



Dr. MANISH PAL

Professor

*Civil Engineering Department
National Institute of Technology Agartala*

Education:

*BE (TEC, presently NIT Agartala),
M.Tech (BESU, presently IEST Shibpur),
PhD (Jadavpur University)*



Contact:

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Research Interests:

- Highway and Traffic Engineering.
- Engineering Materials.
- Water & Waste Management and Water Transportation.
- Environmental issues related to transportation system.
- Geotechnical issues related to roads.
- Intelligent Transportation system.

Membership of professional bodies:

- Indian Roads Congress (Life member)
- Indian Building Congress (Life Member)
- The Institution of Engineers (India) (FIE)

Professional Experience:

- (a) Having experience as a Site Engineer in Geotechnical firm for one year.
- (b) Having experience as a Junior Engineer in Rural Development Department, Govt. of Tripura for nearly two years.
- (c) Working as a faculty in NIT Agartala (Formerly Tripura Engineering College) for nearly 26 (Twenty Six) years



Visit in abroad:

USA, Singapore, UAE, Thailand & Bangladesh for presenting paper, chair the session & as an expert speaker in international conference/workshop etc.

Research guidance:

Completed **15 (Fifteen)** PhD and 03 (Three) candidates on-going.

Selected completed PhD thesis:

1. “Study of Level of Service on two-lane rural highways” by Sri Pritam Saha.
2. “An Investigation on the use of Over-burnt bricks for the Construction of Low Volume Roads” by Sri Dipankar Sarkar.
3. “Studies on removal of some toxic anionic Dyes and hexavalent Chromium for industrial waste water remediation” by Sri Animesh Debnath.
4. “Study of Seismic Response on Slope of C- Φ Soil” by Nipa Chanda.
5. “Utilization of Non-Conventional Aggregates and Piezo Crystals for Road Construction” by Machavarapu Suresh.
6. “Study on the performance of bituminous mixes for road construction using Non-Conventional materials” by Dibyendu Paul.

PG students guidance:

Completed 40 (Forty) M.Tech thesis.

Selected completed M.Tech thesis:

- “Effect of slow moving vehicle & various flow levels on passenger car equivalent of different vehicle categories on two lane Highways” by Sri Victor Chowdhuri.
- “Estimation of PTSF and ATS through Field observations for the assessment of LOS on Two lane Highways under Heterogeneous Traffic conditions” by Sri Shuvankar Debbarma.
- “Development of an Analysis method for performance assessment of Two lane highways under Heterogeneous Traffic condition” by Sri Nagendra Reddy.
- “A study on effect of Lateritic Soil-Cement and Soil-Lime mixture on pavement subgrade” by Mitali Saharia.



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- “Method of defining service quality on Two-lane roads with mixed traffic” by Sri Pallav Kumar.
- “Study on PCE under mixed traffic- A case study on two-lane highways” by Sri Bijoy Debnath.
- “Influence of Jute Geotextile in the construction of pavements on soil subgrade” by Payel Saha.
- “Subgrade soil strength evaluation using Lime & Rice husk ash” by Sri Somdeb Mondal.
- “An evaluation of capacity of roundabouts in Agartala city” by Sri Amitabha Acharjee.
- “Pavement deterioration modelling for low volume roads” by Sri Arghyadeep Biswas.
- “Strength evaluation of soil subgrade by reinforcing with coir fiber” by Sri Sujit Kishor Chakraborty.
- “Improvement of traffic operations in congested intersections – A case study of Agartala city” by Amandeep Jaiswal.
- “Utilization of Chicken mesh for improving the strength of subgrade layer with fly-ash” by Krishendu Kundu.
- “Future possibilities of water transportations in Tripura” by Sri Sabyasachi Mondal.

Patents:

- Title: Intelligent Road Mock-up, 2023
- Title: Use of Vertical Water Treatment Plant in Cities to cope up with land shortage problem, 2021

Publications:

More than 100 paper publications in different International and National journals and Conferences.

Selected Journal papers:

- **M.Pal**, K. Majumdar, M. Barman & D. Sarkar (2010), “Study of Strength, CBR, Resistivity and Conductivity of Soil-Jute mixture”, Indian Highways, IRC, pp- 53-59.
- **M.Pal** & D. Sarkar (2013),” Study of Noise Pollution at Different Intersections at Agartala city”, Indian Highways, IRC, pp-33-39.
- P.Saha, A.K.Sarkar, and **M.Pal** (2015), “Evaluation of performance measures of two-lane highways under heterogeneous traffic”, Journal of science & technology (*Pertanika*), Vol. 23, No. 2, pp 223-239. (*SCOPUS*).
- P.Saha, A.K.Sarkar, and **M.Pal** (2015), “Evaluation of speed flow characteristics on two lane highways with mixed traffic”, Transport (*Taylor & Francis*), Jan. (*SCI*).



- A.Debnath, M.Majumder, and **M.Pal**, (2015), “A Cognitive Approach in Selection of Source for Water Treatment Plant based on Climatic Impact”, Water Resour Manage (*Springer*), January, <http://dx.doi.org/10.1007/s11269-015-0918-x> . (*SCI*)
- R. Sutradhar, **M. Pal** & A.K. Sarkar (2015), “Artificial neural network modeling for evaluating roughness parameters based on pavement distress values”, Indian Highways, IRC, pp- 11-17.
- Dipankar Sarkar & **Manish Pal** (2016) “Effect of Cement on Properties of Over-Burnt Bricks Bituminous Concrete Mixes” Journal of Institution of Engineers India (Sec .A) pp.107-113 DOI 10.1007/s40030-016-0157-z (*SCOPUS*).
- A.Debnath, M.Majumder, and **M.Pal**, (2016), “Potential of Fuzzy-ELECTRE MCDM in Evaluation of Cyanobacterial Toxins Removal Methods”, Arab J Sci Eng (*Springer*), Vol. 41, pp. 3931–3944, <http://dx.doi.org/10.1007/s13369-016-2032-7> . (*SCI*)
- S.Ghosh, T.Chakraborty, S.Saha, M.Majumder, and **M.Pal**, (2016), “Development of the location suitability index for wave energy production by ANN and MCDM techniques”, Renewable and Sustainable Energy Reviews (*Elsevier*), Vol. 59, pp. 1017–1028. <http://dx.doi.org/10.1016/j.rser.2015.12.275> . (*SCI*)
- N.Chanda, S.Ghosh, and **M.Pal**, (2016), “Analysis of slope considering circular rupture surface”, International Journal of Geotechnical Engineering (*Taylor & Francis*), Vol. 10:3, pp. 288-296, <http://dx.doi.org/10.1080/19386362.2016.1142270> . (*SCOPUS*).
- N.Chanda, S.Ghosh, and **M.Pal**, (2016), “Pseudo-dynamic analysis of seawall considering non-breaking wave force”, International Journal of Geotechnical Engineering (*Taylor & Francis*), September, <http://dx.doi.org/10.1080/19386362.2016.1223905> . (*SCOPUS*).
- A.Debnath, M.Majumder, **M.Pal**, N.S.Das, K.K.Chattopadhyay, and B.Saha, (2016), “Enhanced Adsorption of Hexavalent Chromium onto Magnetic Calcium Ferrite Nanoparticles: Kinetic, Isotherm, and Neural Network Modeling”, Journal of Dispersion Science and Technology (*Taylor & Francis*), ISSN: 0193-2691 (print), 1532-2351 (online), <http://dx.doi.org/10.1080/01932691.2016.1141100> . (*SCI*).
- N.Chanda, S.Ghosh, and **M.Pal**, (2017), “Analysis of slope using modified pseudo-dynamic method”, International Journal of Geotechnical Engineering (*Taylor & Francis*), January, <http://dx.doi.org/10.1080/19386362.2016.1277848> . (*SCOPUS*)
- Pritam Saha, Rupali Roy, Ashoke Kumar Sarkar & **Manish Pal** (2017), “Preferred time headway of drivers on two-lane highways with heterogeneous traffic”, Transportation Letters (*Taylor & Francis*), <http://dx.doi.org/10.1080/19427867.2017.1312859> . (*SCI*).



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- Nipa Chanda, Avik Paul, Sima Ghosh, and **Manish Pal** (2017), “Seismic Stability of Slope Considering Rayleigh Wave”, Journal of Earthquake Engineering (*Taylor & Francis*), pp. 1-19.
- Pritam Saha, Nabanita Roy, Ashoke Kumar Sarkar & **Manish Pal** (2017),” Speed Distribution on Two – Lane Rural Highways with Mixed Traffic : A Case Study in North East India., Journal of Institution of Engineers India (Sec .A) pp.107-113 DOI 10.1007/s40030-017-0208-0 (*SCOPUS*).
- Jince P.Zachariah , Partha Pratim Sarkar ,Barnali Debnath and **Manish Pal** (2018), “Effect of polypropylene fibres on bituminous concrete with brick as aggregate” Construction and Building Materials, (*ELSEVIER*) pp 867-876 (*SCI*).
- Jince P.Zachariah , Partha Pratim Sarkar and **Manish Pal** (2019), “Effect of mixing polypropylene fibre in reinforcing non-conventional bituminous concrete”, Transport (*SCIe*).
- M. Suresh & **M. Pal** (2020), “Effect of centrifuged latex on moisture damage of hot-mix asphalt with brick aggregate”, Transport (*SCIe*).
- Suresh, M., **Pal, M.**, & Sarkar, D. (2021, April). Performance of polymer-reinforced bituminous mixes using recycled coarse aggregate. In Proceedings of the Institution of Civil Engineers-Transport (Vol. 174, No. 2, pp. 142-156). Thomas Telford Ltd. (*SCI*)
- Suresh, M., & **Pal, M.** (2021, April). Effect of centrifuged latex on moisture damage of hot-mix asphalt with brick aggregate. In Proceedings of the Institution of Civil Engineers-Transport (Vol. 174, No. 2, pp. 99-109). Thomas Telford Ltd. (*SCI*)
- Zachariah, J. P., Sarkar, P. P., & **Pal, M.** (2021, April). Effect of mixing polypropylene fibre in reinforcing non-conventional bituminous concrete. In Proceedings of the Institution of Civil Engineers-Transport (Vol. 174, No. 2, pp. 87-98). Thomas Telford Ltd. (*SCI*)
- Paul, D., Suresh, M., & **Pal, M.** (2021). Utilization of fly ash and glass powder as fillers in steel slag asphalt mixtures. Case Studies in Construction Materials, 15, e00672. (*SCI*)
- Paul, D., Suresh, M., & **Pal, M.** (2021). Effect of CENEX polymer on the performance of bituminous concrete and dense bituminous macadam of pavement. Case Studies in Construction Materials, 15, e00558. (*SCI*)
- Suresh, M., & **Pal, M.** (2021). Utilization of recycled concrete wastes and latex polymer for sustainable road construction. Materials Today: Proceedings, 47, 4171-4176. (*SCOPUS*)
- Karmakar, D., Majumdar, K., **Pal, M.**, Roy, P.K. and Machavarapu, S., 2022. Energy harvesting from pedestrian movement using piezoelectric material. Materials Today: Proceedings, 57, pp.391-397. (*SCOPUS*)



- Suresh, M., **Pal, M.**, Sarkar, D., & Majumdar, K. (2022). Generation of Electricity Using Piezoelectric Material: Study on Asphalt Pavement Structure on Rural Road. Journal of Materials in Civil Engineering, 34(2), 04021418. (SCI)
- Karmakar, D., **Pal, M.**, Majumdar, K., Suresh, M. and Roy, P.K., 2022. Utilization of porous asphalt material in road construction for reducing the vehicular noise. Materials Today: Proceedings, 65, pp.3602-3609. (SCOPUS)
- Karmakar, D., Majumdar, K., **Pal, M.** and Roy, P.K., 2023. Experimental Analysis on Engineering Properties of Pervious Concrete with GGBS as a Partial Replacement for Cement. International Journal on Emerging Technologies, 14(1): 52-58.
- Debnath, C., **Pal, M.**, & Sarkar, D. (2023). Intelligent Prediction Model on Soil Bamboo Fibre Mix for Road Construction. Advances in Engineering Software, 177, 103400. (SCI)

Selected Conference papers:

- **M.Pal** & M. Barman, “Prediction of the Remaining Life of an Existing Rotary Intersection: A case study”, National Conference on Application of ICT in Urban Infrastructure Planning and Management, Chennai, March 19, 2005.
- **Manish Pal**, Kaberi Majumdar, Manik Barman and Dipankar Sarkar “Study of CBR and Electrical Conductivity of Soil-Jute Mixture”, International Conference on “pavement Engineering” organized by College of Engineering & Technology, Bhubaneswar, 14th – 15th February, 2009.
- **M. Pal**, K.Majumdar and P.P.Sarkar & D. Sarkar. “Study of Strength, Modulus of Elasticity, Resistivity and Conductivity of Soil- Cement Mixture” International Conference on Civil Engineering, organised by PCI, Washington D.C.USA, 29th May-2nd June, 2010.
- D.Sarkar & **M.Pal**, “Maintenance Priority Index for low volume Roads”, International conference on Architecture & Civil Engineering (ACE 2013), Singapore, 18th to 19th March, 2013.
- **M.Pal** & D.Sarkar, “Study of Young’s Modulus of Laterite Soil-Bamboo Fibre Mix”, International conference on Architecture & Civil Engineering (ACE 2013), Singapore, 18th to 19th March, 2013.
- D.Sarkar, **M.Pal** & A.K.Sarkar, “Laboratory Evaluation of Asphalt Concrete Prepared with Over Burnt Brick Aggregate Treated by Zycosoil”, XII International Conference on Civil, Structural and Earthquake Engineering, Dubai, UAE, 25th to 26th December, 2014.
- **M.Pal** & R.Sutradhar, “Pavement Roughness Prediction Systems: A Bump Integrator Approach”, XII International Conference on Civil, Structural and Earthquake Engineering, Dubai, UAE, 25th to 26th December, 2014.



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- J.Pal, P.K.Roy, **M.Pal** and R.N.Bhowmik (2020) “Storage Level Prediction of Rudrasagar Lake Using ANN” International Conference on Sustainable Water Resources Management Under Changed Climate, Jadavpur University , 13th to 15th March, 2020
- D. Karmakar, D. Debnath, **M. Pal**, P.K. Roy and K. Majumdar "An Experimental Study on Porous Asphalt Pavement for the Improvement of Strength under Medium Traffic Condition Maintaining Permeability" Water Resources: Current and Future Challenges and Research Directions, Jadavpur University, 119-126, November, 2020
- Karmakar, D., Das, B. and **Pal, M.**, 2021. A Study on Porous Bituminous Pavement as an Alternative Method for Ground Water Management. In Advances in Water Resources Management for Sustainable Use (pp. 75-84). Springer, Singapore.

Hobbies:

- ✓ *Writing poem*
- ✓ *Recitation*
- ✓ *Playing cricket*

Extra –curricular activities:

Bengali Announcer in All India Radio, Agartala