource person in workshop on 'Sustainable construction practices for Civil engineers' (Aug 3-8, 2020).

Lectures Delivered:

- Delivered a lecture on 'Roadway to modern geotechnical engineering' in FDP program on 'Advances in Civil Engineering' (Jan 2019).
- Delivered a lecture on 'Improvement in conventional geotechnical facilities-Need of the hour' in IGS-NABL webinar (July 2021).
- Delivered a 2-day lecture session on geotechnical laboratory testing to HPPWD officials during workshops in 2020 and 2021.
- Delivered a lecture on 'Use of sustainable materials in geotechnical engineering' in workshop on 'Sustainable construction practices for Civil engineers' (Aug 3-8, 2020).

Extra-Curricular Activities:

- Warden in charge of boys hostel (Azad Bhawan) at present at JUIT Waknaghat.
- Member of internal water-audit committee of JUIT Waknaghat.
- Coordinator for departmental consultancy works.
- Departmental lab-in-charge of civil engineering department laboratory (2015-present).
- Departmental in charge for mentoring of B.Tech students at present.
- Member of JUIT laboratory stock verification committee at university level (2019-21).
- Faculty coordinator of the JUIT Literary club 2014-15.
- Faculty coordinator of JUIT CEC cultural event Sanrachna.
- Member of Anti-Ragging Squad at JUIT Waknaghat.
- Member of disciplinary committee at JUIT Waknaghat (2016-17).
- Chairman of the Cultural Committee, Hall-4, IIT Kanpur, 2011-12.
- Member of core team of PG cultural event Impressions 2011 at IIT Kanpur.