

INFRA TODAY

DEPARTMENT OF CIVIL ENGINEERING



**SIR M. VISVESVARAYA INSTITUTE
OF TECHNOLOGY**



e-Newsletter



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SUPPORTED BY:

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SRI KRISHNADEVARAYA EDUCATIONAL TRUST
SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

(Affiliated to VTU-Belagavi, Recognized by AICTE and Accredited by NAAC)
Krishnadevarayanagar, Off International Airport Road, Hunasamaranahalli, Bengaluru - 562157

DEPARTMENT OF CIVIL ENGINEERING

VISION AND MISSION

VISION

- To create competent, disciplined quality Engineers and administrators of global standards in Civil Engineering with capability of accepting new challenges.

MISSION

- To impart quality education in Civil Engineering.
- To serve society by providing professional Civil Engineering leadership to find solution to community, regional and global problems and accept new challenges in rapidly changing technology.
- To create competent professionals who are trained in the design, and development of Civil Engineering systems and contribute towards research & development activities.

Program Educational Objectives (PEOs)

- Graduates will become leaders in the industries associated with Civil Engineering and become professional entrepreneurs. They will be experts working in public sector, private sector, and international organizations.
- Graduates will engage in continual learning by pursuing advanced degrees or additional educational opportunities through coursework, professional conferences and training, or participation in professional societies.
- Graduates will adapt to different roles and responsibilities in multidisciplinary environment by respecting professionalism and ethical practices. They will contribute to the well-being of the society and environment through responsible practice of Engineering profession.

Principal's Message

Prof. Rakesh S. G.

I am extremely delighted to know that the Department of Civil Engineering is coming up with the next edition of its yearly Newsletter "INFRA TODAY" for the year 2022-2023.

The Department is doing extremely well on these testing times where there is a decline in demand for Civil Engineers across the globe. It is able to attract good number of students to pursue B.E. in Civil Engineering by maintaining high academic standards. The faculty members of the department are highly motivated and talented and always go one extra mile to help the students in academics and nurture their talents in cocurricular and extracurricular activities.

My best wishes to the department and congratulate the editorial team for bringing out another edition of "INFRA TODAY", filled with a lot of information covering all aspects of the department.



HOD's Message

Dr. Ravi Kumar H.

Presenting "INFRA TODAY", the electronic newsletter from the Department of Civil Engineering at Sir M. Visvesvaraya Institute of Technology, Bengaluru. This newsletter is dedicated to addressing contemporary needs and concerns, providing insights into the significant events, developments, and accomplishments within the department for the year 2023. Offering a concise overview, it highlights various activities and achievements, with a special mention of the remarkable performance by our student Madakasira Chinmaya Vikas. He not only secured all 13 gold medals but also clinched the University 1st rank in the Civil Engineering branch for the academic year 2022-23. Congratulations to him and everyone who contributed directly or indirectly to this success. He serves as a lasting source of inspiration for all Sir MVIT students, particularly those in the Civil Engineering Department.



Notably, the Department received accreditation from the National Board of Accreditation, for 3 years until June 30, 2026. Emphasizing holistic student growth, the department has facilitated academic and industrial visits, along with regular guest lectures by experts. Students actively engaged in project-based learning, symposiums, and intercollegiate events, achieving commendable results and securing prizes. My heartfelt congratulations and best wishes to the editorial team and all contributors involved in the publication of this newsletter.

PROGRAM OUTCOMES (POs)

- **PO1-Engineering knowledge:** Apply the knowledge of mathematics, science, engineering Fundamentals and an engineering specialization to the solution of complex engineering problems in Civil Engineering.
- **PO2-Problem analysis:** Identify, formulate, review research literature, and analyse complex Engineering problems in Civil Engineering reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO3-Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes of Civil Engineering that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO4-Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments in Civil Engineering, analysis and interpretation of data, and synthesis of the information to provide valid conclusions for complex problems:
 - that cannot be solved by straightforward application of knowledge, theories and techniques applicable to the engineering discipline as against problems given at the end of chapters in a typical text book that can be solved using simple engineering theories and techniques;
 - that may not have a unique solution. For example, a design problem can be solved in many ways and lead to multiple possible solutions;
 - that require consideration of appropriate constraints / requirements not explicitly given in the problem statement such as cost, power requirement, durability, product life, etc
 - which need to be defined (modelled) within appropriate mathematical framework; and; that often require use of modern computational concepts and tools, for example, in the design of an antenna or a DSP filter
- **PO5-Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities in Civil Engineering with an understanding of the limitations.
- **PO6-The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice in Civil Engineering.
- **PO7-Environment and sustainability:** Understand the impact of the professional engineering solutions of Civil Engineering in societal and environmental contexts and demonstrate the knowledge of and need for sustainable development.
- **PO8-Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- **PO9-Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- **PO10-Communication:** Communicate effectively on complex engineering activities with the Engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- **PO11-Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- **PO12- Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OBJECTIVES (PSOs)

- **PSO1.** Identify the broad context of Civil Engineering problems, including describing the problem Conditions, Identifying possible contributing factors and generating alternative solution strategies.
- **PSO2.** Undertake laboratory, field and other data collection efforts using commonly used measurement techniques to support the study and solution of Civil Engineering problems.
- **PSO3.** Employ mathematics, science and computing techniques in a systematic, comprehensive and rigorous manner to support the study and solution of Civil Engineering problems.
- **PSO4.** Exhibit good teamwork skills and serve as effective member of multi-disciplinary project teams.

DEPARTMENT NEWS

- The Department of Civil Engineering in association with Indian Concrete Institute Bengaluru Centre, Karnataka had organized a Technical Talk by Er. H. R. Girish., Hon. Chairman ICI (BENC) and Er. Suhas R., Hon. Secretary ICI (BENC) on “Latest Developments in Bridge Engineering” on 21-11-2023 at M. V. Seminar Hall. 58 students from Seventh Semester participated in the event.
- The department had organized a One-Day Student Development Program (SDP) by Dr. U. B. Mallikarjuna, Consulting Hydrogeologist and Former Professor and Head, Department of Civil Engineering, Sambhram Institute of Technology, Bengaluru on “Groundwater Investigation by Electrical Resistivity Method: A Practical Approach” on 18-10-2023 at M. V. Seminar Hall, Department of Civil Engineering, Sir MVIT. A total of 58 students from Seventh semester participated in the event.
- The Department Conducted the Alumni Interactions and alumni meet on 13-10-2023 at M. V. Seminar Hall, Department of Civil Engineering, Sir MVIT. In which the Original Degree certificates of the students were distributed.
- The department had organized One Day Workshop in collaboration with SMEC, Surbana Jurong on “Curating Innovative Future Technologist” on 11-10-2023 at M. V. Seminar Hall, Department of Civil Engineering, Sir MVIT. About 58 students from Seventh semester participated in the event.
- Department of Civil Engineering Organized Community Engagement Activity on the topic “Lifestyle Management” on 20-09-2023. There were about 60 students from Government Higher Primary School, Bettahalsoor participated in the event.
- Department of Civil & Mechanical Engineering in association with L&T EduTech organised seminar on “Technical Education beyond Syllabus” at Sir M. V. Civil seminar Hall on 05-07-2023. Overall, 51 students of second semester participated in the event.
- Department of Civil Engineering organized Awareness Programme on “Start-up plan and future opportunities in Civil Engineering Domain” by Asset ACE Scientific Skill- Development in Engineering & Technology Society at Sir M. V. Civil seminar Hall on 06-07-2023. Overall, 20 students of fourth semester participated in the event.
- One-Day visit to the Karnataka State Remote Sensing Application Centre, Bengaluru was organized on 04-08-2023. Overall, 21 students of Fourth semester visited Karnataka State Remote Sensing Application Centre, Govt. of Karnataka, near Yelahanka, Bangalore along with faculty members Dr. Shivanna S., Ms. Pradeepa S. and Ms. Vyshnavi D. R. The objective of the visit was to get the knowledge on Remote Sensing Applications in the Field of Civil Engineering.
- Department of Civil Engineering organised Project Exhibition on 13-05-2023. 40 students of Eighth Semester participated in the event.
- The Department had Organised Industrial Awareness Program on Building Information Modelling by Mr. Viswas K Viswanathan, Industry Partner, Autodesk Certified Instructors, Bangalore on 25-04-2023. Overall, 45 students of Sixth Semester participated in the event.
- The Department had organized Heritage Trip to Sri Ranganatha Swamy Temple, Isha Foundation and Kempegowda Statue on 03-03- 2023. 21 students of Third Semester participated in the event.
- The Department organized the annual survey camp for Sixth Semester students from 13-03-2023 to 17-03- 2023.
- The Department had organized an Alumni Meet on 25-03-2023. 20 alumni from different batches attended the meeting. Ms. Lalita R. Hangaragi (VTU 8th rank holder) and Ms. Deepika R., (VTU gold medal awardee), and Ms. Akanksha (Best student of 2018-22 batch) were felicitated in the meeting.
- Project-based learning activity for the course on Renewable Energy sources was organized on 17-03-2023 for First Semester students of 'K' section in the Civil Engineering Model Room. Ms. Ramya N. was the coordinator of this activity. 65 Students participated in the event.

- Project-based learning activity for the course on Renewable Energy sources was organized on 20-03-2023 for First Semester students of 'L' section in the Civil Engineering Model Room. Mr. Sriram Mustapure was the coordinator of this activity. 55 Students participated in the event.
- The Department in association with Indian Concrete Institute organized a Webinar on "Sustainable Cities with ESG Impact" by Ar. Jyothi Gupta on 23-02-2023. 70 students participated in the event
- Motivational Lecture by Major Lishmitha B. A. on 04-01-2023. 60 students of Third Semester & Fifth Semester participated in the session.
- The Department organized a Two-Day Online FDP on "New Generation Construction Materials & Technologies", on 05-01-2023 and 06-01-2023. Overall, 400 participants took part in the event.
- The Department had organized an Awareness program on "Soil Conservation by Organic farming" in Suggatta village, Bengaluru, on 09-01-2023. 13 students of Third Semester participated in the event.
- The Department had organized a One-Day site visit to Anthem Bio-Science, Harohalli Industrial Area, Bengaluru on 09-01-2023. 55 students of Fifth Semester took part in this visit. Students got on-site exposure to construction techniques.
- The Department had organized a Motivational Talk by Mr. Rakshit K. B., Director, Kundur Constructions, Bengaluru on 19-12-2022. 60 students of Third Semester, Fifth Semester and Seventh Semester participated in the event.
- The Department organized a Motivational Lecture by Mrs. Aruna Ashwin, AEE, Mrs. Nalini G, AE, and Mr. Murali K, AE, PWD on 27-12-2022. 60 students of Third Semester and Fifth Semester participated in the event.
- The Department had organized a Guest Lecture by Mr. Rajanish Kumar, Director, Edu CADD, Bengaluru on 28-12-2022. 60 students of Third Semester and Fifth Semester participated in the event.
- The Department had organized a Motivational Talk by alumnus Mr. Sridhar Govardhan, Vice President and Head of information security, at Flipkart on 30-12-2022. Overall, 50 students of Third Semester & Fifth Semester participated in the event.
- The Department renewed the MoU with M/s. Kundur Constructions Pvt.Ltd., Bengaluru.
- A Technical Lecture by Mr. Ashish, GIS Consulting Engineer at KMS Consultants and Developers, was conducted on 17-10-2022 for the students of Third Semester and Fifth Semester. 50 students participated in the talk.
- A Technical talk by Dr. Jagadish H.B., Retired Scientist – E (Joint Director), CWPRS, PUNE, Dr. L R Ranganath, Retired Scientist-E (Joint Director), CWPRS, PUNE, Prof. K Raghupathi, Professor, Dept. of Civil Engg., Global Academy of Technology, Bengaluru, Sri R. D. Manohar, Proprietor, M/s. R D Manohar, Consultants Bengaluru, Sri Thej Raj, President, FactR systems, LLC USA, was conducted on 22-11-2022 for Third Semester and Fifth Semester students. 50 students participated in the talk.
- Mr. Sriram Mustapure was appointed as Assistant Professor in the department of Civil Engineering, in the month of November 2022.

FUNDED PROJECTS

Sl. No.	Year	Name of the Guides	Project Title	Name of the Students	Sanctioned Letter Details
1.	2022-2023	Ms.Anitha J. Ms. Tamil Selvi N.	Flyash based papercrete blocks – an economical & eco-friendly light weight building solution	Druva Kumar B. S. Chithra Yadav N. Tanuja S.	46th Series of student Project Programme: 2022-23

STAFF NEWS

- **Dr. Ravi Kumar H.** has been recognized as reviewer for the Journal of Emerging Technologies & Innovative Research and the International Journal of Emerging Research & Technology.
- **Ms. Anitha J.** was invited as a guest speaker on “Recent Trends in Concrete Finishes” by the School of Architecture, M. S. Ramaiah Institute of Technology, Bengaluru. The guest lecture was organized on 11-01-2023 and was attended by around 100 participants
- **Dr. Ravi Kumar H.** was invited as Session chair for technical paper presentation in National Conference on “Recent Multidisciplinary Research in Civil Engineering NCRMRC-2023” Organized by Don Bosco Institute of Technology Bengaluru on 1st June 2023.
- **Dr. Shivanna S.** was invited as an external judge for evaluating the B.E projects in Project Exhibition held on 05-05-2023 at Brindavana College of Engineering.
- **Dr. Ravi Kumar H.** presented a paper titled “Study of Behavior of Flexural and Shear Strength of RC Beam using welded wire Mesh” in National Conference on Recent Multidisciplinary Research in Civil Engineering at Don Bosco Institute of Technology, Bengaluru on 01-06- 2023.
- **Dr. Ravi Kumar H.** has been recognized as Reviewer for Journal of Building Engineering Elsevier (ScienceDirect.com by Elsevier)
- **Dr. Shivanna S., Vyshnavi D. R., Sriram Mustapure, Dr. Ravi Kumar H., K. V. R. Prasad** presented a paper titled “Evaluation of Groundwater Quality Using Remote Sensing and GIS: A Case Study” in Two Day International Conference on Recent Trends in Science & Technology ICRTST-2023, ATME college of Engineering, Mysuru on 18th & 19th October 2023.
- **Ramya N., Anitha J., Pradeepa S., Tamil Selvi N., Subhadra G. D.** presented a paper titled “Experimental Study on Mechanical Behaviour of Human Hair Reinforced Concrete.” in Two Day International Conference on Recent Trends in Science & Technology ICRTST-2023, ATME college of Engineering, Mysuru on 18th & 19th October 2023.
- **Dr. Ravi Kumar H.,** “Research on predicting axial load capacity of concrete filled steel tubular columns based on support vector machine method” AIP Conf. Proc. 2399, 030011, Dec 2023. doi: 10.1063/5.0134677.
- **Ramya N., Anitha J., Pradeepa S., Tamilselvi N., Subhadra G. D.,** “Experimental Study on Mechanical Behaviour of Human Hair Reinforced Concrete”, Journal of Propulsion Technology, Vol. 44, no. 5, pp. 1168-1177, Dec 2023. doi: 10.52783/tjjpt.v44.i5.2745.
- **Dr. Shivanna S., Vyshnavi D. R., Sriram Mustapure, Dr. Ravi Kumar H., K. V. R. Prasad,** “Evaluation of Groundwater Quality using Remote Sensing and GIS: A Case Study”, Journal of Propulsion Technology, Vol. 44, no. 5, pp.1065-1072, Dec 2023. doi: 10.52783/tjjpt.v44.i5.2733
- **Pradeepa S., Anitha J., Ramya N., K. V. R. Prasad,** Published a Patent on “Development of Fiber Reinforced Cement Mortar for Sustainable Construction in India”, In the official Journal of Patents, Application number 202341075487, 22 December 2023, India.

STUDENT NEWS

- 1. Ms. Deepika R.** (USN 1MV18CV014) secured Gold Medal, instituted by Er. S. M. Panchagatti (constituted for children of Government/ Aided Primary School teachers), for securing the highest marks in Civil Engineering, in the 22nd Annual Convocation of VTU.
- 2. Ms. Lalita R. Hangaragi** (USN 1MV18CV022) secured 8th rank in Civil Engineering in the 22nd Annual Convocation of VTU.
- 3. Mr. Karthi T., Mr. Syed Shaahid D., Mr. Ganesh P. N. and Rakesh Gowda C. S.,** of Sixth Semester Secured First place in Surveying conducted during the Department Technical Fest – SurveKshan-2023 held on 04-05-2023 by the Department of Civil Engineering, Nitte Menakshi Institute of Technology, Bengaluru.
- 4. Mr. Manjesh Gowda J.** of Third semester secured Fourth place in Cricket Inter Zone Competition held at SJCIT, Bengaluru from 21 -03-2023 to 23-03-2023.
- 5. Ms. Kavya Y. Dalawai** of Eighth semester successfully completed the NPTEL online Certification in subject Hydraulic Engineering by completing 50%.
- 6. Mr. Akash M. Jadhav** of Eighth Semester secured Runners up place in Bengaluru North Inter Collegiate Cricket Zone Tournament held at Acharaya Institute of Technology from 08-03-2023 to 17-03-2023
- 7. Mr. C. Lohith Chandra** of Third Semester secured First place in the event BGMI in TECH-SAMBRAMA organized by the Department of Master of Computer Application on 05-01-2023.
- 8. Mr. Karthi T.** of Sixth Semester Secured Second place in the event Filmy Dance in Verve 2022, the intra collegiate techno cultural fest hosted by Sir M. Visvesvaraya Institute of Technology on 15-07-2022.
- 9. Rohan Babu S. B., Puneeth Gowda N., Abhiram S. R., and Naveen P. D.** presented a paper titled “Bacteria Based Self-Healing Concrete” in National Conference at Ghousia College of Engineering, Ramanagaram on 13-08-2022.
- 10. Mr. Manikantha K.** of Eighth Semester secured Runners up place in Bengaluru North Inter Collegiate Hockey Tournament held at SJC Institute of Technology, Chickballapura from 9 November 2022 to 10 November 2022.
- 11. Mr. Sumeet Chalak** of Fifth Semester participated in the International Cultural Jamboree 2022, conducted by BHARAT SCOUTS AND GUIDES, Karnataka Division held at Alvas campus, Vidyagiri, Moodbidri from 21 -12-2022 to 27-12-2022.
- 12. Mr. Madakasira Chinmaya Vikas of 2023 Batch,** Secured 1st Rank in Civil Engineering in 23rd Annual Convocation of VTU along with 13 Gold Medals, and was also felicitated by ICI-Ultratech on 28-09-2023.

LIST OF PLACED STUDENTS -2019 BATCH

Sl. No.	STUDENT NAME	USN	YEAR OF PASSING	ON/OFF CAMPUS	EMPLOYER NAME
1	Dhruva Kumar B S	1MV19CV009	2022-23	On Campus	RDC Concrete
2	Dhruva Kumar B S	1MV19CV009	2022-23	On Campus	Nagarjuna Constructions
3	Kavya Y Dalawai	1MV19CV015	2022-23	On Campus	Nagarjuna Constructions
4	Chetan Kumar D N	1MV19CV005	2022-23	On Campus	Nagarjuna Constructions
5	Tanjuja S	1MV19CV027	2022-23	On Campus	Nagarjuna Constructions
6	Kiran Gowda G	1MV19CV016	2022-23	On Campus	Nagarjuna Constructions
7	Madakasira Chinmaya Vikas	1MV19CV017	2022-23	On Campus	Nagarjuna Constructions
8	Mahesh Kumar	1MV19CV018	2022-23	On Campus	Nagarjuna Constructions
9	Ashok B	1MV20CV401	2022-23	On Campus	Nagarjuna Constructions
10	Sudeep G	1MV20CV406	2022-23	On Campus	Nagarjuna Constructions
11	Nishant Goyal	1MV19CV022	2022-23	On Campus	Nagarjuna Constructions
12	Om Shankar	1MV19CV023	2022-23	On Campus	Nagarjuna Constructions
13	Veeresh	1MV29CV028	2022-23	On Campus	IMMENSPPHERE
14	Shravana Y	1MV19CV026	2022-23	On Campus	IMMENSPPHERE
15	Sharat J P	1MV19CV025	2022-23	On Campus	IMMENSPPHERE

Revolutionizing Construction The Power of 3D Printing Technology

S. PRUTHVI, 6TH SEM

L&T Construction is 3D concrete printing India's first Post Office building in Bengaluru, Karnataka. The project is to design and build the 1000 sq. feet Halasuru Post Office (India Post, Karnataka circle) using 3D Concrete Printing Technology within a period of 45 days. The project scope involves structure, MEP, and finishes. While the technology has been approved by the Building Materials and Technology Promotion Council (BMTPC), the structural design of the post office has been validated by IIT Madras. The 3D printing of the post office building is cast in Situ' at the job site in an 'open to sky' environment, using a fully automated 3D printer. An emerging technology, 3D concrete printing has the potential to transform construction practices by quickening the construction process and enhancing overall build quality. Using a robotic printer, 3D printing technology deposits concrete layer-by-layer in accordance with the 3D model drawing input. The process requires a delicate balance of concrete properties, including flowability, quick hardening for load-bearing capacity, green concrete status for inter-layer bonding, and sufficient strength to ensure successful printing.



Larsen & Toubro Construction presented a preliminary glimpse of the country's first 3D printed post office set to come up in Bengaluru within a month's time. The 1,000 square feet facility at Cambridge Layout in Ulsoor comes at a cost of Rs 23 lakh.

As opposed to 6-8 months and 30-40 men required in the conventional process of construction for such a facility, the 3D printing technology requires only 5 men and a total of 45 days,. Furthermore, pollution levels come down by 50%, while the concrete mix used - M30 - will offer six times more strength.

Using a robotic printer sourced from Finland's 3D construction printing solutions provider Cobod, the technology involves deposition of concrete layer-by-layer in accordance with a 3D model drawing input.

Advantages of 3D Concrete Printing:

- Automation: Fully automated construction ensures excellent build quality and safe work environment.
- Design Freedom: Without a formwork system, innovative and non-geometrical building shapes can be constructed to enhance aesthetics & convenience and optimize overall cost.
- Sustainable Construction: Elimination of timber and aluminum formwork; use of supplementary materials to optimize CO2 emission; less material wastages; less electrical energy consumption.
- Digital Workflow: Digital workflow of drawings [Design (3D AutoCAD) □ Printer (3D AutoCAD to gCode)] eliminates manual errors and costly rework.

Terminal In a Garden

SATHVIK A., 6TH SEM



“Terminal 2 is dedicated to the beautiful city of Bengaluru,”. “Designed as a reflection of this city, it is founded on four pillars: technological leadership, the idea of a terminal in a garden, environmental and ecological stewardship, and a celebration of Karnataka’s rich heritage and culture. The design is inspired by Bengaluru’s history as a “Garden City.” Recalling Bengaluru’s expansive parks and plantings, an element that has declined due to urbanization, the landscape design serves as an opportunity to revitalize the city’s historic sense of place and establish a new vision for sustainable growth. At the same time, the design aligns with Bengaluru’s emerging role as a capital for technological innovation. SOM’s plan is designed with flexibility for the future integration of cutting-edge tools that will support vital airport functions.

Terminal 2 leverages its extensive landscape design to support the project’s ambitious sustainability goals. The abundant vegetation complements the mechanical system to purify the air and serve as a natural means of counteracting carbon emissions. The planned building enclosure uses high performance glazing and carefully calibrated shading to temper natural light, which sustains interior plantings and minimizes reliance on artificial illumination. Outside Terminal 2, another expansive garden will be arrayed around a large lagoon to provide a nursery for maintaining the terminal’s plant life, while also creating a dramatic visual impression for arriving travelers. Elevated walkways will thread through this outdoor garden, linking a series of public pavilions and connecting to both Terminal 1 and the airport hotel. The lagoon will capture rainwater for reuse in graywater processes, including cooling and irrigation. More importantly, the exterior space completes SOM’s design of a terminal in a garden.



The terminal is spread across four levels. The first phase has a built-up area of 255,661m². Passengers have a unique experience as they travel through more than 10,000m² of green walls, hanging gardens and outdoor gardens.

The terminal features a large indoor garden with rammed-earth walls and waterfalls, which acts as a gateway into the densely landscaped retail area. The ceiling at the entrance, check-in and security area features hanging planted bells.

The three-storeyed forest belt, which is located between the main terminal building and the boarding gates, offers a unique outdoor experience for arriving and departing passengers. It is well connected to the shopping area. The forest belt is viewable from all main indoor spaces. An open call was issued in August 2022 to submit proposals for a 20m-high monumental sculpture at the forest belt area.

The walls of the terminal are made of brick while the floors feature natural terrazzo and an engineered bamboo ceiling.

Clad in engineered bamboo, the interiors of the terminal provide a contemporary yet classic look and feel.

An expansive outdoor garden built under the project is arranged around a lagoon to serve as a nursery for the maintenance of plants, with connection to T1 and the airport hotel through elevated walkways.

The lagoon takes rainwater, which can be reused in greywater processes, including cooling and irrigation. Advanced technology and cutting-edge tools to enhance airport operations are also installed in the terminal.

Each component of the terminal incorporates natural and man-made elements, which enhance the passenger experience.

The T2 design incorporates artwork to reflect the culture and heritage of Karnataka. Naurasa is the central theme that unites all the 60 installed artworks by 43 artists.



Sustainability at Kempegowda International Airport

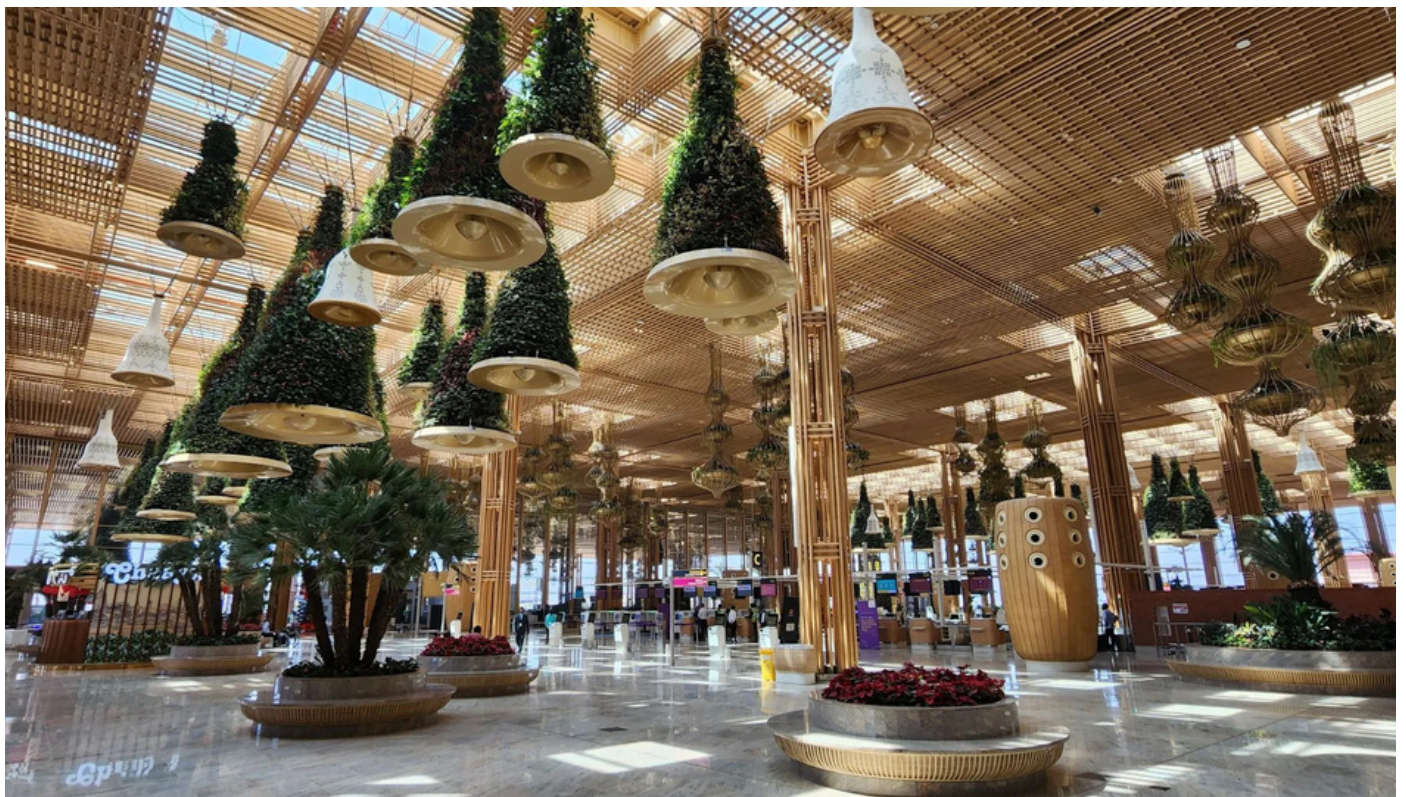
The green landscape surrounding the terminal comprises 620 endemic plants, 150 palm species, more than 3,600 plant species, 7,700 transplanted trees, 96 lotus species, 100 varieties of lilies, 180 rare, endangered and threatened species and ten ecological habitats.

The outdoor garden maintains a microclimate with temperatures two to three degrees lower than its surroundings.

The gardens and forest cover ensure clean air, while solar panels and daylight harvesting are estimated to help the terminal achieve 24.9% energy savings. The terminal's environmental footprint is also reduced thanks to rainwater harvesting and six major rainwater-fed ponds with 413 million litres of water that will cater to the airport's needs.

Treated reverse osmosis water is used in heating, ventilation, and air conditioning systems.

The T2 received the Platinum LEED rating from the US Green Building Council. The planned integrated solid waste management plant is expected to contribute to the airport's zero waste to landfill ambition by converting biodegradable waste to fuel and manure.



BENGALURU MYSURU EXPRESSWAY

DHEERAJ C., 6th SEM



Travelling from Bengaluru to Mysuru will be now very easy for people. This journey can now be completed in 75-90 minutes rather than 3 hours. This is because Honorable Prime Minister Mr. Narendra Modi inaugurated the Bengaluru-Mysuru Expressway on March 12th 2023. It was developed as part of the Central Government's expansive and ambitious Bharatmala Pariyojana programme. Mr. Nitin Gadkari, the minister of roads and transport for the union, tweeted details on this motorway.

The project entails widening NH 275 to six lanes through the Bengaluru-Nidaghatta-Mysuru segment. The 118-kilometre-long project's development cost is amounted to roughly Rs. 8480 crores. The journey from Bengaluru to Mysuru will now take only around 75-90 minutes instead of about 3 hours. It will serve as a catalyst for the socioeconomic growth of the area.

To provide a free and uninterrupted trip, there will be 69 bus bays, 49 underpasses, 13 overpasses, and fencing on either side of the access-controlled, 6-lane roadway.

A greenfield bypass would be built as part of the Bengaluru-Mysuru motorway route.

There will be a 22-kilometre bypass for Ramanagaram and Channapatana, an 8-kilometre bypass for Mandya, a 10-kilometre bypass for Srirangapatana, and a 4-kilometre bypass for Maddur.

Furthermore, Bidadi will have a 7-kilometre bypass, and commuters travelling between the two cities will be able to bypass all of these major towns.

Bikes, automobiles, and other slow-moving vehicles, on the other hand, will be prohibited from using the motorway.

Congestion will be reduced and light and heavy cars will be able to use separate lanes on a ten-lane highway. It will be a facility with strict entry controls. Additionally, the highway will have service lanes on either side for simple local traffic flow in populated regions.

The design includes an 8-km long elevated corridor, 11 overpasses, 64 underpasses, 4 roads over bridges, 5 bypasses, 9 main bridges, and 42 minor bridges in an additional attempt to lessen congestion. Along this highway, bus stops will be placed in 21 locations.



BAMBOO AS A BUILDING MATERIAL

R. RAM ROHIT, 6TH SEM



Bamboo as a building material has high compressive strength and low weight has been one of the most used building material as support for concrete, especially in those locations where it is found in abundance. Bamboo as a building material is used for the construction of scaffolding, bridges and structures, houses. Due to a distinctive rhizome-dependent system, bamboos are one of the fastest-growing plants in the world and their growth is three times faster than most other species of plants. They are renewable and extremely versatile resource with multi-purpose usage. Among many uses of bamboo, Housing is one of the major areas applications especially in the wake of residential shortages around the globe.

Utilization of Bamboo for construction is achieved by a structural frame technique which is related to same approach applied in usual timber frame design and construction. In the case bamboo, floor, walls and roof are interconnected and often rely on the other for overall stability. Bamboo has played a vital role in the growth of enterprises and the rural transformation.

Advantages of Bamboo as a Building Material

1. Tensile strength: Bamboo has higher tensile strength than steel because its fibers run axially.
2. Fire Resistance: Capability of bamboo to resist fire is very high and it can withstand temperature up to 4000 C. This is due to the presence of high value of silicate acid and water.
3. Elasticity: Bamboo is widely preferred in earthquake prone regions due to its elastic features.
4. Weight of bamboo: Bamboos due to their low weight are easily displaced or installed making it very easier for transportation and construction.
5. Unlike other building materials like cement and asbestos, bamboo poses no danger to health.
6. They are cost effective and easy to use.
7. They are especially in great demand in earthquake prone areas.

Disadvantages of Bamboo

1. They require preservation
2. Shrinkage: Bamboo shrinks much greater than any other type of timber especially when it loses water.
3. Durability: Bamboo should be sufficiently treated against insect or fungus attack before being utilized for building purposes.
4. Jointing: Despite prevalence of various techniques of jointing, structural reliability of bamboo is questionable.

VERNACULAR ARCHITECTURE

ANITHA J., Assistant Professor



Vernacular architecture refers to the traditional, indigenous, or locally derived architectural styles and construction techniques that are specific to a particular region, culture, or community. It is rooted in the local context, climate, available materials, and cultural practices. Vernacular architecture has evolved over centuries and reflects the wisdom and knowledge of generations of builders. Key characteristics of vernacular architecture include:

Adaptation to the environment: Vernacular architecture is designed to respond to the local climate, topography, and natural resources. It takes into account factors such as sunlight, wind patterns, rainfall, and temperature fluctuations to create comfortable living spaces.

Use of local materials: Vernacular architecture relies on readily available local materials, such as wood, stone, mud, thatch, or bamboo. These materials are often sustainable, affordable, and suitable for the local climate, making construction accessible to the community.

Cultural and social relevance: Vernacular architecture reflects the cultural and social values of a community. It incorporates local traditions, craftsmanship, and architectural forms that are deeply rooted in the cultural identity of the people. It also considers social aspects like family structure, communal living, and community interaction.

Functionality and practicality: Vernacular architecture is designed to fulfill the practical needs of the occupants. It often takes into account factors like ventilation, insulation, earthquake resistance, and privacy. Spaces are organized based on the activities and lifestyle of the community, optimizing the functionality of the built environment.

Passive design strategies: Vernacular architecture commonly employs passive design strategies to regulate temperature and optimize energy efficiency. These strategies include natural ventilation, shading devices, thermal mass, and orientation to maximize solar gain or minimize heat gain, depending on the climate.

Vernacular architecture is valued for its sustainability, cultural significance, and connection to local communities. It offers insights and lessons that can be applied in contemporary architectural practice, particularly in terms of sustainable design, energy efficiency, and resilience to local conditions.

If anything is to be taken from vernacular architecture, it provides a vital connection between humans and the environment.



Mastering Speed and Strength: The Mivan Construction Advantage

PRAJWAL T., 6TH SEM

Mivan shuttering is a fast-paced construction technique which offers strength and durability to a building by use of aluminium formworks. It is much quicker than the traditional beam, column, and brick construction. This technology does not use column and beam but involves walls and slabs cast in easy to handle, light weight, pre-engineered aluminium forms



Mivan is basically an aluminium formwork system developed by one of the construction companies from Europe. In 1990, the Mivan Company Ltd. from Malaysia started the manufacturing of such formwork systems. MIVAN technology is suitable for constructing large number of houses within short time using room size forms to construct walls and slabs in one continuous pour of concrete. Early removal of forms can be achieved by hot air curing / curing compounds. This facilitates fast construction, say two flats per day

The first and foremost advantage of using this technology is the pace of construction. Since it has a set procedure to follow, it minimises the need for skilled labour and completely eliminates labour intensive activities such as masonry and rendering.

On the structural front, the technology makes the buildings more seismic-resistant and durable. Since there is a lesser number of joints, the building faces reduced leakages, hence requiring negligible maintenance.

There is uniformity in Mivan construction and the walls and slabs have a smooth finish. Moreover, the technology gives the scope to take out more carpet area in comparison to conventional techniques.

- No plastering required.
- Savings on overhead expenses due to speedy construction (10-15 days per floor).
- Monolithic crack free structures.
- Doesn't require timber or plywood for construction activities.
- Casting of walls and slabs possible simultaneously.

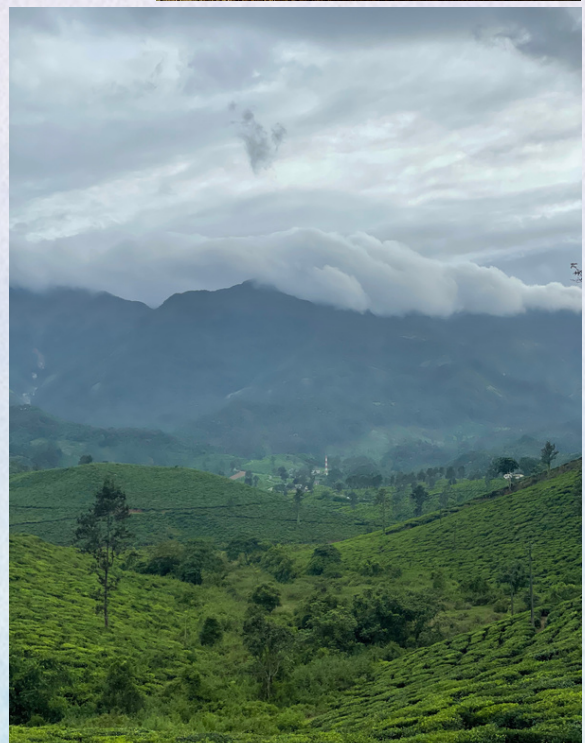
Aluminium formwork is costly and might not be economical for small projects. Mivan construction is advantageous only if you look at it from a large-scale perspective.

DEPARTMENT GALLERY



PHOTOGRAPHY

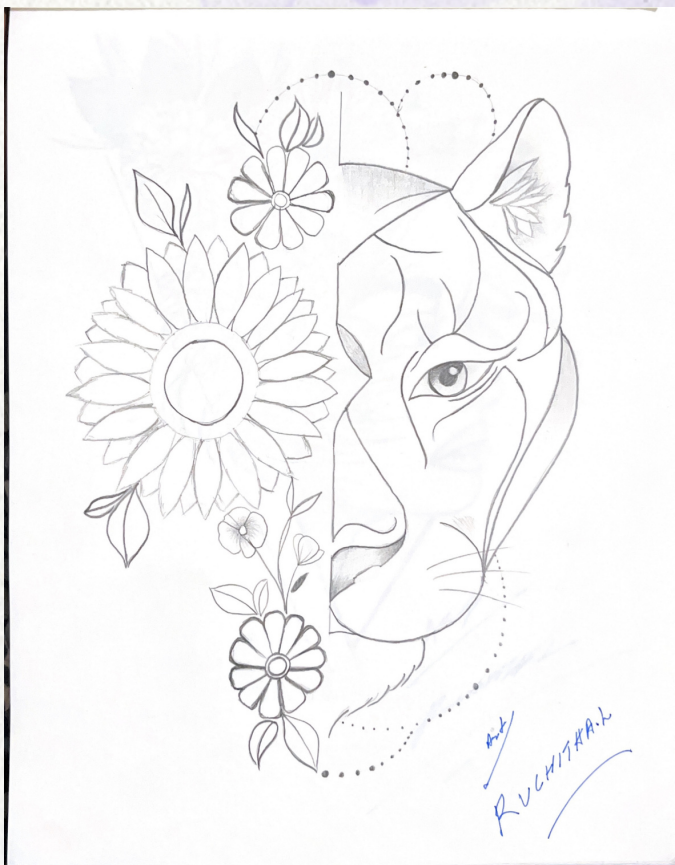
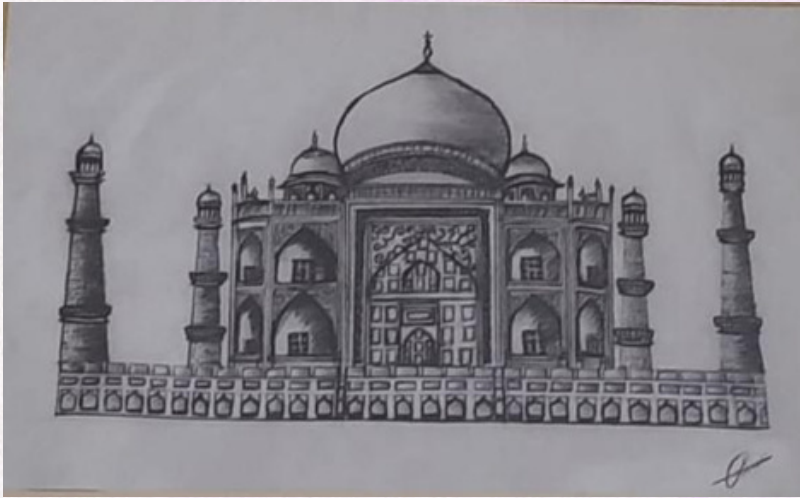
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