

Sanwad



SANWAD

A Newsletter from the Department of Civil Engineering

Volume 1 | Issue 1 | March, 2024



Department of Civil Engineering

Birla Institute of Technology, Patna Campus

Patna- 800014

Sanwad



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From Director's Desk



It is matter of immense pleasure to be a part of the first edition of "Sanwad", a newsletter of Department of Civil Engineering, Birla Institute of Technology Patna. It reflects progress of the department that mainly depends on the immense efforts and contributions of students, faculty members and staffs. Together, they form required backbone of success.

Their stories weave a narrative of resilience and determination. Present newsletter will be a medium to provide acknowledgement of all such efforts and contributions. I express my gratitude to everyone involved in bringing "Sanwad" to fruition that may not only inform but also inspire, fostering a sense of pride in collective accomplishments. I am sure the readers will get a good view of CED, BIT Patna's all-round activity.

My Best Wishes

Prof. Vishnu Priye,
Director, BIT Mesra, Patna Campus

DEPARTMENTAL PROFILE

The Department of Civil Engineering at BIT Off-Campus (Patna) was formally established in 2007 with a vision to create an impact on society through technology-based training, innovation, and service. Civil Engineering is a professional engineering discipline that deals with the design, construction, and maintenance of the physical and naturally built environment, including works like roads, bridges, canals, dams, and buildings.

Presently, the department offers 4-years B.Tech. programme with an average intake of 60 per year. B.Tech. programme in Civil Engineering envisages providing students with a good understanding of civil engineering solutions in global, societal, and environmental development. Student contexts are consistent with the principles of sustainability and given very good exposure to modern tools such as Engineering Graphics, AutoCAD, StaadPro, MATLAB, GIS, etc. It embraces Architectural Planning, Structural and Pavement Design, Construction and Infrastructure Management, Geotechnical, Environmental, Water Resources, and Hydraulic Engineering. The course also gives importance to research-based projects and prepares students for further research, in addition to making them ready to satisfy the current needs of the industry.

Vision of the Department

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

Mission of the Department

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

FACULTY PROFILE

Dr. Anish

Assistant Professor and In-charge,
Civil Engineering Department,
Ph.D. (NIT PATNA).



Research Publications:

1. Indra Vijay Singh, Anish, Subhajit Sen. "Study on flowability and strength of Self-compacting concrete using Portland Slag cement with quarry dust as fine aggregate replacement" at ICIEM'23, Birla Institute of Technology Mesra (Ranchi) Noida Campus, India; 2023.
2. Indra Vijay Singh, Anish, Subhajit Sen. "Review study on Physical properties of SCC having Quarry Dust, Recycled Concrete Aggregate and Sugarcane Bagasse Ash" at 13th Structural Engineering Convention SEC-23 at Visvesvaraya National Institute of Technology, Nagpur; 2023.
3. Anish, A. Kumar, A. Chakrabarti, M. K. Widomski and D. Barnat-Hunek. "Rhombic Laminates with Mass Variations under Dual-Axis Compression.", Journal of Aerospace Engineering, 33(3); 2020.
4. Anish, A.K. Chaubey, S. Vishwakarma, A. Kumar, and Stanis. "Transient response of rhombic laminates.", Structural Engineering and Mechanics, Techno-Press, 70(5), 551; 2019a.
5. Anish, A. Chaubey, A. Kumar, B. Kwiatkowski, D. Barnat-Hunek, and M. K. Widomski, "Bi-Axial Buckling of Laminated Composite Plates Including Cutout and Additional Mass.", Materials, Multidisciplinary Digital Publishing Institute, 12(11), 1750; 2019b.
6. Anish, A. Kumar, and A. Chakrabarti. "Failure mode analysis of laminated composite sandwich plate.", Engineering Failure Analysis, 104, 950-976; 2019c.
7. Anish, K. K. Gupta, A. Kumar, D. Barnat-Hunek, and W. Andrzejuk. "Dynamic response with mass variation of laminated composite twisted plates.", Journal of Mechanical Science and Technology, 32(9), 4145-4152; 2018a.

8. Anish, and A. Kumar. "Ultimate Strength Analysis of Laminated Composite Sandwich Plates.", Structures, 14, 95–110; 2018b.
9. Anish, A. Kumar, and A. Chakrabarti, "Influence of openings and additional mass on vibration of laminated sandwich rhombic plates using IHS DT.", Journal of Thermoplastic Composite Materials, SAGE Publications Sage UK: London, England, 89270571878568; 2018c.

Dr. Angshuman Mandal
Assistant Professor,
Civil Engineering Department,
Ph.D. (IIT Kharagpur).



Research Publications:

1. Angshuman Mandal; "Assessment of the efficiency of open trench barrier as vibration screening using spring-dashpot absorbing boundary condition." in ICCTMRI-2023 at BIT Mesra, Ranchi Off Campus Jaipur (July 27-28, 2023).
2. Swayam Bhaskar and Angshuman Mandal; "Seismic pounding between adjacent structures based on two linear impact model." in ICCTMRI-2023 at BIT Mesra, Ranchi Off Campus Jaipur (July 27-28, 2023).
3. Angshuman Mandal, Damodar Maity; "Fluid Structure Interaction Analysis Under Earthquake Loading and Its Application to Concrete Gravity Dam" Recent Advances in Computational and Experimental Mechanics, Vol II (2022) based on ICRACTEM: Online International Conference on Recent Advances in Computational and Experimental Mechanics.
4. Angshuman Mandal, Damodar Maity "Non-linear transient analysis of soil domain under variable soil properties with spring-dashpot type local absorbing boundaries". Geomechanics and Geoengineering, An International Journal. Taylors & Francis Group. 14(4); 297-311; 2019.
5. Angshuman Mandal, Damodar Maity "Seismic analysis of dam-foundation-reservoir coupled system using direct coupling method" Coupled Systems Mechanics; Techno-Press; 8(5); 393-414; 2019.
6. Nik Zainab Nik Azizan, Angshuman Mandal, Taksiah A. Majid, Damodar Maity, Fadzli Mohamed Nazri, "Numerical prediction of stress and displacement of the ageing concrete dam due to alkali-aggregate and thermal chemical reaction"; Structural Engineering and Mechanics; Techno-Press; 64(6); 793-802; 2017.
7. Angshuman Mandal, Damodar Maity "Finite Element Analysis of Dam-Foundation Coupled System Considering Cone-Type Local Non-Reflecting Boundary Conditions" Journal of

- Earthquake Engineering; Taylors & Francis Group, 20(3); (428-446) 2016.
8. Angshuman Mandal, Damodar Maity; Study of local non-reflective boundary condition on soil domain; Procedia Engineering; 144:1252-1259 (2016).
 9. Damodar Maity, Angshuman Mandal; Earthquake Analysis of concrete gravity dams: some recent development, ICCMS 2016; IIT Bombay; page: 1479-1482.
 10. Angshuman Mandal, Damodar Maity; "Estimation of the Hydrodynamic Pressure in Reservoir Domain" ISTAM 2016; Vellore Institute of Technology.
 11. Angshuman Mandal, Damodar Maity; Dynamic dam foundation interaction analysis considering direct coupling method with unified viscous boundary condition; 5th ICCMS conference 2014; SERC Chennai.
 12. Angshuman Mandal, Damodar Maity; Effect of foundation flexibility on dam-foundation coupled system using direct coupling method; ICTACEM 2014; IIT Kharagpur.
 13. Angshuman Mandal, Kalyan Kumar Mandal, Damodar Maity; A GUI Based MATLAB code for finite element analysis of concrete gravity dam; National Conference on Innovations in Design & constructions of Industrial Structures; NIT Durgapur; (2014) Awarded Best Paper Award.

Mrs. Bandana Mahto
Assistant Professor,
Civil Engineering Department,
B.Tech (BIT Sindri), M.Tech, (IIT Guwahati)



Research Publications:

1. P. Kandakatla, B. Mahto and S. Goel. "Extent and rate of biodegradation of different organic components in municipal solid waste", International Journal of Environment and Waste Management, 11(4): 350-365; 2012.
2. B. Mahto and S. Goel, "Impact of temperature and applied chlorine dose on inactivation and regrowth of HPC bacteria", Chemical, Biological and Environmental Engineering: Proceedings of the International Conference on CBEE 2009, Singapore, 9-11 October 2009.
3. R. N. Sharma, B. Mahto and S. Goel. "Disinfection by-products in chlorinated drinking water and their adverse health effects: A Review", Journal of Environmental Research and Development, 3(3): 893-921; 2009.
4. B. Mahto and S Goel. "Bacterial survival and regrowth in drinking water systems", Journal of Environmental science & Engineering, 50(1), 33-40; 2008.

Dr. Kumari Sweta
Assistant Professor (Visiting),
Civil Engineering Department,
Ph.D. (IIT Patna)



Research Publications:

1. L. Radhakrishnan, J. S. Mary, Kumari Sweta, A. Anuj Jee, N.S. Maurya, A Nema, D Sharma “Occupational health hazards associated with E-waste handling, treatment, management, and case studies”, Global E-waste Management Strategies and Future Implications, PP- 153-181, 2023. ISBN: 978-0-323-99919-9.
2. D. Sharma, A. Nema, R. Prasad, Kumari Sweta, DKR Sonaviya, S Karmakar, “Global E-waste management: consolidated information showcasing best available practices”, Global E-waste Management Strategies and Future Implications, PP- 289-314, 2023. ISBN: 978-0-323-99919-9.
3. Kumari Sweta and Syed K. K. Hussaini. “Role of particle breakage on damping, resiliency and service life of geogrid-reinforced ballasted tracks”, Transportation Geotechnics, 37, 100828; 2022.
4. Kumari Sweta, Sanjeev Kumar Suman and Sandip Karmakar “Correlation of California Bearing Ratio (CBR) with Shear Strength Parameters of Road Subgrade Soil”, 8TH Online International Conference on Transportation Systems Engineering and Management”, 26-27 August, NIT Calicut, 2021.
5. Syed K. K. Hussaini and Kumari Sweta. “Investigation of deformation and degradation response of geogrid-reinforced ballast based on model track tests”, Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and Rapid Transit, 235(4), 505-517; 2021.
6. Syed K. K. Hussaini and Kumari Sweta. “Application of geogrids in stabilizing rail track substructure” Frontiers in Built Environment, 6, 20; 2020.
7. Kumari Sweta and Syed K. K. Hussaini. “Effect of geogrid on deformation response and resilient modulus of railroad ballast under cyclic loading” Construction and Building Materials, 264, 120690;2020.

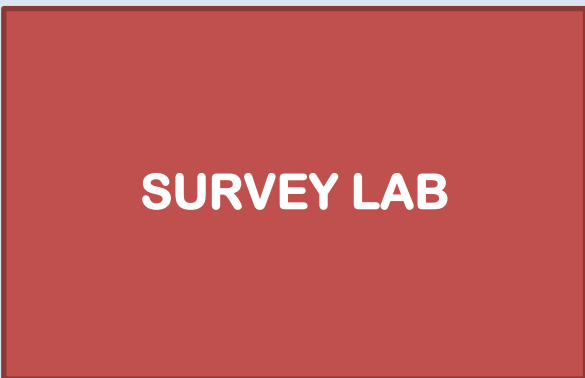
8. Kumari Sweta and Syed K. K. Hussaini. "Behaviour evaluation of geogrid-reinforced ballast-sub-ballast interface under shear condition", *Geotextiles and Geomembranes*, 47(1), 23-31; 2019.
9. Kumari Sweta and Syed K. K. Hussaini. "Performance of Geogrid-Reinforced Railroad Ballast in Direct Shear Mode", *Proceedings of the Institution of Civil Engineers-Ground Improvement*, 172(4), 244-256; 2019.
10. Kumari Sweta and Syed K. K. Hussaini. "Effect of shearing rate on the behaviour of geogrid-reinforced railroad ballast under direct shear conditions", *Geotextiles and Geomembranes*, 46(3), 251-256; 2018.
11. Kumari Sweta and Syed K. K. Hussaini. "Shear behaviour of geosynthetic-reinforced ballast based on large-scale direct shear testing" *Fourth International Conference on Railway Technology: Research, Development and Maintenance A2.06*; 2018.
12. Kumari Sweta and Syed K. K. Hussaini. "Performance Evaluation of Ballast-Sub ballast Interface Stabilized with Geogrids", *Proceedings of China-Europe Conference on Geotechnical Engineering: Volume 2*, 1738-1741; 2018.
13. Kumari Sweta and Syed K. K. Hussaini. "Behaviour of Geogrid-Reinforced Railroad Ballast in Direct Shear Conditions", *Proceedings of Indian Geotechnical Conference, GeoNest 2017*, pp. 1-4, IIT Guwahati, India; 2017.

LAB FACILITIES

CONCRETE TECHNOLOGY LAB



STRUCTURAL ENGINEERING LAB



SURVEY LAB



ENVIRONMENTAL ENGINEERING LAB



LAB FACILITIES



GEOTECHNICAL LAB

**FLUID MECHANICS
LAB**



**TRANSPORTATION
ENGINEERING LAB**

CADD LAB





Digital Compression Testing Machine



Rapid Chloride Permeability Test



Compression Failure Test Apparatus



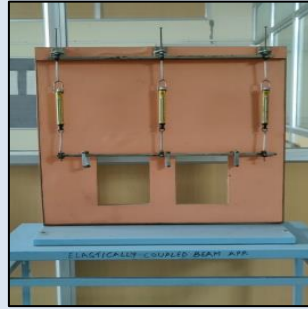
Compression Testing Machine



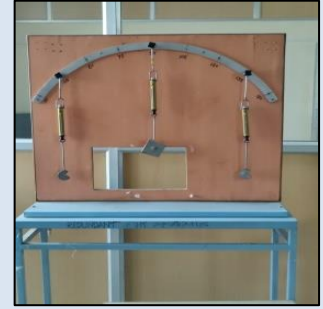
Briquette Mould Apparatus



UV-VIS Spectrometer



Elastically Coupled Beam Apparatus



Redundant Joint Apparatus



Maxwell Theory Apparatus



Two-Hinged Arch Apparatus



Column Buckling Apparatus



Three-Hinged Arch Apparatus



Deep Freezer



Double Distillation Unit



Flame Photometer



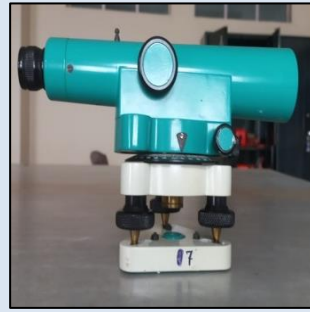
Fine Particulate Matter



Jar Test Apparatus



Theodolite



Auto Level



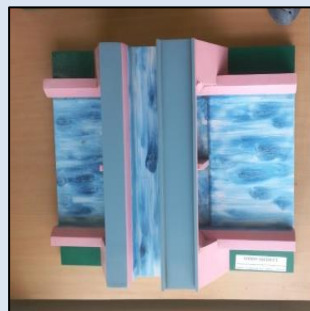
Celestial Sphere



River Head Work



Gravity Dam



Syphon Aqueduct



Supper Passage to two span



Ductility Test Apparatus



Los Angeles Abrasion Apparatus



Deval Attrition Test Apparatus



Marshall Test Apparatus



CBR Test Apparatus



Triaxial Test Apparatus



Direct Shear Test Apparatus



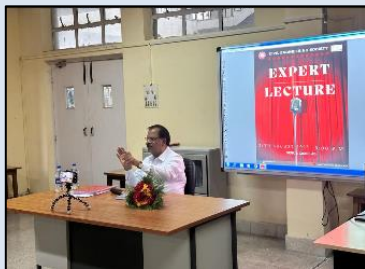
Permeability Test Apparatus

FRESHER'S WELCOME



It began with SOUL ENLIGHTENERS, held on September 4th and 5th, 2023, serving as the official welcome party for incoming freshmen, jointly organized by the college and the Civil Engineering Department. The event featured engaging interaction sessions, quizzes, and entertaining displays of talent, all accompanied by the enthusiastic introductions of the new students. There was palpable excitement as everyone embarked on their four-year journey through B.Tech. life. Faculty members warmly greeted the newcomers, providing valuable insights into the department. Dr. Anish, the department's In-charge, demonstrated exemplary patience in guiding the aspiring engineers.

EXPERT LECTURE



The Civil Engineering Department hosts regular interaction sessions where distinguished guests are invited to share their expertise. Recently, Er. Jainendra Singh, a retired Superintendent Engineer from the Water Resource Department of the Government of Bihar, graced the session as the chief guest. Through insightful discussions, students had the opportunity to address their queries regarding Water Resources Engineering and Irrigation Engineering, spanning from internship opportunities to career uncertainties. This collaborative exchange has proven highly

beneficial for the students, providing clarity and guidance in their field of study.

TEACHER'S DAY CELEBRATION



The Birla Institute of Technology, Patna is dedicated to fostering research and maintaining high standards in education. While the students are the pride of the institute, it's the professors who diligently lay the groundwork, striving to sculpt brilliance out of raw potential. On September 5th, 2023, Teacher's Day was joyously celebrated at the CADD Lab in the Civil Engineering Department. The festivities featured a diverse array of cultural performances, culminating in a cake-cutting ceremony. Faculty members and staff were honored with gifts, in an event co-hosted by both B.Tech. and Ph.D. students. The enthusiastic response ensures the event's continuation in the future.

GROUP DISCUSSION



The Civil Engineering Department arranged debate competitions for B.Tech. students on March 14, 2023, and August 8-10, 2023. The events commenced with a warm welcome extended to our chief guests, Dr. Ashish Mohan Dubey and Dr. Sultan Khan, Assistant Professors of Management and Humanities at BIT Patna. They provided the topics for the debates, and prizes were awarded to the victorious participants.

Furthermore, an OPEN-MIC event centered on the theme "Mother Nation with Nature First" was hosted in the department on August 20, 2023. Over 20 participants enthusiastically joined the event.

TECHNICAL EVENT



Civil Engineering Department has organized a technical event "EDIFICE" on 3-5 November 2023. Dr. Arbind Kumar, Former Director, BIT Patna, was the chief guest of this technical event. EDIFICE is composed of many events like Insight Check, Poster Presentation, Debate, Spell Sprint, Snapshot Artistry, E-gaming Arena, House of Aces, Master Memory and Treasure Hunt. Certificates were given to the winner of each event.

MISSION AMRIT SAROVAR



Mission Amrit Sarovar, launched on April 24, 2022, by the Prime Minister of India, marks a pivotal step towards the conservation of water for future generations.

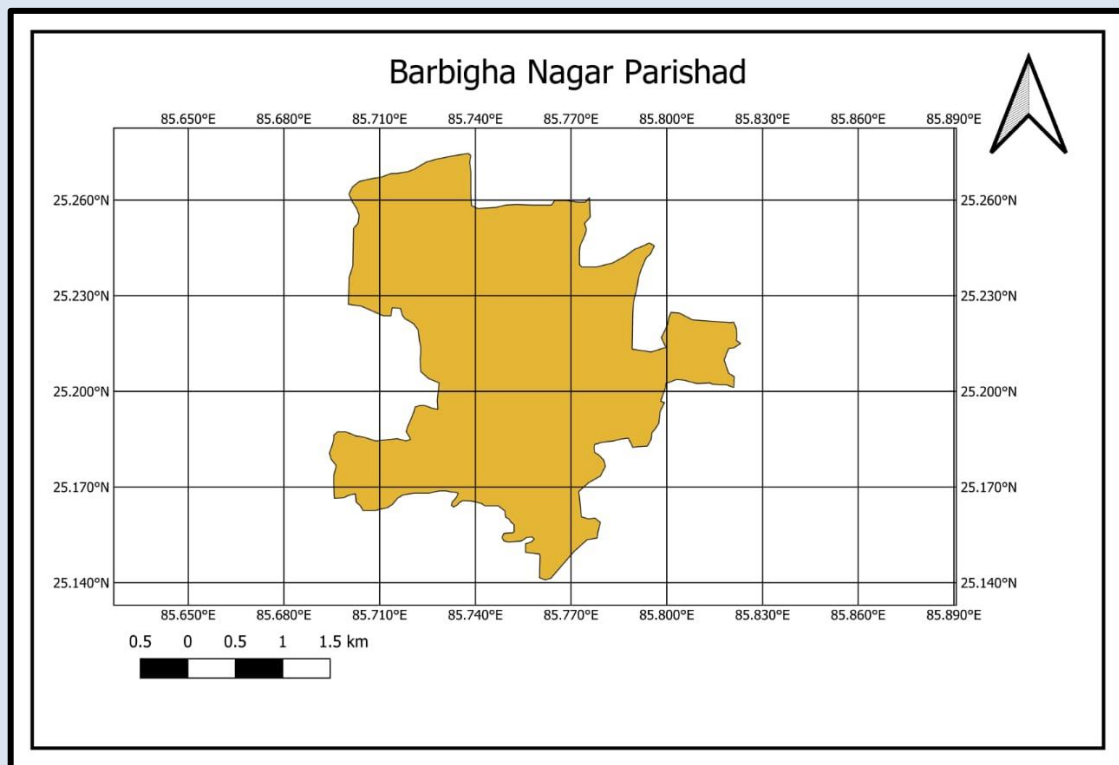
At its core, Mission Amrit Sarovar seeks to develop and rejuvenate 75 water bodies in each district of the country, thereby revitalizing essential natural resources and fostering a culture of conservation nationwide. Among the enthusiastic participants in this noble endeavor are the students of the Department of Civil Engineering at BIT Patna.

Under the mentorship of Mrs. Bandana Mahto, Assistant Professor at Birla Institute of Technology, Patna Campus, a dedicated team of 15 students embarked on a mission to inspect and analyze the condition of Malti Pokhar, a significant water body situated in Tatarpur-Ward-5, Barbigha Nagar Parishad, Sheikhpura, Bihar. Their objective was not only to identify existing issues but also to propose viable solutions aimed at enhancing the pond's maintenance and overall sustainability.

Led by Mrs. Bandana Mahto, the students brainstormed innovative solutions tailored to the specific needs of Malti Pokhar. After weeks of rigorous inspection, analysis, and deliberation, the team of students emerged triumphant, having successfully analyzed Malti

Pokhar and devised a comprehensive plan for its rejuvenation and maintenance.

Through their dedication, ingenuity, and collaborative spirit, they have demonstrated that meaningful change is possible when individuals come together with a shared vision and a determination to make a difference. As India continues its journey towards sustainable development, initiatives like Mission Amrit Sarovar serve as beacons of hope, inspiring future generations to safeguard our precious natural resources for generations to come.



CONSULTANCY

Sl. No.	Title of Project	PI's Name	Amount
1	MIX DESIGN OF M-35 GRADE	Mrs. Bandana Mahto	₹ 78,470
2	MIX DESIGN OF M-35 GRADE	Mrs. Bandana Mahto and Dr. Anish	₹ 78,470

SPORTS AND GAMES

Name & Roll No.	College/ Intercollege	Name of Event	Position
Ranveer Singh (BTECH/15057/20)	College	Athletic Meet'23 1. Shotput 2. Discus Throw	Gold (1 st) Bronze (3 rd)
Sumit Kumar (BTECH/15238/20)	College	Athletic Meet'23 1. Shotput 2. Discus Throw 3. Javelin Throw 4. Relay Race 5. 100m Race	Silver (2 nd) Gold (1 st) Gold (1 st) Gold (1 st) Bronze (3 rd)
Sumit Kumar (BTECH/15238/20)	Intercollege (IIT KANPUR)	Udghosh 1. Shotput 2. Discus Throw 3. Javelin Throw	(Participated)
Arpit Kumar (BTECH/15069/20)	Intercollege (Cricket)	1. Chetan Devraj Trophy (BIT Mesra) 2. Prakida'23 (BIT Patna) 3. Infinito'23 (IIT Patna)	(Participated)
Arpit Kumar (BTECH/15069/20)	College	1. Birla Premier League (BPL)	(Participated)
Kumar Aniket (BTECH/15054/20)	Intercollege (Cricket)	1. Prakida'23 (BIT Patna) 2. Infinito'23 (IIT Patna)	(Participated)



PLACEMENT



Priyanshu Kumar,
BTECH/15065/20 placed in
Chryso India Pvt. Ltd. (SAINT
GOBAIN CONSTRUCTION).



Satvik Nayan,
BTECH/15077/20 placed in
TECHTURE.



Arya Prashar,
BTECH/15208/20 placed in
TECHTURE.



Sumit Kumar,
BTECH/15238/20 placed in
Chryso India Pvt. Ltd. (SAINT
GOBAIN CONSTRUCTION).

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MARCH 2024