DEPARTMENT OF CIVIL ENGINEERING

NEWSLETTER

An Insight into the Department of Civil Engineering. Exploring Key Events, Research Highlights and Sustainable Initiative - March 2025 Issue.

MARCH 2025 ISSUE

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MESSAGE *from the* HOD's Desk

Dear all,

Welcome to the latest edition of Civil Engineering Department newsletter! This newsletter serves as a platform to showcase our successes and keep informed about the events, publications, projects of our R&D activities.

These events and activities highlight the academic, research, and extracurricular environment at the Department of Civil Engineering.

It gives me great satisfaction and immense pleasure to witness the achievements of the Department with continuous efforts from dynamic faculty colleagues, talented research scholars duly supported by dedicated technical staff members.

Best Wishes !

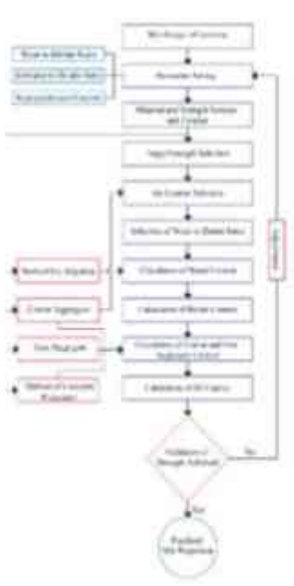
Srinivas Pasupuleti

DEPARTMENT OF CIVIL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY (ISM) DHANBAD

PUBLICATIONS

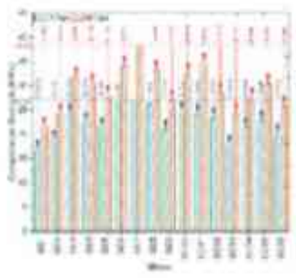
JOURNALS

Jain, D., Adhikary S. D. and Sarker, P.K. (2025) "Novel One-part Geopolymer Concrete Mix Design using Hybrid Taguchi GRA-PCA Optimization Approach" Structures Journal, 75, 108805; https://doi.org/10.1016/j.istruc.2025.108805



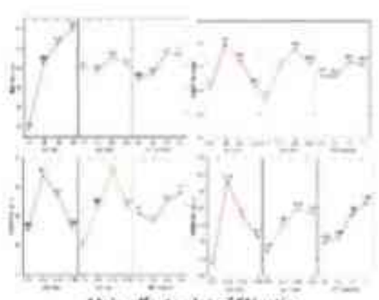
Flow chart of OPGC mix design

Casted and Tested Specimen

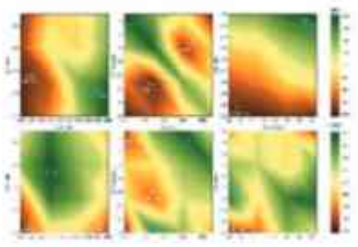


Compressive Strength of Mixes

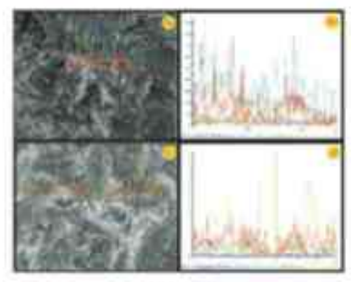
Flow Chart of Taguchi GRA-PCA Method



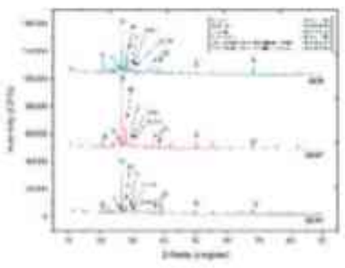
Main effects plot of SN ratio



Contour plot graph of interaction between different parameters



Line EDS of Mixes



XRD analysis of mixes

Md A. Hussain, and Dutta S C (2025) "Inelastic seismic behavior of structures under multicomponent ground motion: Present status, limitations, and future challenges" Structural Engineering and Mechanics, Vol. 93, No. 6 425-444, https://doi.org/10.12989/sem.2025.93.6.425

Ranjan, N., Nayak, S., Bhattacharya, S. and Das, S. (2025). "Seismic safety evaluation of two storey masonry building models built with coir and nylon fiber-reinforced mortar subjected to uni-directional shaking table test", Journal of Earthquake Engineering, Taylor & Francis, 29, 1-29. https://doi.org/10.1080/13632469.2025.2475810

Ranjan, N., Nayak, S. and Das, S. (2025). "Durability assessment of waste fiber added cementitious composite reinforced masonry in aggressive environment", European Journal of Environmental and Civil Engineering, Taylor & Francis, 29, 1-20. https://doi.org/10.1080/19648189.2025.2477073

R&D AND CONSULTANCY PROJECT

Sl. No.	PI/Co-PI or CI/Co-CI	Project Title	Status	Project Value (Lakhs)	Funding Agency
1.	PI: Prof. Pranesh Roy, Dept. of Civil Engg. Co-PI: Prof. Rahul Bhartiya, Dept. of Civil Engg.	Design of Mechanical Metasurfaces for Wave Isolation Applications by Developing a Large Deformation Peridynamics Shell Model	Ongoing (R&D Project)	Rs. 25.38	Defence Research & Development Organisation (Aeronautics R&D Board)

R&D AND CONSULTANCY PROJECT

Sl. No.	PI/Co-PI or CI/Co-CI	Project Title	Status	Project Value (Lakhs)	Funding Agency
2.	CI: Prof. Tanish Dey, CE Co-CI: Prof. Sukanta Chakraborty, CE	Vetting of Structural Drawings & Designs for Different Military Engineering Projects	Ongoing (Consultancy Project)	Rs. 0.70	M/s Engineers and Consultancy, Koderma
3.	CI: Prof. Tanish Dey, CE Co-CI: Prof. Rajib Sarkar, CE	Vetting of Floor Slab for Installation of a Wave Flume	Ongoing (Consultancy Project)	Rs. 0.59	Department of Ocean Engineering & Naval Architecture, IIT Kharagpur
4.	CI: Prof. Rajib Sarkar, CE Co-CI: Prof. D. P. Mishra, MNE Co-CI: Prof. Bhaskara Behera, MNE	Scientific Study for Highwall Slope Stability of Rajapur Opencast Project of BCCL	Ongoing (Consultancy Project)	Rs. 29.50	M/s BCCL, Bastacolla Area, Dhanbad
5.	CI: Prof. Tanish Dey, CE	Evaluation of Rock Materials/Aggregates for Filter and Rip-Rap Work	Ongoing (Consultancy Project)	Rs. 0.70	M/s Simplex Infrastructures Ltd., Karanpura
6.	CI: Prof. Ashok Kumar, MNE Co-CI: Prof. S. Pasupuleti, CE	Additional Mining and Environment Studies as Mentioned in TOR of Arjuni East Coal Mine, Umaria	Ongoing (Consultancy Project)	Rs. 17.70	M/s Ultratech Cement Ltd., Mumbai

ACHIEVEMENTS

INDIVIDUAL FACULTY ACHIEVEMENTS

Prof. Srinivas Pasupuleti is granted **Fellowship of Indian Water Resources Society** for his professional Contribution in the field of Water Resources.

WOMEN FACULTY ACHIEVERS

Prof. Leeza Malik has been reappointed as an Associate Editor for IATSS Research – *The International Association of Traffic and Safety Sciences* journal for the term 2025–2027.

She also served as Associate Editor for the journal during the 2023–2025 term.

IATSS Research is a peer-reviewed, international journal published by Elsevier on behalf of the International Association of Traffic and Safety Sciences (IATSS), Japan. The journal promotes interdisciplinary research in transportation and traffic safety, including engineering, planning, psychology, and public health.

OUTREACH ACTIVITIES

- MoE Sponsored GIAN Program—Two Weeks Short Term Course on "Geospatial Intelligence for Natural Resources Management and Disaster Mitigation" was organized by the Department of Civil Engineering, IIT (ISM) Dhanbad during 03-12 March, 2025. Prof. Biswajeet Pradhan Distinguished Professor, University of Technology Sydney was the foreign faculty, **Prof. Srinivas Pasupuleti,** HoD, Civil Engineering, IIT (ISM), Dhanbad was the Coordinator and **Prof. V. G. K. Villuri**, ASP, Mining Engineering, IIT (ISM), Dhanbad was the Co-coordinator of

This GIAN course covered geospatial technology, artificial intelligence, latest advancements, and case studies related to natural resource management and disaster mitigation. The program was structured with a blend of laboratory sessions and classroom lectures, spanning 10 days and 37 sessions. 51 Participants include engineers, faculty members, research scholars, and students from across India.

- A two-day national workshop titled "Next-Gen Geotechnical Engineering: Numerical Modelling in Railway and Mining Applications" held at IIT (ISM) Dhanbad, on 28 and 29th March 2025, bringing together experts, researchers, and professionals from across the country.

Organized by the Department of Civil Engineering under the aegis of the Indian Geotechnical Society's (IGS) Dhanbad Chapter, the workshop was conducted in collaboration with MIDAS Research and Development Centre India, the Bureau of Indian Standards, PMT Infra Science, and TEXMIN as a technical partner. The event drew over 100 participants from premier educational and research institutions, including Research Design and Standards Organization (RDSO), Indian Railways.

The workshop was inaugurated by Mr. Ravi Kiran Anne, Director of MIDAS, who served as the chief guest. In his address, he underscored the evolving challenges in civil and geotechnical engineering, highlighting the growing role of advanced simulation software, high-performance

OUTREACH ACTIVITIES

computing, and research-driven solutions. Prof. Sagar Pal, Dean (R&D) at IIT (ISM) Dhanbad, presided over the inaugural session, emphasizing the increasing investment in research and development in the field. Prof. Sarat Kumar Das, Dean (Faculty) and Chairman of the IGS Dhanbad Chapter, shared the chapter's milestones and key initiatives. Prof. Srinivas Pasupuleti, Head of the Civil Engineering Department, outlined the department's academic offerings and ongoing research. Prof. Sowmiya Chawla, the workshop coordinator and Secretary of the IGS Dhanbad Chapter, welcomed the participants.

The first day began with an introduction to MIDAS by Mr. Divyansh Pandey, Consultant at MIDAS, followed by a technical talk from Prof. Sowmiya Chawla on the application of numerical modelling in sustainable and resilient railway track design. This was succeeded by a hands-on training session on MIDAS GTS NX, focusing on various types of analyses related to railway track design.

The second day opened with a technical lecture by Prof. Gopi Krishna Dondapati on the significance of numerical modelling tools in the stability analysis of mining excavations. This was followed by another hands-on session on MIDAS GTS NX, specifically addressing mining-related problems.

The workshop concluded with a valedictory session graced by Prof. Sukumar Mishra, Director of IIT (ISM) Dhanbad; Prof. Sarat Kumar Das, Dean (Faculty); Prof. R.M. Bhattacherjee, Dean IRA; and Prof. Srinivas Pasupuleti, Head of the Civil Engineering Department. In his address, Prof. Sukumar Mishra spoke about the vital role of numerical modelling in modern engineering applications and how such workshops empower participants with future-ready skills. Prof. Bhattacherjee reflected on the evolution of research practices, noting how the current generation benefits from advanced tools that were unavailable in earlier times.

OUTREACH ACTIVITIES

- **Prof. Bandita Barman** Co-chaired a breakout session on 'Hydro-geomorphology of river deltas: stressors, impact and solution' in the first UNCCRD Delta summit at Asian Institute of Technology, Bangkok

PhD THESIS SUBMITTED/ AWARDED

Awardee	Supervisor	Thesis Title	Submitted/ Awarded
Ms. Akanksha Srivastava	Prof. Renu V.	Numerical Modeling of Biogeochemical Interactions Influencing Bioremediation of BTEX in Unsaturated Zones	Awarded

MESSAGE FROM ALUMNI

Devanshu Dewanda
IB Analyst
(American Express)

My journey also includes roles as a Financial Analyst at ICICI Bank and Supply Chain & Procurement Manager at H&R Johnson.

MiM ESSEC Paris Int'l Student Exchange
MBA - IIM Lucknow
(Batch of 2025)
B.Tech Civil Engineering
IIT (ISM) Dhanbad
(Class of 2022)

"Success doesn't come from what you do occasionally, it comes from what you do consistently."

Back on campus, I had the honor of serving as the Placement Representative for the Civil Engineering batch of 2022 — an experience that taught me something invaluable: leadership isn't about holding a title, it's about stepping up, taking charge, and being truly accountable.

If I could offer one piece of advice for your journey ahead, it would be this —take ownership of everything you do. Whether it's a project, a competition, or even small day-to-day responsibilities, treat them like they matter, because they do. Stay proactive — don't hesitate to ask questions in class, engage in discussions with professors, attend seminars, and push yourself beyond the regular coursework. Time will often feel like it's slipping away, so learn to manage it smartly and prioritize what truly matters. And don't overlook your health — as it's rightly said, "A healthy body houses a healthy mind." Physical fitness and mental clarity go hand in hand, especially when the pressure builds up.

One thing that becomes very clear once you step into the professional world is that depth matters far more than breadth. In the corporate environment, you'll be expected to bring real insights to the table, not just a copy-paste of what you've read. Focus on building a deep understanding of the concepts you're learning now. At the same time, invest in relationships. Build genuine, positive bonds with your professors and peers — these relationships often open doors and add value in ways that formal education alone cannot.

Academics will always be important, but what will truly set you apart is the entrepreneurial mindset — the ability to think differently, take initiative, and act decisively. Whether you build your own startup or lead innovation inside a company, this spirit will define your success.

I know the caliber and potential that IITians carry within them. Don't be afraid of the journey ahead — you're already wired for greatness. Stay persistent, stay positive, and above all, stay curious and hungry to learn.

Devanshu Dewanda

IIT (ISM) Dhanbad '22 | IIM L'25 | MiM ESSEC Paris | Analyst @ American Express

MESSAGE FROM ALUMNI

CHASING DREAMS, BUILDING FOUNDATIONS: MY JOURNEY AT IIT (ISM) DHANBAD

Dr. Nikhil Ranjan
Assistant Professor
Department of Civil Engineering, Gati Shakti Vishwavidyalaya, Vadodara, Gujarat - India's first university dedicated to Transportation and Logistics (A Central University under the Ministry of Railways, Government of India)

B.Tech. (Dr. B. C. Engg. College, Durgapur)
M.Tech. (IIT (ISM) Dhanbad)
Ph.D. (IIT (ISM) Dhanbad)
Post-Doc (IIT Roorkee)

Every journey begins with a single step — mine began at Dr. B. C. Engineering College, Durgapur (an autonomous institution affiliated to MAKAUT, West Bengal), where I earned my B. Tech. degree in Civil Engineering in 2015. Little did I know then that this was just the beginning of a lifelong pursuit of learning and discovery. Fueled by curiosity and a desire to build stronger structures and even stronger knowledge, I moved to IIT (ISM) Dhanbad to pursue my M. Tech. in Structural Engineering in 2017. It was here that a spark was lit — during those formative years, I found myself drawn not just to what was already known, but to the excitement of exploring what was yet to be discovered. Research became my passion, and in 2019, I decided to continue my academic journey by enrolling in the Ph.D. program at IIT (ISM) Dhanbad itself.

My journey would not have been the same without the unwavering mentorship of Prof. Sanket Nayak. His constant guidance during both my M. Tech. and Ph.D. days not only sharpened my technical skills but also helped me grow as an individual.

Under his leadership, I had the rare opportunity to collaborate with some of the most distinguished researchers across the globe — Prof. Sreekanta Das from the University of Windsor (Canada), Prof. Venkatesh K. R. Kodur from Michigan State University (USA), and Prof. Subhamoy Bhattacharya from the University of Surrey (UK). These experiences led to the publication of several research articles in top-tier international journals.

Life at IIT (ISM) Dhanbad was more than just research; it was about transformation. Working on sophisticated equipment like uni-axial and bi-axial shake tables taught me that theory and practice must go hand in hand. My doctoral journey culminated in nine peer-reviewed journal publications (seven in Q1 and two in Q2 indexed journals), with a few more currently under review. In 2024, I was humbled to receive the Inder Mohan Thapar Research Award (IMTR) 2023, an honor that recognized the long hours, countless revisions, and the relentless pursuit of excellence.

After completing my Ph.D. in 2024, I briefly joined the Department of Earthquake Engineering at IIT Roorkee as a postdoctoral researcher. Soon after, I took a significant step forward in my professional journey by joining Gati Shakti Vishwavidyalaya, Vadodara, Gujarat — India's first university dedicated to Transportation and Logistics (A Central University under the Ministry of Railways, Government of India) — as an Assistant Professor in February 2025.

This journey, filled with challenges and triumphs, would not have been possible without the constant encouragement and support of my supervisor, Prof. Sanket Nayak, and the nurturing environment at the Department of Civil Engineering, IIT (ISM) Dhanbad. As I stand at the threshold of new beginnings, I carry with me the lessons, values, and memories of my time spent at IIT (ISM) Dhanbad — ready to build the future, one step at a time.