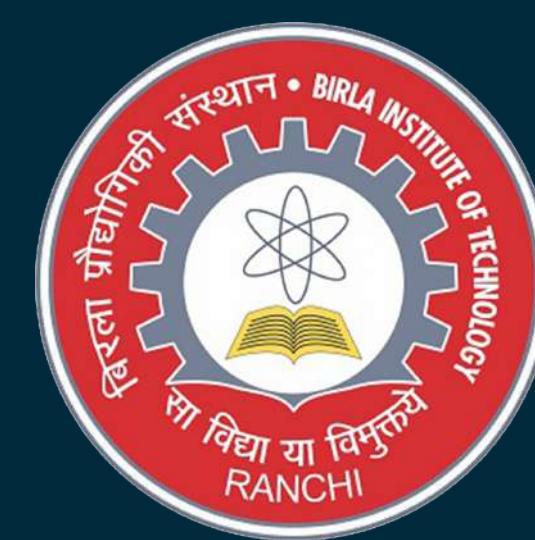


# CIVIL ENGINEERING CHRONICLE

DEPARTMENT OF CIVIL  
AND ENVIRONMENTAL ENGINEERING  
BIRLA INSTITUTE OF TECHNOLOGY MESRA



VOLUME 1  
JANUARY 16th, 2024



1ST EDITION

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# MESSAGE FROM VC

## BIRLA INSTITUTE OF TECHNOLOGY

MESRA - 835215, RANCHI (JHARKHAND), INDIA

Prof Indranil Manna

Vice-Chancellor

प्रो. इन्द्रनील मना

कुलपति



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16<sup>th</sup> January, 2024

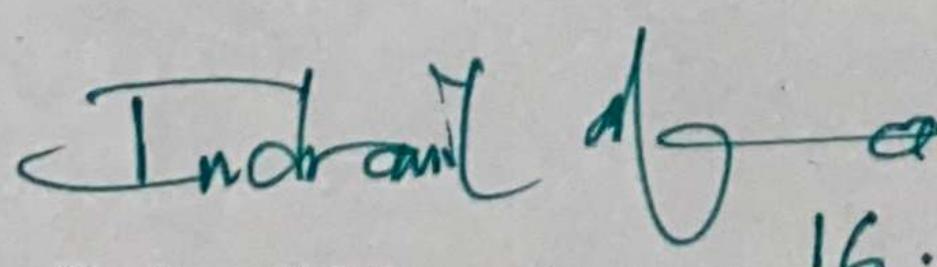
### MESSAGE

It gives me immense pleasure to hear that the Department of Civil Engineering has decided to publish a Departmental Newsletter. This Newsletter will surely provide a platform to disseminate relevant information about the progress in academic, research and related matters in regular interval to the concerned community covering faculty and staff members, students and scholars, entrepreneurs, recruiters, industry and alumni. It will also work as a stimulus to encourage the Department to network with partner Departments in all major academic and research organisations and industry.

The Civil Engineering Department of BIT Mesra is one of the oldest departments in this domain in the country. The Department is always enthusiastic about conducting various courses and workshops for the faculty and students and training programs for working professionals to educate the community about technological advances.

Finally, I wish to extend my best compliments to the team constituted for publishing the Newsletter.

Best wishes!

  
(Indranil Manna) 16.01.2024

## MESSAGE FROM HOD

“

It is with great pleasure and satisfaction that the Civil Engineering Department presents the inaugural issue 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.



Through this medium, we aim to showcase the significant events within our department, providing insight into our advancements. This will not only reflect on the current progress of our department but will also inspire us to continually strive for improvement with each passing quarter.

Anticipating the opportunities and challenges ahead, we, as a department, remain dedicated to advancing our research, supporting our students, and contributing to the broader scientific and engineering community. With our collective expertise, dedication, and hard work, I am confident that we will continue to achieve remarkable milestones in the days to come.

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 Engineering Department.

Dr. Bindhu Lal

Head of Department  
Civil and Environmental  
Engineering

## EDITOR'S DESK

### MESSAGE



“ 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 Engineering Department.”

A dedicated editorial team has meticulously contributed time and expertise to bring forth this inaugural issue. Special gratitude is extended to Dr. Bindhu Lal, the driving force behind this initiative, "Civil Engineering Chronicle" aims to spotlight significant developments, including innovations in teaching, research contributions, project developments, outreach activities, workshops, and student achievements.

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

Dr. Ashish Kumar Patnaik  
EDITOR

# EDITORIAL TEAM



Dr. Ashish Kumar Patnaik  
Editor

Asst. Prof., Dept. of CE

## STUDENT EDITORS



Kunal Kumar Roy



Avinash Pandey



Harsh Tejasvi



Anudeep Kumar



Prashank Gupta



Abhijeet Singh

## STUDENT SUB-EDITORS

Somya Parashar, Harshvardhan Suman, Anand Agnihotri,  
Harshit Bajaj, Shailesh Kumar, Himanshu Kumar

## 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 departments of the institute, its mission is to develop professional skills through quality education & and research with well-established laboratories furnished with promising equipment. 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 contribute towards the building of a better society via their expertise in civil & and environmental engineering.

The department offers a 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 the National Highway Authority of India(NHAI) and, the Jharkhand State Pollution Control Board (JSPC).

We have 19 well-qualified and highly experienced faculty members who are actively involved in research and consultancy. The current areas of research include Air Pollution, Concrete Structures, Geotechnical engineering, mine slope stability, soil Stabilisation, Wastewater Management etc.

>>> **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 enhances 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.

# DEPARTMENTAL ACTIVITIES

## >>> NBA ASSESSMENT

The peer team members of the National Board of Accreditation (NBA) visited the Dept. of Civil 15th to the 17th of April, 2023 to conduct an assessment and accreditation.

## >>> SKILL DEVELOPMENT PROGRAM

A skill development program was organised by the department for enhancing the skill-sets of the undergraduates in different fields which will be beneficial for students in the future.



## &gt;&gt;&gt; SITE VISIT

On March 11, approximately 30 second-year students from the Department of Civil Engineering, accompanied by faculty members Dr. Kirti Avishek and Dr. Pulak Kumar Munshi, visited Dalmia Industry in Bokaro, Jharkhand.



The trip provided a remarkable firsthand experience of the application of civil engineering in a large-scale industrial context, particularly in the manufacturing of building materials. The practical exposure not only deepened the students' understanding of theoretical concepts but also unveiled diverse career opportunities within the field. Guided by industry professionals and skilled professors, the visit proved to be an invaluable and comprehensive educational experience, emphasizing the significance of bridging theory and practical applications in civil engineering.



## >>> 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

## >>> LABORATORIES AND FACILITIES

The Department of Civil Engineering has well-equipped laboratories for various specializations such as surveying, structural engineering, soil mechanics and foundation engineering, rock mechanics, environmental science and engineering and a computer laboratory.

- The Department has the following laboratories:

- Hydraulics Laboratory
- Soil Lab
- Structural engineering laboratory
- Environmental engineering laboratory
- CAAD Lab
- Concrete and Road material laboratory
- field testing in the Geotechnical Laboratory
- Non-Destructive Testing
- Equipment for Structural engineering
- Environmental sample testing

## >>> MAJOR EQUIPMENTS INSTALLED



UV VIS  
Spectrophotometer



Marshall Stability Test  
Apparatus



Mixture Machine



Sieve Shaker



Ultrasonic Pulse Velocity



Rebound Hammer



Total Station in Survey Lab



Triaxial Testing Machine  
in Soil Lab

## &gt;&gt;&gt; PROJECTS

- Performance Evaluation of the Roads Constructed using TerraZyme in the State of Jharkhand under PMGSY, NRIDA, Ministry of Rural Development, Government of India, Cost – Rs. 23.54 lakhs, PI – Prof. Bindhu Lal, Co-PIs – Prof. Anand Kr. Sinha and Mr. Mani Mohan
- Performance Evaluation of the Roads Constructed using Steel Slag in the State of Jharkhand under PMGSY, NRIDA, Ministry of Rural Development, Government of India, Cost – Rs. 23.54 lakhs, PI – Prof. Bindhu Lal, Co-PIs – Prof. Anand Kr. Sinha and Mr. Mani Mohan
- National Carbonaceous Aerosol Programme (NCAP) Working Group III- Modeling Carbonaceous Aerosol Source Influence and Atmospheric Effects (RS:159.54 Lacs) MoEFCC, 2016-24 (30/03/2016). PI - Dr. Jawed Iqbal
- Assessing The Abiotic and Biotic Factors in The Pit Lakes For Sustainable Management of Water and Environment – Implementing Agencies: BIT Mesra, CMPDI Ranchi, CCL Ranchi, MCL Sambalpur (RS: 208.58 Lacs) MoC, 2023-25 (06/07/2023), PI - Dr. Jawed Iqbal
- SERB-CRG sponsored project (Rs. 38.5 lakhs : 2022 - 2025) “Source Apportionment, Hydrodynamic Study and Environmental Fate Assessment of Micro-Plastics in Drinking Water Supplying Reservoirs of Ranchi, Jharkhand”, PI – Dr. Sukalyan Chakraborty
- DST-FIST project entitled “Strengthening Research in Monitoring and Remediation of Chemical Contaminants of Emerging Concern for clean and potable water”. PI – Dr. Sukalyan Chakraborty

## &gt;&gt;&gt; PROJECTS

- Study on carbon foot printing, carbon sink due to proposed opencast mining of Kotre Basantpur OCP. 10.62 Lacs.KBP Mining PVt Ltd. PI – Dr. Kirti Avishek
- Augmentation report on Natural resources including carrying capacity of rivers and streams passing by the Catchment area and Its mitigation measures for Chandragupt Coal Mines, CCI, Ranchi. Kirti Avishek(PI). Sushree Chandragupt Mining Pvt.Ltd.11.80Lacs. June to July 2022. PI – Dr. K Avishek
- Prediction of Particulate Matter and Gaseous Pollutant Concentration Through ANN, PNN And CART Models and Comparison with CALPUFF and AERMOD In Singrauli Coal Mines; Funding: Coal India Ltd.; Scheme: R & D; Sanctioned amount: Rs. 85.25 Lakhs (2021-2024), PI – Dr. Tanushree Bhattacharya
- Consultancy: Traffic volume study, Biocrat Environmental Services, Rs. 1 Lakh. PI – Dr. Ashish K Patnaik, Co-PI – Dr. K Avishek
- Consultancy: Lift well Structure Design check at Prayagraj Railway station, Investigation of cracks on RC structure of Signature Building at Kanke Ranchi, Concrete Mix Design for NCC, NDT tests on Elevated water tank, Intake structure at Ramgarh, Member for investigating the safety off retaining wall of upcoming building adjacent to ratan height. PI - Dr. Mani Mohan
- Plastic Park, funded by JIIDCO (consultancy) ongoing . PI - R Naresh Kumar, Co PI - Jawed Iqbal

## >>> JOURNAL PAPERS

- Anand, P., Sinha, A.K., and Rajhans, P. (2023) 'Enhancing the Performance of Aerated Concrete through Accelerated Curing and Waste Material Integration' Accepted for publication in Advances in Cement Research, published by ICE Publishing (SCI Indexed Journal, Impact Factor 2.206)
- Kausher, R., Sinha A.K., and Singh, R. (2023) 'Chemometric Appraisal of Groundwater and Surface Water Quality for Domestic, Irrigation and Industrial Purposes in the Coal Mining Province of Mahan River Catchment Area' Accepted for publication in Desalination and Water Treatment, published by Desalination Publications, Hopkinton, USA (SCI Indexed Journal, Impact Factor 1.254)
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- Ram Kishore Singh and Bindhu Lal (2023), "Comparison of Prediction Models (ANN and Time Series) for studying the dispersion of pollutants (Sox, NOx and Particulate Matter) from vehicular emissions - A Case Study, *IJEP (Indian Journal of Environmental Protection)* 43(5) , Pp 409-420 ( Scopus Indexed)
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- Mohan, Mani, and Birendra Kumar Singh. "Utilising under-burnt waste bricks from kilns as supplementary cementitious material." *Advances in Cement Research* (2023): 1-12.
- Khan, T., Mohapatra, S.S., Patnaik, A.K. "Realistic Approach for Capacity Estimation of U-Turns Under Heterogeneous Traffic Condition". *Transportation Research Record* 1-18 (2023): Sage publications, DOI: 10.1177/03611981231203227.

## &gt;&gt;&gt; RECENT PUBLICATIONS

01) Enhancing the Performance of Aerated Concrete through Accelerated Curing and Waste Material Integration.

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## &gt;&gt;&gt; ACHIEVEMENTS

## 01) GATE RANKERS :



Aman Ujjwal (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

## 02) ESE RANKER :



Anish Bagga (2014-2018)  
AIR 4 in ESE 2020

## 03) CAT RANKER:



Harsh Raj (2019-2023)  
99 Percentile Score  
MBA, IIM Calcutta

## &gt;&gt;&gt; DST- FIST



Department of Civil and Environmental Engineering has received a DST- FIST (Fund for Improvement of S&T Infrastructure) grant of the tune of one crore for five years from the Department of Science and Technology Government of India, for the project entitled “Strengthening Research in Monitoring and Remediation of Chemical

Contaminants of Emerging Concern for clean and potable water”. The Principal Investigator is the Head of the Department, Prof. Bindhu Lal. The grant is supporting the purchase of an FTIR-Microscope as the major equipment in this project, which will help in Microplastic analysis. Microplastics are ubiquitous particles up to the size of 5 mm present in almost every environmental matrix including water, soil and air. They easily find their way into the living organisms through various exposure routes like ingestion and inhalation, and once they enter the organisms they have the possibility to impair the normal physiological functions leading to detrimental health impacts. Dr. Sukalyan Chakraborty is leading this research area with the other faculty members of the Department, Dr. Kirti Avishek, Dr. R. Naresh Kumar, Dr. Tanushree Bhattacharya, Dr. Jawed Iqbal and Dr. Neeta Kumari. The main objective of this project is to develop a full-fledged Microplastic analysis facility at BIT, Mesra, along with monitoring and assessing microplastics from the Subarnarekha River and developing a suitable remediation process. The project also aim to develop a network of scientists working on microplastic-related research in India and abroad and create R&D infrastructure not only for R&D activities in the institute but also for use by the nearby institutions, start-ups/ manufacturing industries/ MSMEs.

## ALUMNI TALK

### MY EXPERIENCE WITH BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI.



It's always said that "Learning is development and development is life". I had the same experience when I joined Birla Institute of Technology, Mesra, Ranchi. The worthy professors, classes, laboratories, library and the hostels at BIT Mesra, each of them has contributed to invincible memories which I want to re-live again. Entering the college, when you feel all alone and that too when there are many new avenues to learn at BIT Mesra, it was never so lonely because of amazing classmates and compassionate professors. Not only the studies, I enjoyed participating in several co-curricular activities, spending time with friends in the evergreen surroundings and also, collecting narratives for different fests we had annually.

I take this opportunity to thank BIT Mesra and especially, my professors of Civil Engineering Department because of whom I could develop several insights and research interests in my field. With the blessings of my professors and good wishes of my friends, I could receive the Gold Medal in Civil Engineering for 2k16 batch. It is because of my college itself that without any coaching I went on to grab AIR 99 in GATE 2021 which landed me as an executive at Coal India Limited (CIL).

I could also become the Gold Medalist in my M.Tech. programme at IIT Guwahati only because of some great lessons which I learnt at BIT Mesra. It's actually my privilege that I could express my feelings for BIT Mesra and I wish to see my college at the apex with its achievements. I wish that BIT Mesra continues to shape the lives of the students forever.

Thank You.

**Aman Ujjwal**

B.E. Civil Engineering  
2016-2020 Batch

# STUDENTS ACTIVITIES

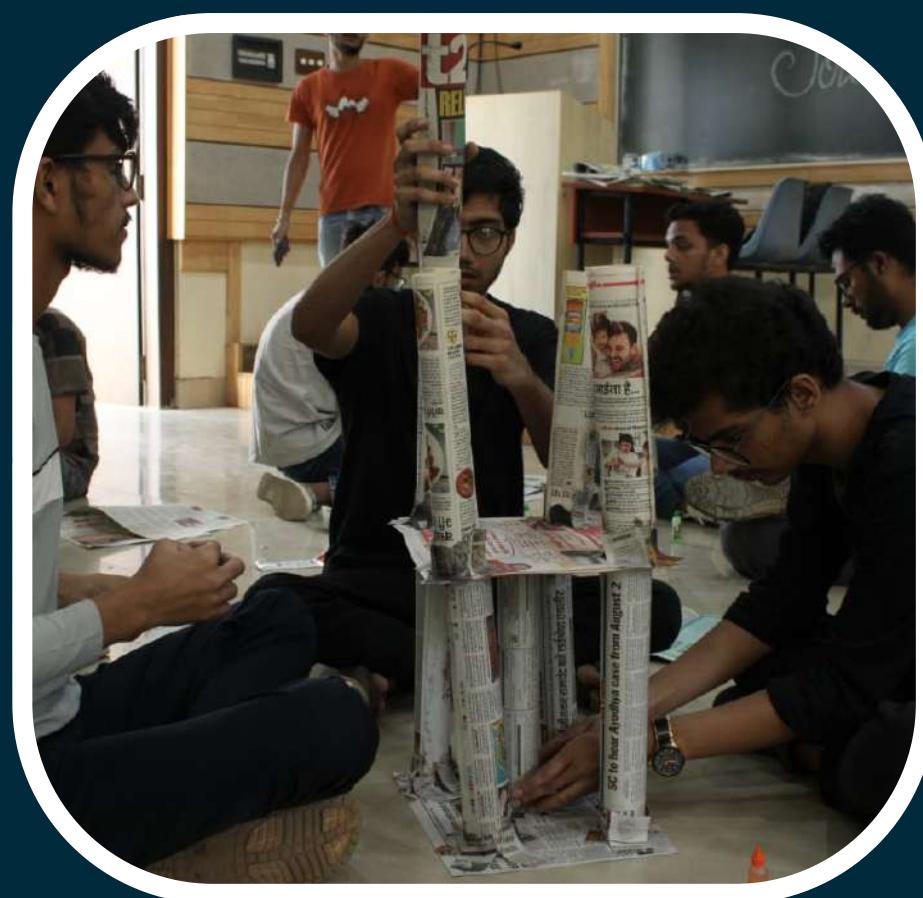
## >>> TOWER OF PAPER

The Tower of Paper event organized by the Civil Engineering Society is a fun-filled event that typically involves participants constructing tall structures using newspapers and gum. This activity helped participants gain in-depth exposure to the practical aspects of civil engineering and insight into structural stability. The paper tower of the team is taller in height and having more load-bearing capacity is considered a winner.

The event consists of two rounds:

1. General aptitude round
2. Tower making round

Ultimately, the Tower of Paper event offers a unique blend of education and fun, allowing participants to apply their engineering knowledge creatively and engagingly while preparing them for the challenges they may face in their future careers.



## >>> UPSC SESSION WITH ANISH BAGGA

On 23 April 2022 at 7 P.M., a virtual meet was organized by department, BIT Mesra, where Anish Bagga, an alumnus, was invited as a guest speaker. Anish secured an All India Rank of 04 in UPSC ESE (Civil) in the year 2020, which served as a testament to his dedication and hard work. Anish shared his experience and preparation tips for the engineering services examination. He emphasized the importance of understanding the exam pattern, syllabus and time management. Anish motivated the participants by sharing his personal experiences on how he managed his job and preparation simultaneously.

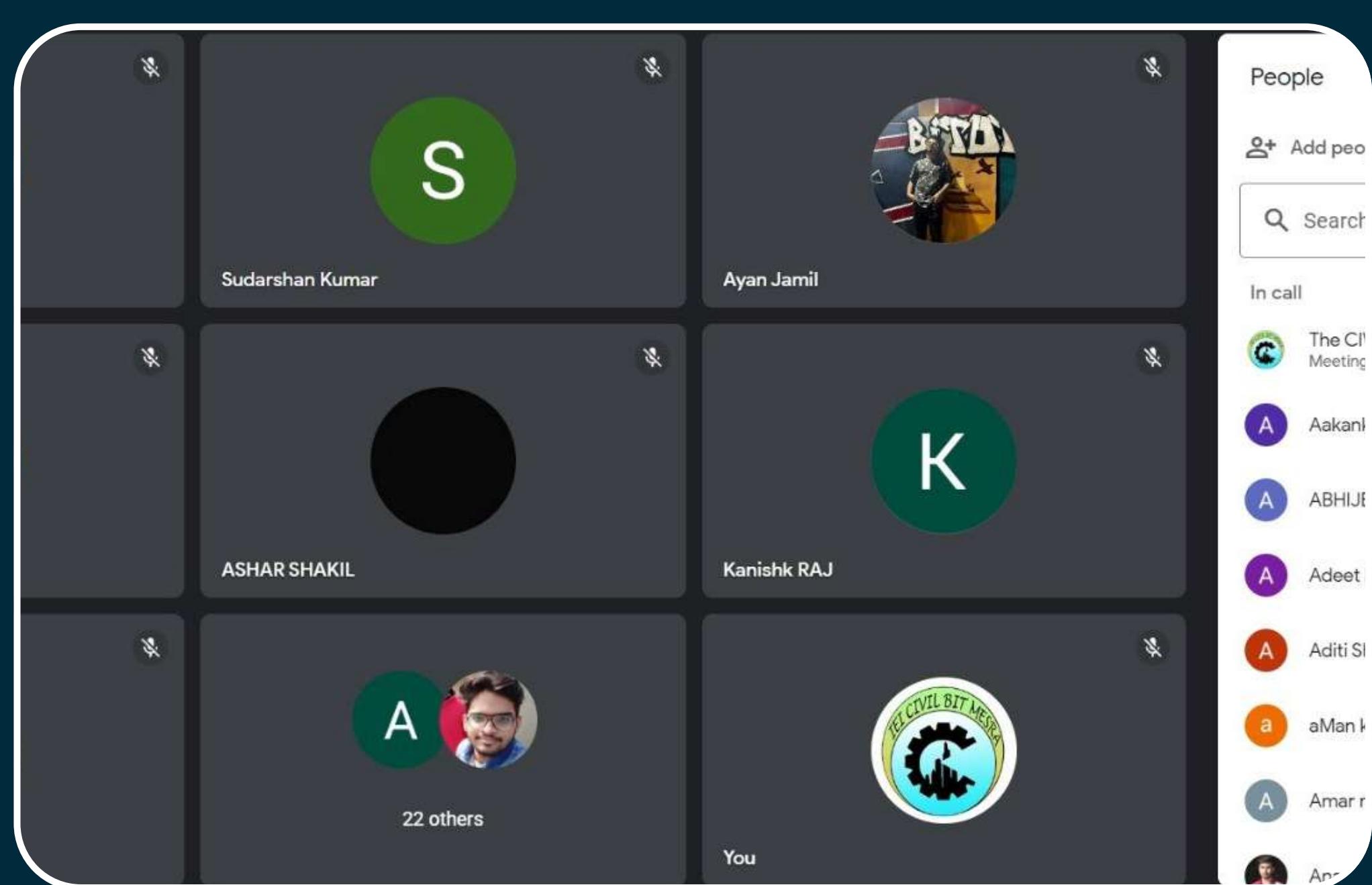
Anish's success in the ESE is a source of inspiration for the participants, and his success story.



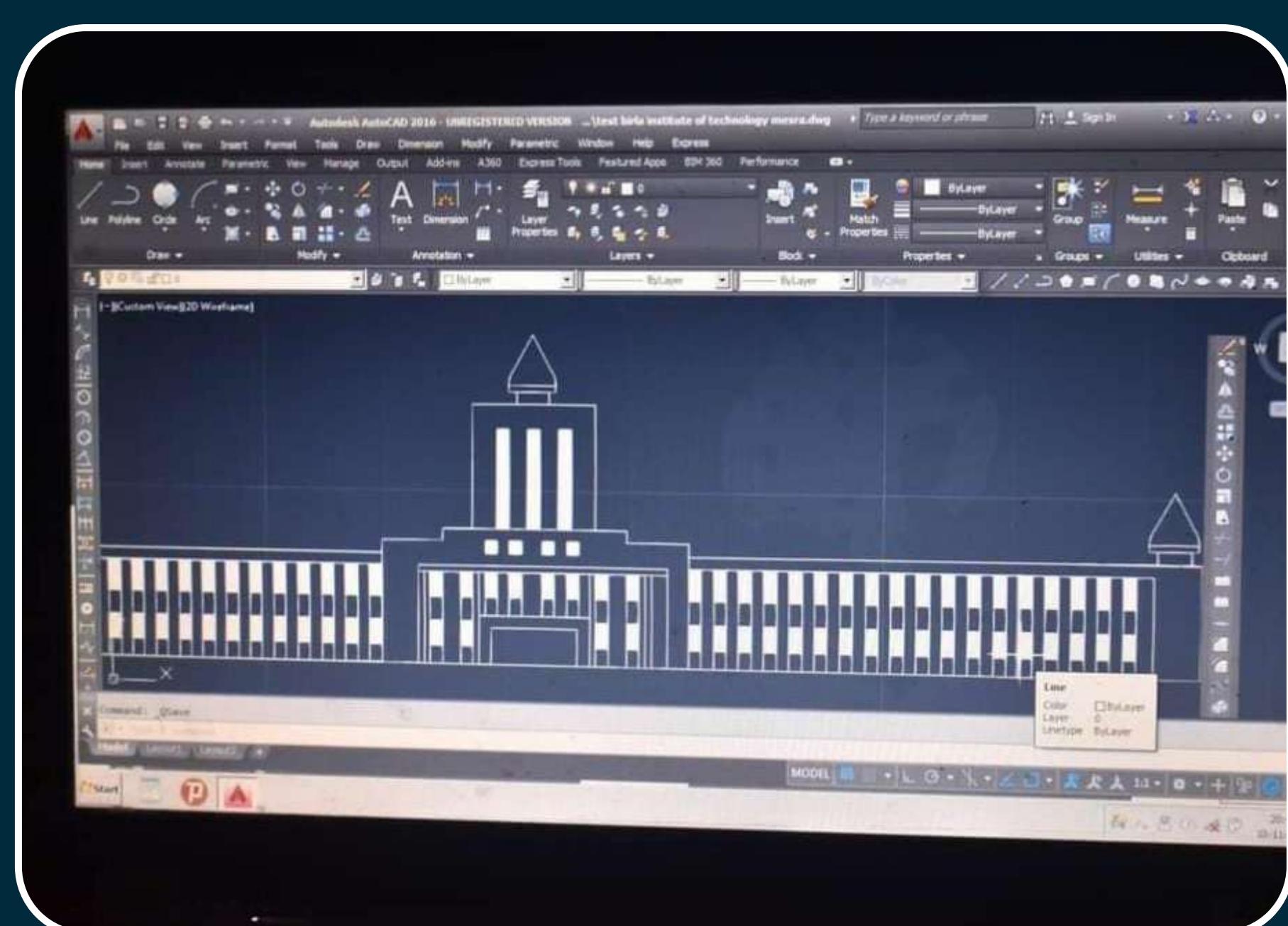
Additionally, he completed his graduation from BIT Mesra in the year 2014. Overall, Anish's presence and insights during the virtual meet were invaluable for the participants, who were able to gain valuable guidance and inspiration for their own preparation.

## >>> AUTOCAD ONLINE WORKSHOP

Department organized an AutoCAD workshop that was conducted by Anjaneya Puli, a Civil engineering software's Trainer with 12 years of experience, an international speaker, wellness coach, and digital coach. The workshop was attended by 90 participants on Zoom. During the workshop, he shared his expertise on the latest version of AutoCAD and explained important topics such as understanding the UI of latest version of AutoCAD, top 10 tools to create the drawing in AutoCAD, creating plan of building using simple techniques, and interview related Q&A on AutoCAD. Participants were able to gain valuable insights and hands-on experience from Anjaneya, who shared his knowledge and expertise with them during the workshop. Overall, the



AutoCAD workshop conducted by department and led by Anjaneya Puli was a great success, providing participants with valuable guidance and expertise to enhance their skills in this field.



## KEY MOMENTS

### >>> OUTGOING CIVIL STUDENT DURING CONVOCATION' 23



### >>> CIVIL ENGINEERING GRADUATES WITH SHRI C K BIRLA JI



# RECENT GRADUATES



BIRLA INSTITUTE OF TECHNOLOGY  
MESRA, RANCHI



BACHELOR OF TECHNOLOGY (2019-2023)  
DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING



BIRLA INSTITUTE OF TECHNOLOGY  
MESRA, RANCHI



MASTER OF TECHNOLOGY (2021-2023)  
DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING