

CIVIL ENGINEERING CHRONICLE



DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING
BIRLA INSTITUTE OF TECHNOLOGY MESRA

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MESSAGE FROM HOD



It is with great pleasure and satisfaction that the Civil & Environmental Engineering Department presents the 2nd Edition of our departmental Newsletter, "Civil Engineering Chronicle". I am confident that this newsletter will serve as a platform through which the comprehensive profile of our academic and co-curricular activities, achievements, and progress made during the stipulated period can be perused.

I extend my gratitude for your ongoing commitment and eagerly look forward to collaborating with each one of you to shape a bright future for our Civil and Environmental Engineering Department.

Dr. Bindhu Lal

Head of Department
Civil and Environmental Engineering

EDITOR'S DESK



For a considerable period, there has been a recognized need to establish a departmental newsletter serving as a conduit to showcase the achievements and diverse scholarly endeavors within the Civil and Environmental Engineering Department."

Through vibrant visuals, it seeks to foster information sharing, break down silos, and cultivate a culture of record-keeping, propelling the Civil and Environmental Engineering Department towards sustained success.

Dr. Ashish Kumar Patnaik

Assistant Professor, Dept. of CEE

Editor

EDITORIAL TEAM

STUDENT EDITORS



**SOAMYA
PARASHAR**



**HARSHVARDHAN
SUMAN**



**ANAND
AGNIHOTRI**



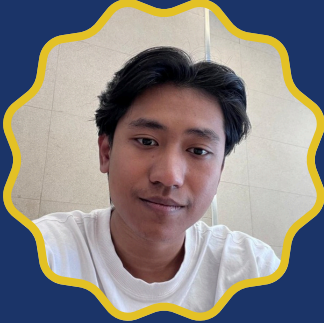
**HIMANSHU
KUMAR**



**HARSHIT
BAJAJ**



**PRINCE
RAJ**



**TOMI
NYODU**



**TANNUJA
KUMARI**



**RICHA
KUMARI**

STUDENT SUB- EDITORS

Sumit Kumar, Richik Kumar, Abhijeet Dutta, Vaibhav Bahal, Kartikey Singh Rounak Kumar, Shivangi Hembrom, Rishabh Choudhary, Akshat Gupta, Ankit Vikram, Amritashh Krishna Sinha, Dip Priya, Arjun Bacchani, Anurag Raj Sinha



ABOUT THE DEPARTMENT

The Department of Civil Engineering was established in 1957, later in 2014, it was renamed as Department of Civil and Environmental Engineering. Being one of the Oldest and largest department of the institute, its mission is to develop professional skills through quality education & research with the well established laboratories furnished with promising equipments. The department has also contributed towards the infrastructural and industrial growth of the country.

The vision is to develop quality intellectuals through education, research and motivation, so that they can bring contribute towards the building of a better society via there expertise in civil & environmental engineering.

The department offers 4-year B. Tech.(civil) and 2-year M. Tech. (civil) degree in 3 specializations: Structural Engineering, Soil Mechanics and Foundation engineering, Environmental Science and Engineering. The program objectives and program outcomes are based on CBCS. We also have collaboration via MOU with National Highway Authority of India(NHAI) and Jharkhand state pollution control board (JSPC).

We have 17 well qualified and highly experienced faculty members who are actively involved in teaching, research and consultancy. The current areas of research includes Air Pollution, Concrete Structures, Geotechnical engineering, mine slope stability, soil Stabilisation, Wastewater Management, Transportation Engg. etc.



VISION AND MISSION OF DEPARTMENT

VISION

To develop quality intellectuals through education, research and motivation, so that they can bring a positive contribution to society, in areas of Civil & Environmental Engineering.

MISSION

- To develop professional skills through quality education & research.
- To outreach various sectors of society through interdisciplinary programmes and practical oriented approach.
- To create dynamic, logical and effective leaders with inspiring mindsets.

»» FACULTY MEMBERS



Our esteemed professors play a pivotal role in shaping the success and growth of our Civil Engineering Department. Their unwavering commitment to excellence is reflected in their profound contributions to both academia and industry. Beyond the classroom, their impactful research endeavors push the boundaries of innovation, addressing real-world challenges in infrastructure, construction, and sustainable development.

The professors' engagement with industry partnerships and collaborative projects further enhance the department's standing, fostering a dynamic learning environment. Their passion for advancing the field and cultivating a culture of curiosity and exploration is integral to the department's continuous progress and the overall development of aspiring civil engineers.

>>> NEW FACULTY MEMBERS



Dr. Saptarshi Kumar Lahiri

Specialisation – Structural Engineering,



Dr. Ravi Kumar Mudragada

Specialization – Structural Engineering



DEPARTMENTAL ACTIVITIES

>>> COURSES OFFERED

The department offers the following courses -

- Airport and Harbour engineering
- Bridge and Tunnel engineering
- Construction, Estimation and Planning
- Concrete structure
- CAAD
- Geotechnical engineering
- Pre stressed concrete
- Disaster management
- Structural engineering
- Reinforced Concrete
- Surveying
- Remote Sensing in civil engineering
- Railway engineering
- Steel Structure
- Environmental engineering
- Water Resource engineering
- Dam and Water bodies
- Earthquakes and Disaster Management
- Building Materials and Construction
- Transportation Engineering



»» LABORATORIES AND FACILITIES

The Department of Civil Engineering has well-equipped laboratories to carry out effective research in various specializations.

The Department has the following laboratories:

- Hydraulics Laboratory
- Structural Engineering Laboratory
- Environmental Engineering Laboratory
- CAAD Laboratory
- Concrete and Road Material Laboratory
- Advanced Instrumentation Laboratory
- Surveying Field Work Laboratory
- Soil Mechanics and Soil Testing Laboratory

The department's advanced Instruments Laboratory is being developed, which now houses FTIR Microscope (Thermo Fisher Scientific) and Atomic Absorption Spectrophotometer (Perkin Elmer). FTIR Microscope (Thermo Fisher Scientific), procured from DST-FIST Grant in 2024 is used for microscopic imaging and chemical analysis simultaneously for various organic materials.

Atomic Absorption Spectrophotometer (Perkin Elmer) is a high end equipment used for elemental analysis from various environmental samples.

>>> MAJOR EQUIPMENTS INSTALLED



Compression Testing Machine



Tilting bed flow channel



Automatic Bitumen Compactor



Fiber Reinforced Concrete Testing Machine



L BoxTest Self Compacting



>>> PUBLICATIONS

- Kumari A, Chakraborty S. Influence of soil characteristics and agricultural practices on microplastic concentrations in sandy soils and their association with heavy metal contamination. *Environ Monit Assess.* 2024 Dec 30;197(1)
- Jha, A. K., Chakraborty, S., & Biswas, J. K. (2024). Green synthesis of low-cost graphene oxide-nano zerovalent iron composite from solid waste for photocatalytic removal of antibiotics. *iScience*, 27(12), 111486.
- Bhola, S., Chakraborty, S. Morphology and Polymeric Composition-Based Source Apportionment of Microplastics in Surface Water and Sediment of Drinking Water Supply Reservoirs in Ranchi, India. *Environ. Process.* 11, 32 (2024).
- Chahar, R., Mukherji, R., Chakraborty, S. et al. Effective removal of toxic dye [Malachite green] by aquatic plant *Hydrilla verticillata* and *Najas minor* as low cost adsorbent. *Environ Dev Sustain* (2024).
- Munshi, A. K., Patnaik, A. K., & Bhuyan, P. K. (2024). Modelling the Entry Capacity Reduction Factor and Pedestrian Movement Analysis at Roundabouts: A Case Study of Tier-II Cities in India. *Slovak Journal of Civil Engineering*, 32(3), 41-50.
- Roy, A., Bhattacharya, T., Kumari, M. et al. Exploring heavy metal dynamics and risks from dust and soil in urban cities of Jharkhand, India. *Sci Rep* 14, 32101 (2024).





- Prasad, N., Mishra, A., Bhattacharya, T. et al. Validation of AERMOD Prediction Accuracy for Particulate Matters (PM10, PM2.5) for a Large Coal Mine Complex: A Multisource Perspective. *Aerosol Sci Eng* (2024).
- Abhishek Kumar, Tanushree Bhattacharya*, Wasim Akram Shaikh, Arpita Roy, Sustainable soil management under drought stress through biochar application: Immobilizing arsenic, ameliorating soil quality, and augmenting plant growth, *Environmental Research*, Volume 259, 2024, 119531, ISSN 0013-9351, <https://doi.org/10.1016/j.envres.2024.11953>. (IF: 8.3 | Q1)
- Akash Mishra, Bindhu Lal (2024), Application of soil quality evaluation indices and multivariate statistics to assess soil health: a case study” *Environmental Earth Sciences* (2024) 83:464 <https://doi.org/10.1007/s12665-024-11766-0>, August 2024
- Kumar, G. and Kumari, N., 2024. Surface Water Quality Assessment. *Advances in Water Treatment and Management: Select Proceedings of ICAWTM 2023*, 536, p.267.
- Pandey, S. and Kumari, N., 2024. Assessment of morphology and soil erosion risk in agrarian watershed of jharkhand india using RUSLE, GIS and MCDA-AHP. *Journal of the Indian Society of Remote Sensing*, pp.1-20.
- Pandey, S., Kumari, N. and Mallick, L., 2024. Review on Assessment of Land Degradation in Watershed Using Geospatial Technique Based on Unmanned Aircraft Systems. *Unmanned Aircraft Systems*, pp.263-311.



>>> SPONSORED RESEARCH PROJECTS

Name of the faculty	Project Title	Project Type Research/ Consultancy	Funding Agency	Amount	Duration
Prof. Bindhu Lal, Prof. Anand Kr. Sinha, and Dr. Mani Mohan	Performance Evaluation of the Roads Constructed using TerraZyme in the State of Jharkhand under PMGSY	Research	NRIDA	Rs. 23.54 Lakhs	1.5 years
Prof. Anand Kr. Sinha, Prof. Bindhu Lal, and Dr. Mani Mohan	Scrutiny of DPRs under PMGSY	Consultancy	NRIDA	1.44 lakhs	1 year

R. Naresh Kumar & Jawed Iqbal	Assessing the Abiotic and Biotic Factors in Pit Lakes for Sustainable Management of Water and Environment	Research	Ministry of Coal, India	Rs. 208.58 Lakhs	2 Years
R. Naresh Kumar & Jawed Iqbal	National Knowledge Network (NKN) under National Clean Air Program (NCAP)	Consultancy	Ministry of Environment Forest and Climate Change, India	Rs. 1.50 Lakhs	1 Year
R. Naresh Kumar & Jawed Iqbal	Preliminary report on environmental vulnerability of plastic park in Deoghar on the basis of detailed project report and field visit	Consultancy	Jharkhand Industrial Infrastructure Development Corporation	Rs. 5.90 Lakhs	6 Months
Dr. Mani Mohan Dr. Subhajit Sen	NDT Test at Naisarai	Consultancy	Balaji Construction	0.38 lakh	1 month

Dr. Indrajit Roy (PI) Dr. Mani Mohan (Co-PI)	Conducting Scientific Study for method of working, bench design, dump design including dump slope, ultimate pit slope and monitoring of slope stability	Consultancy	WCL	5.19 Lakh	6 months
Dr. Mani Mohan	Vetting of Lift well Structure at Prayagraj Station	Consultancy	Arohi Elevators	0.53 lakh	2 month
Dr. Mani Mohan	Core Testing of DBM and BC Sample	Consultancy	LEA Associates	1.35 lakh	1 month
Dr. Mani Mohan	Mix Design M15, M20, M25, M30	Consultancy	NCC	1.41 lakh	3 month



Conferences / Workshops / Seminars

>>> DR. TANUSHREE BHATTACHARYA:

- Invited talk and session chair in The 2nd International Conference on Biochar Research and Application & The 7th Asia Pacific Biochar Conference" from September 20th to 22nd in Shenyang, China. Topic: Arsenic removal by biochar application in soil.
- Invited talk in Technology and interaction on the 26th monthly interactive series of lectures organized by the Bihar State Pollution Control Board (BSPCB) – on August 22, 2024, Topic: "Vehicular pollution and its effect on atmospheric ozone with special reference to the role of Citizens."
- Distinguished speaker and Expert in the field of Environmental Engineering to conduct a session for Student Induction Programme, at RTCIT, Ormanjhi. Topic: Microplastics in the environment. Date: 12.09.2024.

>>> DR. NEETA KUMARI:

- An invited talk on "Groundwater quality management in coal mining areas of Jharkhand" in the International Conference on Innovation in Civil, Structural and Environmental Engineering (CIVIL ENGG, 2024), October 23-25, 2024 | Rome, Italy (ONLINE mode)
- Attended MMTTC NEP training from IIT-ISM from 21st October to 2nd November' 24 (ONLINE)
- Acted as Principal rapporteur at 23rd IASSI annual conference, 26-27 october at Dept of Management, BIT, Mesra.





- An invited talk in International and Inter University Centre for Nanoscience and Nanotechnology (IIUCNN) Mahatma Gandhi University, Kerala on "Groundwater fluoride management using waste materials" held on July 6-7, 2024 (ONLINE)

>>> DR. SUKALYAN CHAKRABORTY

- Delivered an invited Lecture in Strategy Workshop on "Microplastics Pollution: Strategies for Remediation in Sustainable Environmental Management" on 23rd November 2024 organized by National Academy of Agricultural Sciences, Delhi.
- Organised 2 day workshop on 'Microplastics in the Environment' as Convener on 23rd and 24th August 2024 at BIT, Mesra, funded by ANRF, ThermoFisher and BIT, Mesra.

>>> DR. PUJA RAJHANS

- Singh, P. K., and Rajhans, P. (2024). Experimental investigation and comparative analysis of the properties of recycled aggregate concrete considering different mixing approaches. International Conference on Research and Innovation for Sustainability in Civil Engineering (RISCE-2024), 25-26 November 2024, BIT Sindri, India.
- Pandey, S., and Rajhans, P. (2024). Evaluating the Sustainability of Concrete Prepared with Supplementary Cementitious Materials Containing Different Percentage of Recycled Concrete Aggregate by Performing Durability Performance". MS ID: AIPCP24-CF-CAMSE2023-00016. AIP Conference Proceedings.
- Anand, P., Sinha, A. K., and Rajhans, P. (2023). "Investigating the Effects of Carbonated Construction and Demolition Waste with Two Different Granulometries on the Mechanical and Durability Properties of AAC Blocks. MS ID: AIPCP24-CF-CAMSE2023-00002. AIP Conference Proceedings. .





Induction of Dr. Tanushree Bhattacharya as Associate Fellow of INSA by Padmashree Dr. Ashutosh Sharma (President of INSA)



Invited talk of Dr. Tanushree Bhattacharya in The 2nd International Conference on Biochar Research and Application & The 7th Asia Pacific Biochar Conference" from September 20th to 22nd in Shenyang, China



Two-Day Workshop on “Microplastics in the Environment” organized by the Department of Civil and Environmental Engineering on 23rd and 24th August 2024 at BIT, Mesra, funded by ANRF, ThermoFisher and BIT, Mesra.

ACHIEVEMENTS

1. AWARD / RECOGNITION BESTOWED ON FACULTIES

Dr. Tanushree Bhattacharya has been awarded the following awards:

- Young Scientist Award, in 9th International Congress and Exhibition on Arsenic in the Environment, 20-24th October, 2024 organised by Kalinga Institute of International Technology, International Society of Groundwater for Sustainable Development, and KTH Royal Institute of Technology, Stockholm, Sweden.
- Indian National Science Academy Associate Fellow, 2024
- Award for the highest number of research papers, Birla Institute of Technology, 2024.

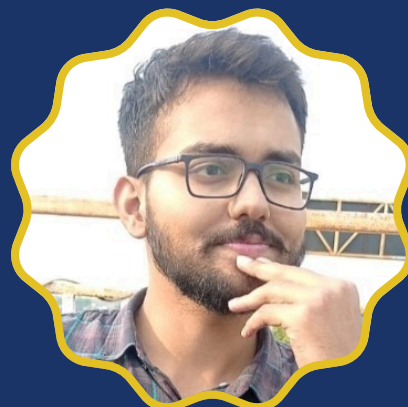
Dr. Sukalyan Chakraborty has been selected for the prestigious NASI-Membership 2024

Dr. Puja Rajhans has been awarded for the highest number of research papers, Birla Institute of Technology, 2024.

2. GATE RANKERS :



Aman Ujjawal(2016-2020)
AIR 99 in GATE 2021
AIR 244 in GATE 2022



Ankur Mishra(2018-2022)
AIR 432 in GATE 2022



Ashish Nand(2019–2023)
AIR 628 in GATE 2022



Navneet Kumar(2019–2023)
AIR 517 in GATE 2022

3. TEN STUDENTS HAVE QUALIFIED GATE 2025 FROM BATCH 2021 & 2022.



AYUSH SINGH



HARSHVARDHAN



**AYUSH KUMAR
RANJAN**



**ANUPAM
KARAN**



**PRABHUTVA
VERMA**



**VIPUL
PARASHAR**



**PRINCE
RAJ**



**RAJVEER LALA
TIGGA**



ARYAN RAJ



**ANAND
AGNIHOTRI**

4. MANY STUDENTS FROM 2K21 GOT PLACED IN DIFFERENT COMPANIES.

- **4 STUDENTS GOT PLACED IN ADITYA BIRLA GROUP.**
- **4 STUDENTS GOT PLACED IN SLNKO ENERGY.**
- **2 STUDENTS GOT PLACED IN SIGMOID.**
- **2 STUDENTS GOT PLACED IN VISHVARAJ.**
- **AND VARIOUS OTHERS GOT PLACED IN DIFFERENT COMPANIES.**

»» INDUSTRIAL VISIT

The industrial visit to Kujju coal mines by BIT Mesra students offered firsthand exposure to coal extraction. They observed opencast and underground mining, learning about drilling, blasting, haulage, and key concepts like mine stratigraphy and slope stability. Insights from CCL professionals on ventilation, methane control, and subsidence monitoring emphasized sustainable mining practices.



The visit deepened students' knowledge of geotechnical investigations, coal processing, and environmental impact mitigation. It emphasized safety, restoration, and sustainable mining practices, bridging academia and industry while equipping them with practical skills for resource extraction and infrastructure development.

KEY MOMENTS



I AM PLEASED TO NOTE THAT THE THIRD EDITION OF THE NEWSLETTER OF THE DEPARTMENT OF CIVIL ENGINEERING IS BEING RELEASED. MY BEST WISHES TO THE EDITORIAL TEAM. SUCH PUBLICATIONS PROVIDE A PLATFORM FOR HIGHLIGHTING THE PROFESSIONAL ACHIEVEMENTS, RESEARCH CONTRIBUTIONS, AND ACADEMIC ADVANCEMENTS OF FACULTY MEMBERS, STUDENTS, AND ALUMNI OF THE DEPARTMENT.

RECENTLY, I HAVE BEEN APPOINTED AS THE DIRECTOR AT BIT PATNA OFF CAMPUS. I HAD ENJOYED MY 34 YEARS OF TEACHING EXPERIENCE AT BIT MESRA MAIN CAMPUS. AS A PROFESSOR OF CIVIL ENGINEERING, I TEACH MAINLY FLUID MECHANICS AND WATER RESOURCES ENGINEERING. THE DEPARTMENT OF CIVIL ENGINEERING IS KNOWN FOR ITS EXCELLENCE AND NURTURING ENGINEERS WHO ARE NOT ONLY TECHNICALLY PROFICIENT BUT ALSO VISIONARY LEADERS IN THEIR RESPECTIVE FIELDS.

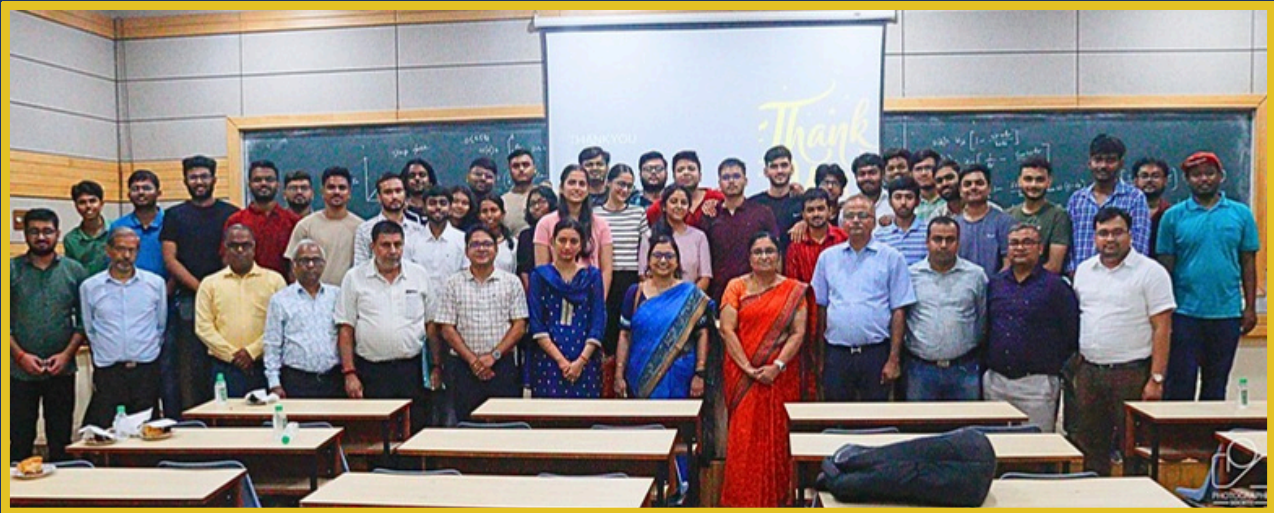
I ENCOURAGE YOU TO EMBRACE CHALLENGES, FOSTER COLLABORATIONS, AND MAKE MEANINGFUL CONTRIBUTIONS TO THE EVER-EVOLVING DISCIPLINE OF CIVIL ENGINEERING AS YOU ADVANCE IN YOUR EDUCATIONAL AND PROFESSIONAL JOURNEYS. THE OPPORTUNITIES BEFORE YOU ARE BOUNDLESS, AND WITH DEDICATION AND PERSEVERANCE, I AM CONFIDENT THAT YOU WILL LEAVE A SIGNIFICANT IMPACT ON ACADEMIA, INDUSTRY, AND SOCIETY AS A WHOLE.

Prof. Anand Kr. Sinha

Director BIT Patna

STUDENT ACTIVITIES

>>> WARM RECEPTION OF K23S



With great enthusiasm and warmth, we extend a heartfelt welcome to the Civil Engineering Batch of 2023 into this esteemed institution, where foundations are not just laid in concrete but in knowledge, perseverance, and innovation. As you embark on this transformative journey, know that you are stepping into a realm where blueprints evolve into reality, structures transcend mere design, and challenges foster ingenuity. The corridors of this department echo with the wisdom of those who came before, and now, you are part of this illustrious lineage. With every calculation, contour, and concrete mix, you will forge not only infrastructure but also your destiny. Embrace this voyage with curiosity, tenacity, and an unwavering pursuit of excellence, for the bridges you design today will connect the world of tomorrow.

>>> FAREWELL CEREMONY



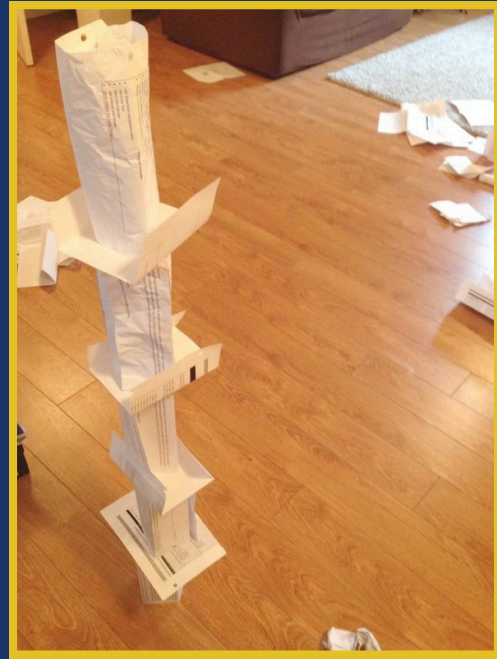
As we turn another page in the illustrious chronicle of our department, we bid an emotional farewell to Professors Birendra Singh and Subhajit Sen, whose unwavering dedication has sculpted generations of engineers. Their erudition in structural marvels and steadfast commitment to nurturing minds have left an indelible imprint on our academic landscape. More than educators, they were architects of character, mentors who imparted wisdom that transcended equations and load-bearing calculations. Their legacy of excellence, integrity, and relentless pursuit of knowledge shall forever resonate in the hearts of students and faculty alike. Though they may step beyond these walls, their teachings remain the bedrock upon which countless careers shall be built. With boundless gratitude, we bid them adieu, cherishing their invaluable contributions to this noble discipline.



An era came to a beautiful end as we bid farewell to the K21 batch of Civil and Environmental Engineering, BIT Mesra. From the first lectures to the last project submissions, they have navigated through challenges, built lifelong friendships, and created memories that will forever define their journey here. Their resilience, creativity, and camaraderie have set a remarkable standard for all to follow. As they step beyond the gates of BIT Mesra, we would like to remind them that this is not goodbye but the beginning of a greater adventure. We wish their paths be filled with opportunities success, and the same determination that brought them here. The BIT family will always be cheering for them!

»» TOWER OF PAPERS

The "Tower of Papers" event typically involved participants building the tallest or most stable tower using only paper and possibly tape or other lightweight materials. It was fun team-building exercise that encouraged creativity, collaboration, and problem-solving.



RECENT GRADUATES

