

Edifice

June 2024

**NEWSLETTER OF THE
DEPARTMENT OF CIVIL
ENGINEERING**

VOLUME - 9

ISSUE I



INDEX

S.No	Contents	Page .No
1	FROM HOD'S DESK	1
2	FACULTY ARTICLE	3
3	DEPARTMENT EVENTS	10
	3.1 International Conference SPICE 2024	10
	3.2 Faculty Development Program	11
	3.3 Guest Lecture- (Professional Societies)	12
4	NOTABLE ACHEIVEMENTS	13
5	PLACEMENT ACTIVITIES (2023-2024)	15
6	ACTIVITY ROUNDUP – PROFESSIONAL SOCIETIES	17
	6.1 Association of Civil Engineers (ACE)	17
	6.2 Bureau of Indian Standards (BIS)	21
	6.3 Institution of Civil Engineers (ICE) UK	24
	6.4 Indian Concrete Institute (ICI)	35
	6.5 Institution of Engineers India (IEI)	42

INDEX

S.No	Contents	Page .No
	6.6 Indian Green Building Council (IGBC)	4 4
	6.7 MOU	4 6
7	STUDY TOUR	4 8
8	PUBLICATIONS	5 3
9	CONFERENCES	5 6
10	FACULTY ACTIVITIES	5 8
11	STUDENT ACTIVITIES	7 3
12	NON-TEACHING STAFF ACTIVITY	8 0
13	STUDENTS ARTICLES	8 2
14	ALUMINI WRITE UP	111
15	INDUSTRIAL ARTICLE	113
	EDITORIAL MEMBERS	117

1.From HoD desk

Dr.N.Sivakumar

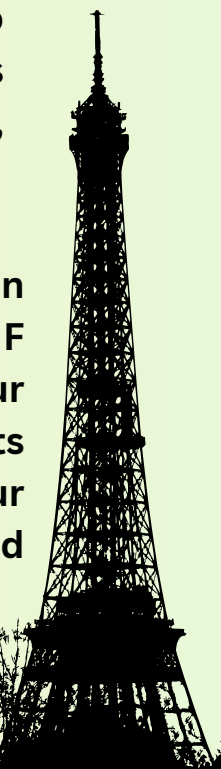
**Professor and Head of the
Department**

“The goal of civil engineering is to make life better for people. We are not just interested in creating beautiful buildings or perfect roads; we want to make sure people can get around easily, enjoy their surroundings, and lead productive lives.” – Joseph-Armand Bombardier



With great pleasure, I present to you the latest edition of our biannual newsletter, Edifice of June 2024, from the Department of Civil Engineering. Our mission is to provide students with a top-notch education and hands-on experience, ensuring they are well-prepared to meet industry demands from the moment they start their careers. This is achieved through regular engagement with academics and industry professionals who visit our campus to deliver insightful lectures through various student organizations. We've hosted experts from CMTI, L&T, and Hokkaido University, Japan.

Dr.Ramanjaneyulu has secured DST grant of Rs 87 Lakhs as Co-PI in collaboration with SERC.Dr.Aswin Sriram as Co-PI has secured SNF grant of 40 lakhs in this year These are the grant for our department. Hope this will pave the way for more and more grants in the near future. This time we had 16 publications and our department consistently organizes events such as workshops and webinars to ignite curiosity and interest in our students.



Workshops on advanced topics like DGPS, Drones, LIDAR and STAD-Pro were conducted for civil engineering students. Value added courses were done on topics such as “Practical Aspects of Civil Engineering”. Professional and Industrial experts share their experience and enlighten students with real challenges faced in the construction industry. 3 Guest lectures were focused on integrating core subjects with practical aspects. Professional societies in department were also actively involved by conducting events like site visits, webinar and National competitions.

An International conference of SPICE 2024 was conducted, Resources persons from Malaysia, Thailand, CBRI and IITs delivered a keynote on sustainable aspects in civil engineering.

Instincts, a completely student-run event, featured both technical and cultural activities and attracted participants from colleges throughout the city. It was a tremendous success. Our students excel in national competitions, bringing accolades to our college by securing top positions in the ICI-RDC Concrete Cube Testing Competition, the International Design Thinking Challenge, and various other contests across India.

The third-year students of our department actively participated in the event Civilization held by Anna University. Our students performed outstandingly, winning multiple awards and a lump amount of cash.

This academic year our PhD student's strength increases a good start for research activities in department. These students come from diverse academic backgrounds and bring a wealth of experience and expertise to our institution

We look forward to supporting their intellectual growth and helping them excel in their respective programs.

The 'Appreciation Day for Merit Students' happened where we were delighted to congratulate and showcase the academic tops of each year. It served as a testament to the diligent students, encouraging their peers to follow suit. Industrial link awards from Zeus, L&T, BAI and Artelia were given to students for best performance in academics and active organizers of various events in departments.

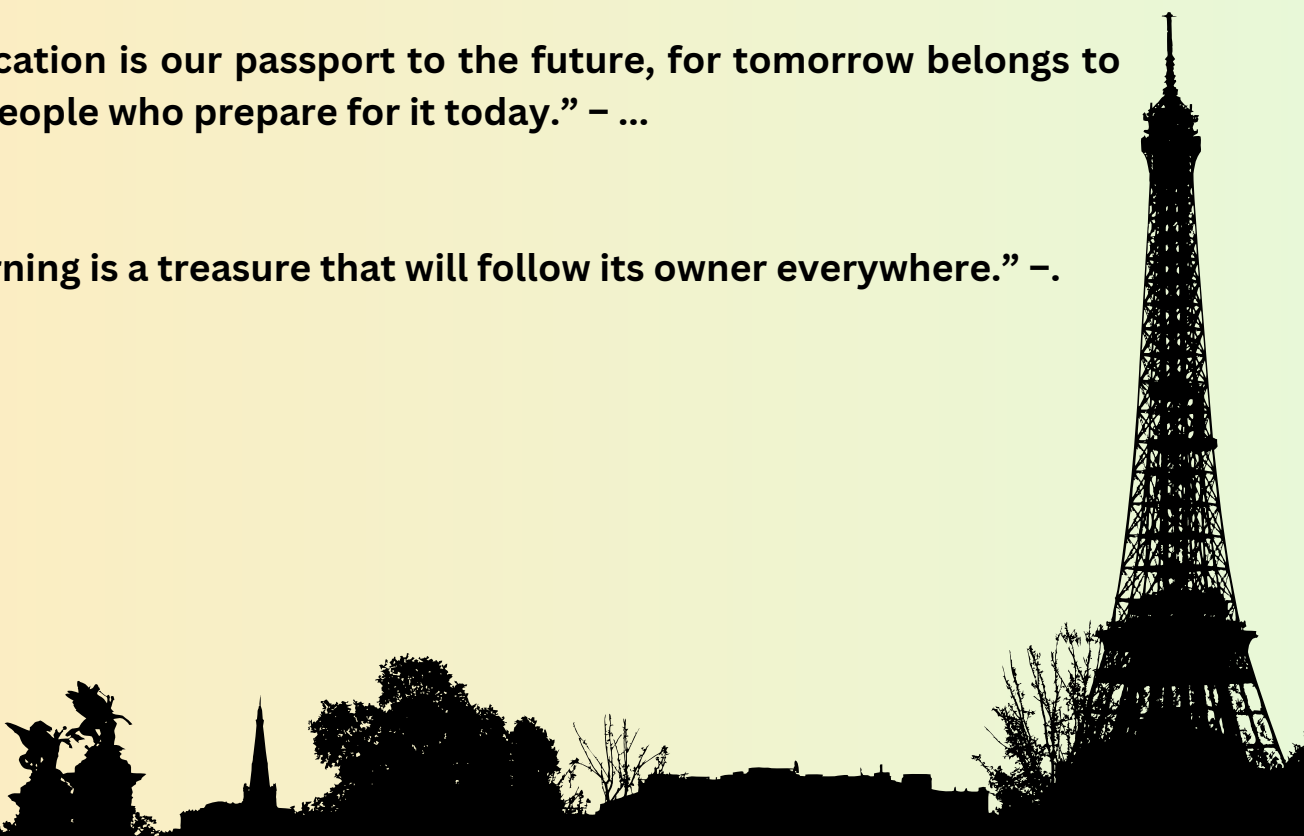
.

- “What we learn with pleasure, we never forget.” – Alfred Mercier. ...
- “Good teaching is more a giving of right questions than a giving of right answers.” – Josef Albers. ...

“Learn as much as you can while you are young, since life becomes too busy later.” – ...

“Education is our passport to the future, for tomorrow belongs to the people who prepare for it today.” – ...

“Learning is a treasure that will follow its owner everywhere.” –.



2. FACULTY ARTICLE

Bio-inspired Structures

Bio-inspired is a unique approach of adapting design and product to resolve the existing problem of humankind, which requires abstracting and adapting, can be also called as bio-mimic. The inspiration can be from animals, plants and even micro-organisms. This process involves various level which involves understanding, identifying, formulating, testing and evaluating. Thus, bio-inspiration requires careful evaluation of the upscaling potential before biological strategies can be implemented to develop solutions.

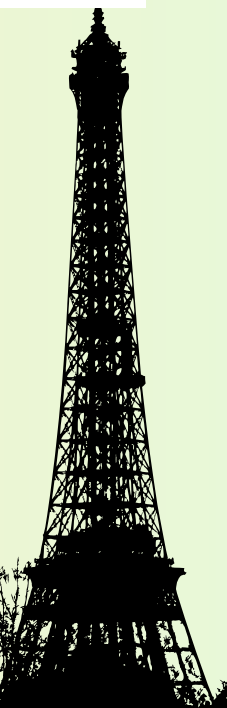


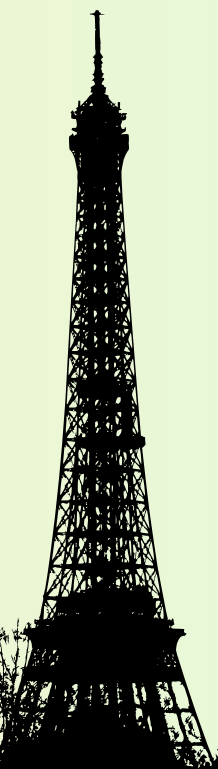
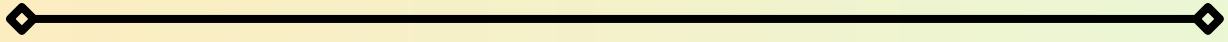
Dr. S.V. Sivapriya
Associate Professor
Department of Civil
Engineering



Tree Trunk – Structural Design Optimisation:

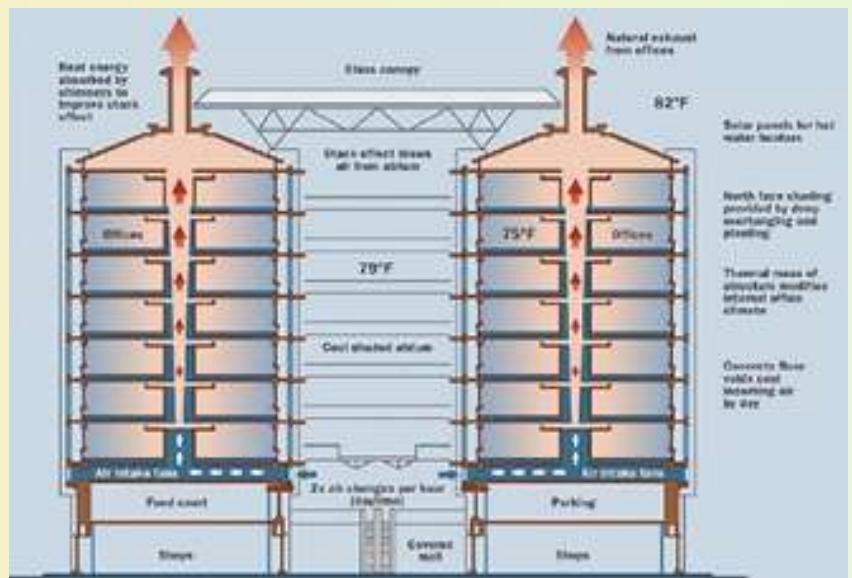
The tree trunk with branches is a classic example of structural optimisation. The usage of single column in bridge design construction lacks in slenderness in the earlier period due to over estimation of materials. The structure of tree with trunks provides multiple load paths to maintain a uniform load distribution. This provides the structure with full slenderness and as well as reduction in construction cost. This concept is adopted in the construction of Nesenbach Valley bridge, Vaihingen, Germany.





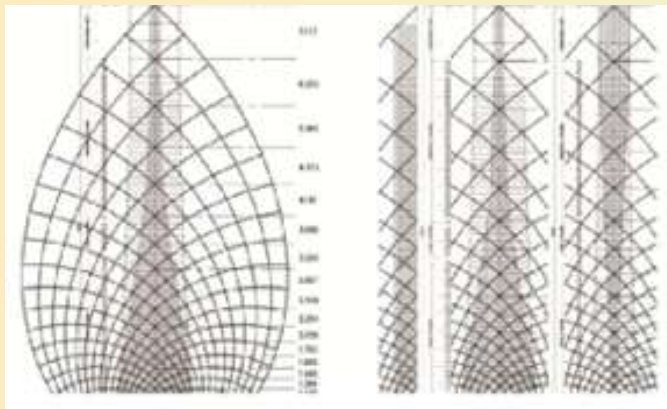
Termite Mounds - Passive Cooling:

The exceptional function of termite mounds is having a constant temperature and humidity. This concept can be used in a multi-storeyed building so that it reduces the heat absorption and transfer through walls and roofs. This in-turn reduces the use of air conditioner in high raised building which emits toxic chloro fluoro carbon – greenhouse gas. Considering the cost effectiveness and passive cooling condition system, the termite mound system is adopted in Eastgate centre, Harare, Zimbabwe. The passive cooling system consists of roof painting, metal roofing, thermal insulation installation, roof top gardening, incorporating air cavities in wall and creating shallow water ponds.



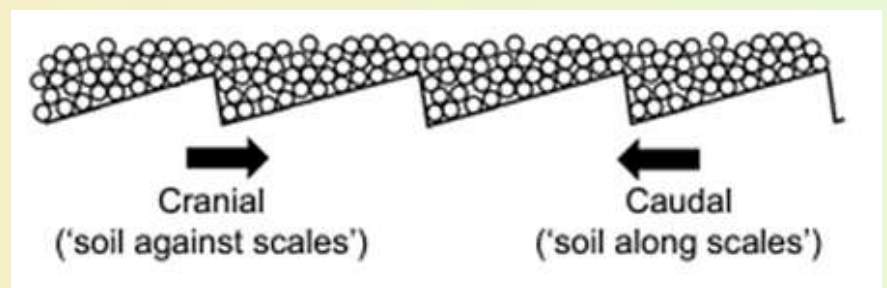
Spider Web - Seismic Design

The seismic forces considered in a structural design requires exceptional design concepts. This can be considered in the design inspired from the natural spiral web. The logarithmically spiral concept is applied in skyscrapers simulating the cantilever structure to the foundation; where the spiral is dense near the centre and get reduce towards the outer periphery. This concept is adopted in Transbay tower, San Francisco, California. This concept reduces the material cost and develop self-sustained construction which provides better seismic behaviour



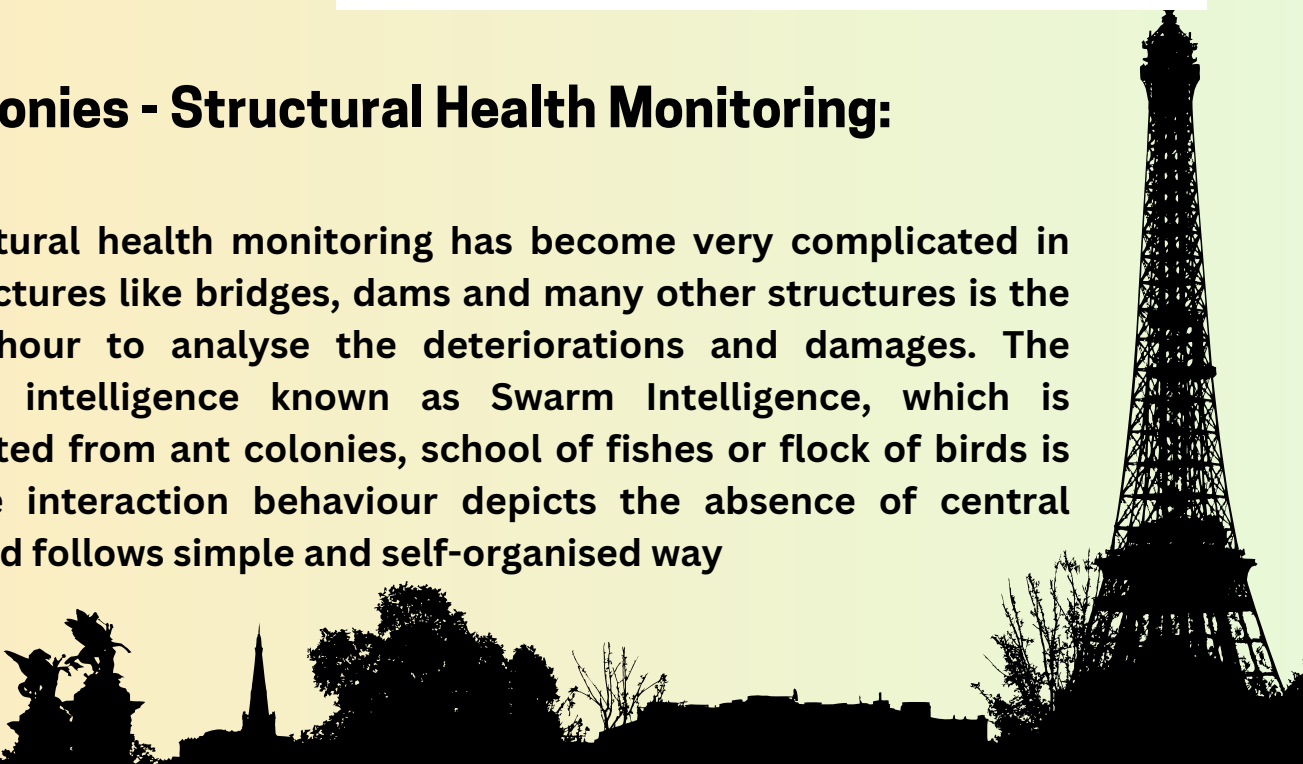
Belly Scales of Snake - Interfacial Friction:

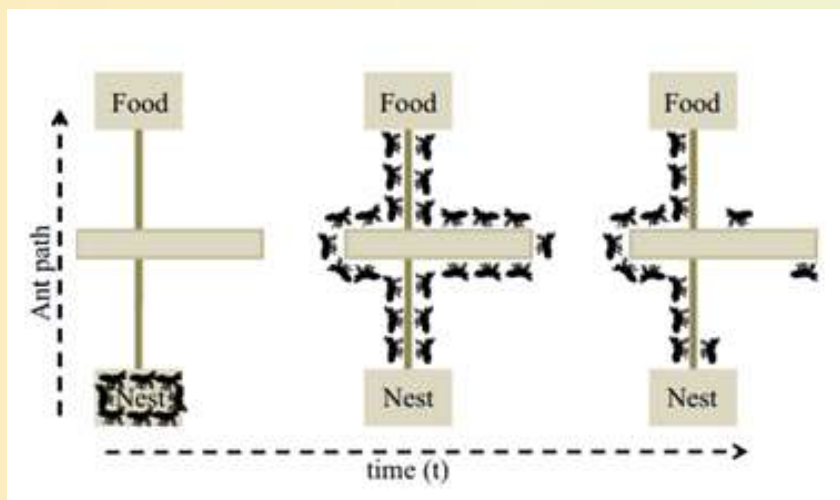
The interfacial function is inspired and developed from the belly scales of snake. The passive resistance is generated when the snake moves in the cranial direction of the soil against the sharp edges which is greater than the caudal friction. This can be incorporated in the Deep foundation which supports the wind turbine to reduce the soil resistance during installation and to increase the skin friction during pullout loading.



Ant Colonies - Structural Health Monitoring:

The structural health monitoring has become very complicated in large structures like bridges, dams and many other structures is the need of hour to analyse the deteriorations and damages. The collective intelligence known as Swarm Intelligence, which is incorporated from ant colonies, school of fishes or flock of birds is used. The interaction behaviour depicts the absence of central system and follows simple and self-organised way

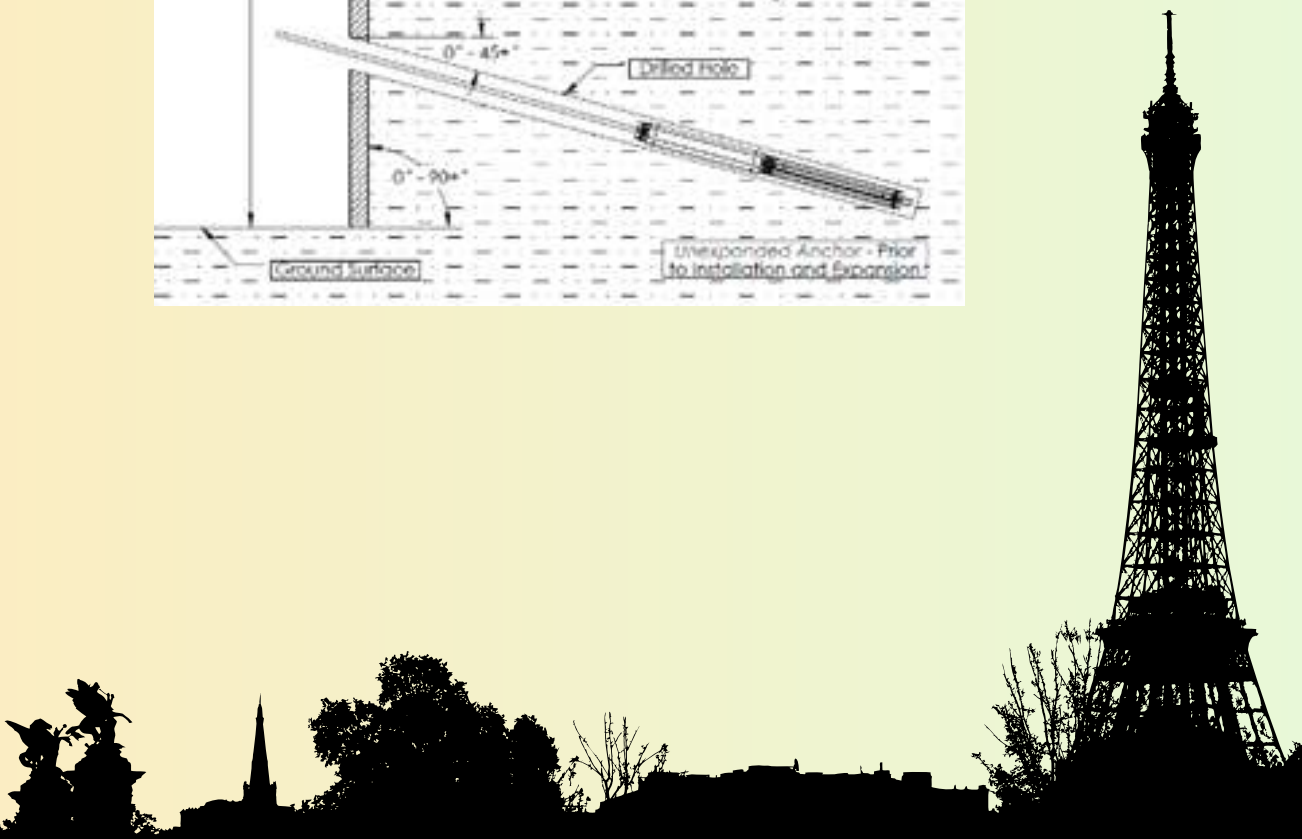
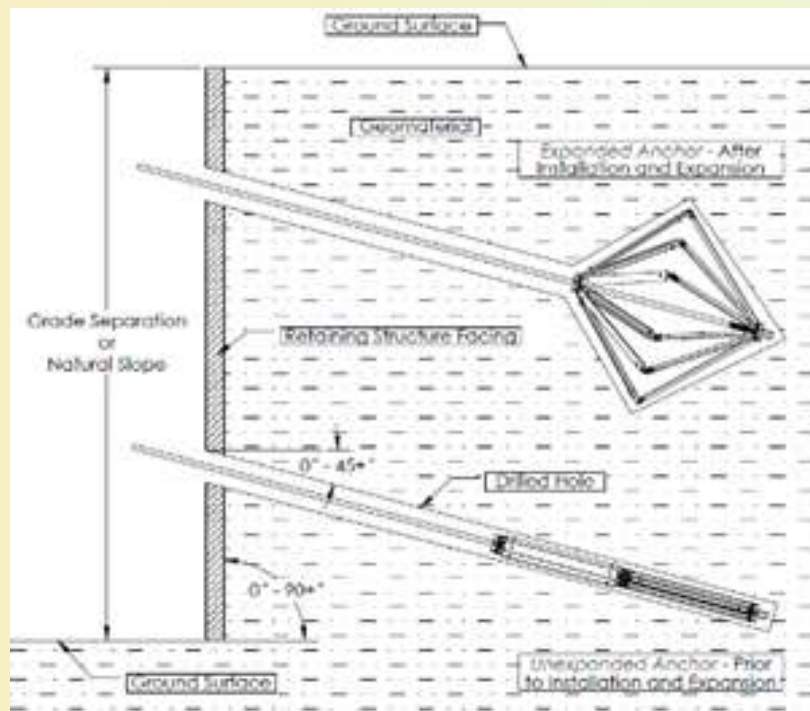
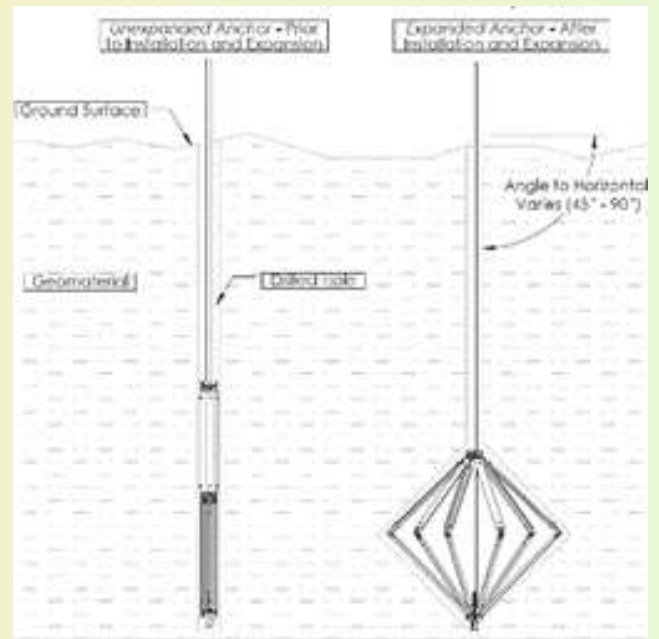
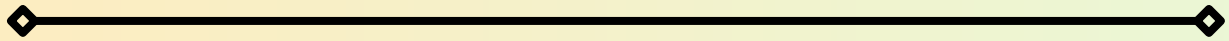




Tree Root - Ground Anchor

To increase the capacity and stability of foundation and retaining wall, large excavation and material is required. To reduce this, a new type of foundation is developed by understanding the Tree Root system. A structure is developed by providing critical shear surface geometry of the expanded anchor with log-spiral in shape. This change in geometry increases the surface area over which the shear strength of the surrounding geomaterial is mobilized to increase anchor capacity.





3. DEPARTMENT EVENTS

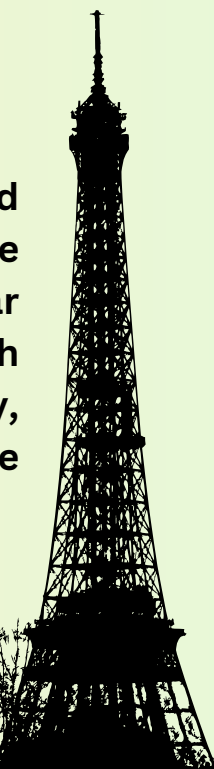
3.1 SPICE 2024 International Conference

- SPICE 2024 International Conference on Sustainable Practices in Civil Engineering is conducted. More than 100 participants at National and International submitted abstract and presented papers in various specialisation in civil engineering.



SPICE 2024 International Conference (14-2-2024 to 15-2-2024)

- 5th International conference on Sustainable Practices and Innovations in Civil Engineering (SPICE '24) organized by the Department of Civil Engineering, Sri Sivasubramania Nadar College of Engineering, Chennai, and held on 14th and 15th February 2024. Dr. Thanongsak from Walailak University, Thailand, Dr. Sasitharan A/L Nagapan from UTHM Malaysia are International experts acted as keynote speakers



- At National level Dr.S.Surya Prakash from IIT Hyderabad, Dr.Palani G.S from CSIR Chennai, Dr.Prakash Nanthagopalan from IIT Bombay and Dr.S.Ganesh Kumar CSIR,Roorkee acted as keynote speaker.

Keynote Speakers	Advisory Committee	Participation as Author	Registration Fees								
Dr. Thanongsak Injai Associate Professor, Department of Civil Engineering, School Of Engineering and Technology Walailak University, Thailand. Dr. Sasitharan A/L Nagapan Associate Professor, Department of Civil Engineering and Built Environment, University Tun Hussein Onn Malaysia (UTHM), Malaysia. Dr. S. Surya Prakash Professor, Department of Civil Engineering, IIT Hyderabad. Dr. Palani G. S Chief scientist, CSIR - Structural Engineering Research Centre, Chennai. Dr. Prakash Nanthagopalan Associate professor, Construction Technology and Management, Department of Civil Engineering, IIT Bombay. Dr. S. Ganesh Kumar Senior Scientist, Geotechnical Engineering, CSIR, Roorkee	Dr. S. K. Bhattacharyya Vice -Chancellor, Shiv Nadar University, Chennai Dr. Devadass Menon Institute Chair Professor, Department of Civil Engineering IIT Madras. Dr. N.Ganesan Professor (HAG), Department of Civil Engineering, NIT Calicut. Mr. Narayana C S Artelia Consulting Engineers Ltd., Chennai. Dr. Nenkumar (Nemy) Banthia Professor and Senior Canada Research Chair (Emeritus), Department of Civil Engineering, The University of British Columbia,Vancouver, B.C.,Canada Ts. Dr. Salmia Beddu Senior Lecturer, University Tenaga National, Malaysia. Dr.Moatasem Fayyadh Principal Engineer - Civil and Structures, Sydney water, Greater Sydney Area, Sydney,Australia Mr. K Senthil Nathan Executive Vice President, Larsen & Toubro Ltd., Chennai. Er. Muralidharan N G Chairman, ICI Chennai Center. Mr. Ashok Kumar Chief Executive Officer, CMTI Bangalore.	If one wants to participate as an author(s), he/she needs to submit an abstract of their work related to the conference theme in the prescribed format to the conference mail id, during the period when the call for abstracts opens. All abstracts will be subjected to review and intimation of the selection will be sent to the corresponding author. Following this, the author(s), need to send in their full manuscript in the prescribed format to the conference mail ID when the call for full papers is open. The submitted papers will be subjected to peer review and selected papers for presentation will be intimated to the authors within the stipulated time. Authors whose papers have been selected for presentation need to register for the conference as an author by paying the registration fee when the time for registration is open. Only the registered authors will be allowed to participate and present their papers in the conference. Accepted papers shall be recommended for publications in Scopus Indexed Journals at an additional fee as required.	<table border="1"> <tbody> <tr> <td>Academicians</td> <td>: ₹ 2500</td> </tr> <tr> <td>Student/Research scholar</td> <td>: ₹ 1000</td> </tr> <tr> <td>Industry Delegate</td> <td>: ₹ 3500</td> </tr> <tr> <td>Foreign delegates</td> <td>: \$ 50</td> </tr> </tbody> </table>	Academicians	: ₹ 2500	Student/Research scholar	: ₹ 1000	Industry Delegate	: ₹ 3500	Foreign delegates	: \$ 50
Academicians	: ₹ 2500										
Student/Research scholar	: ₹ 1000										
Industry Delegate	: ₹ 3500										
Foreign delegates	: \$ 50										

SHIV NADAR

Sri Sivasubramaniya Nadar College of Engineering

Rajiv Gandhi Salai, Kalavakkam, Chennai 603 110, Tamil Nadu, India.

Department of Civil Engineering in association with

Indian Concrete Institute & Shiv Nadar University, Chennai presents

SPICE 2024

Feb 14th & Feb 15th 2024

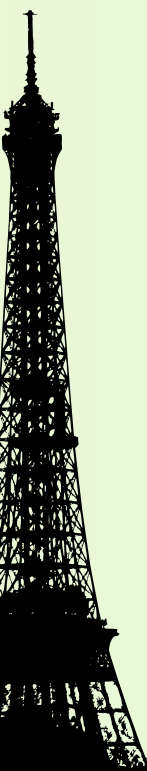


5th International Conference on Sustainable Practices and Innovations in Civil Engineering

www.spice2024.com

3.2 Faculty Development Programme

- A 6-day Faculty Development Program on "Comprehensive Industrial Sustainability: Carbon, Environmental Impact and Safety Enhancement (CISES)" on 5-2-2024 to 10-2-2024 at Civil Engineering Department of Civil Engineering



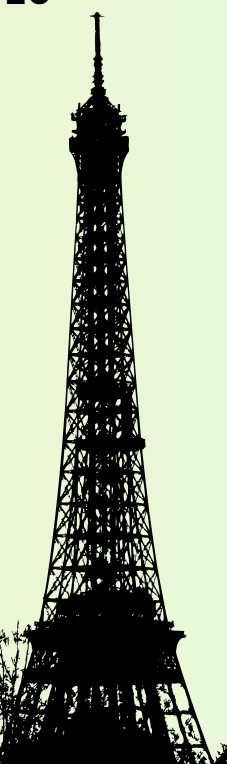


6-day Faculty Development Program

- Resource persons from industries and academic institutions acted as speakers for the sessions of FDP delivered lectures on green building, carbon foot prints and sustainability.
- Faculties from various engineering colleges more than 20 members attended the programme.

3.3 Guest Lecture

- -Dr. Ramana Gopal S has organized a guest lecture on the topic “Finite Element Analysis for Structures” Dr. K. Jayabal, from IITDM, Kancheepuram on 26/12/2024. Students of all years and faculties actively participated and interacted with resource person.



4. NOTABLE ACHIEVEMENTS

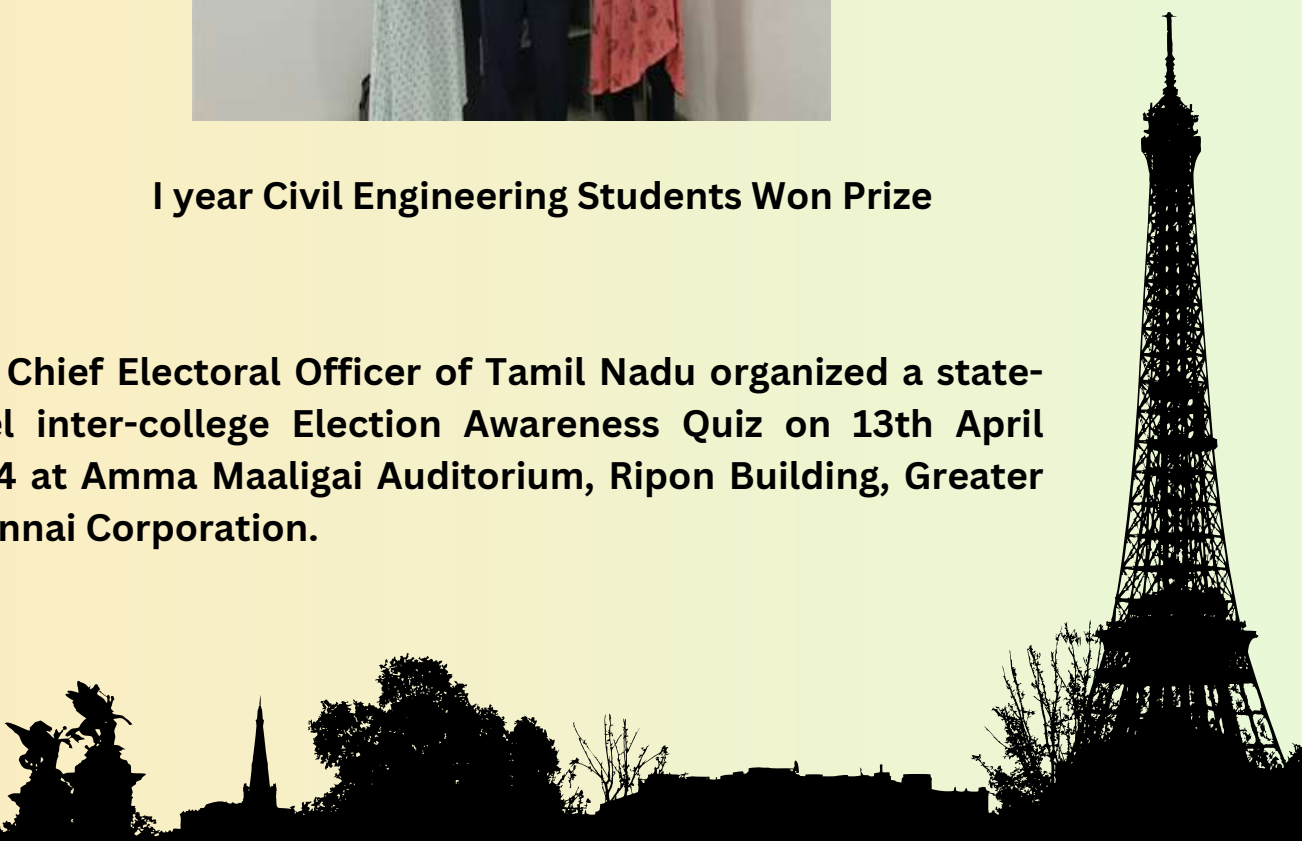
4.1 Student Achievement in tech areas – winning / participation in external competitions:

- Civilisation'24 Inter-college National level symposium is organized by Department of Civil Engineering, College of Engineering Guindy, Anna University from 6th – 8th May 2024. 23 students from civil engineering participated in various technical events, competitions (Autocad, Acropolis, Reveal the civil, Geowiz, Digging deep, Primametry, Apitude, Cricket Quiz, Kollywood Quiz, series Quiz, Breaker of Codes, Sustainable Artistry) and won prizes.



I year Civil Engineering Students Won Prize

- The Chief Electoral Officer of Tamil Nadu organized a state-level inter-college Election Awareness Quiz on 13th April 2024 at Amma Maaligai Auditorium, Ripon Building, Greater Chennai Corporation.



-
- S.P. Ananth, BE, 2nd year Civil and S.V. Srinath, 2nd year EEE, secured 3rd place (team) won cash prize rupees 5000 among 170 teams that participated across the state.



III-year Civil Engineering Students Won Prize

5. PLACEMENT ACTIVITIES (2023-2024)

The placement statistics for the Civil Department for the 2020-24 batch reflect a positive outcome. Out of a total cohort of 61 students, 14 chose to opt out of the placement process to focus on higher studies and preparation for competitive examinations, leaving 47 students who registered for placements. Of these, 38 were eligible, and an impressive 27 secured positions in core civil engineering roles, highlighting the department's strong emphasis on core sector placements.

A total of 34 students were placed, receiving offers from 14 different companies. The highest salary offered was ₹12,00,000 per annum, with the average salary being around ₹5,09,176 per annum. Prominent companies like McKinsey, which offered the top salary, along with Dow Chemicals, L&T ECC, and JGC India EPC Private Limited, played a significant role in the placement process. Companies like L&T ECC extended three offers, and Wood PLC made five offers. Furthermore, firms such as Navin Housing & Properties Pvt Ltd and JANAV Constructions Private Limited also made multiple offers, indicating strong industry interest in the department's graduates. Internships were pivotal in enhancing the employability of students, particularly in core civil engineering roles. The practical exposure and hands-on experience gained through internships were invaluable, enabling students to apply their academic knowledge in real-world contexts and develop skills that were highly sought after by core companies. This experience significantly contributed to the high number of core placements.

A total of 11 students have successfully cleared various competitive exams, including TANCET, GATE, CAT, XAT, and IELTS. This showcases their commitment to further studies and professional growth. Out of these, two students have been admitted to prestigious universities in the United States. Thosi has opted for the University of Washington, while Pavithran has chosen Boston University for their further studies. Both students have secured admissions in their respective universities and will be continuing their academic pursuits in the US.

The placement outcomes highlight a strong placement rate and engagement with a diverse range of companies, underscoring the department's dedication to preparing students for successful careers. With a focus on internships and practical training, the department has cultivated a nourishing ecosystem that equips students with the skills and experience needed to meet industry demands and secure rewarding career opportunities. Furthermore, the department's support extends beyond placements, as evidenced by the significant number of students pursuing higher studies and excelling in competitive exams. This comprehensive approach ensures that students are well-prepared for both professional and academic success.

Dr.Aswin Sriram G
Assistant Professor
Placement Coordinator



6.ACTIVTY ROUNDUP – PROFESSIONAL SOCIETIES

The Department Events are parked under various professional societies like ACE, ICE, ICI, IEI, IGBC and BIS

6.1.1 Association of Civil Engineers (ACE)

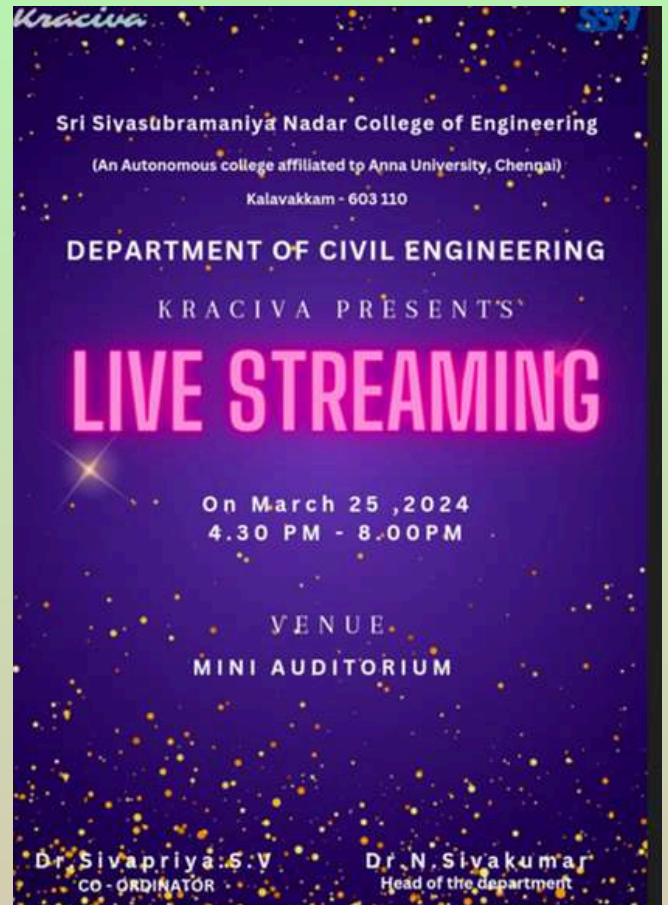
The events like chit chat session (Kraciva), Seminar and Appreciation Day were conducted.

Kraciva

·Online chit chat session (by Association of Civil Engineers) was organized on 12th January 2024 for the students of civil engineering department by final year student Jemimah J, Vice-President, ACE student chapter. She interacted with juniors regarding stress bursting, placements, IFSP and academics to juniors



•Online chit chat session (by Association of Civil Engineers) was organized on 12th January 2024 for the students of civil engineering department by final year student Jemimah J, Vice-President, ACE student chapter. She interacted with juniors regarding stress bursting, placements, IFSP and academics to juniors



6.1.2 Appreciation Day

Inorder to felicitate the achievements of students in their academics and to encourage the students in actively participating in various club activity, Appreciation Day was celebrated on 30th April 2024 in the Civil Department Seminar Hall -CADD Lab. Appreciation certicates were awarded to best performance in academics, industry linked awards from L&T, Zeus, Artelia and BAI to best students' active members in various professional societies and department newsletter team.





(A)



(B)

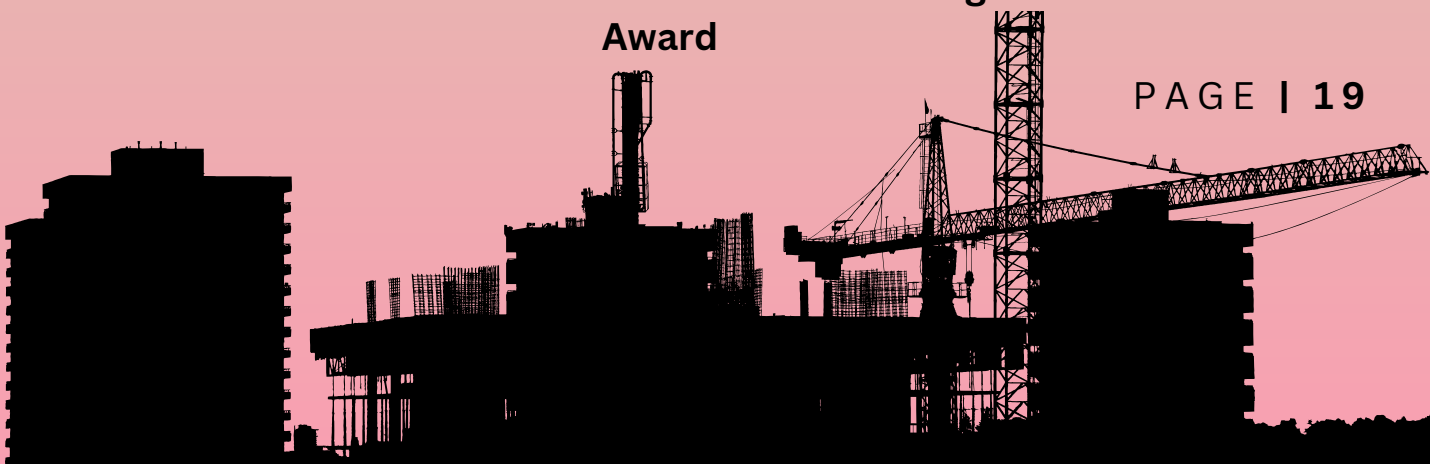


(C)



(D)

(a) Mr.Rethnakumar RG – Zeus (b) Mr.Yogesh B-L& T (c) Mr. Adarsh C-Artelia and Ms. Kuchi Phani Sowmika- BAI Receiving Industrial linked Award





APPRECIATION DAY -CLUB ACTIVITIES



Seminar on “Importance of Triaxial test in soil testing” was delivered by Mr.Karthikeyan.M ,Geotechnical Engineer, Minerva Civil testing lab on 20th May 2024 in the Civil Department Seminar Hall - CADD lab.



6.2 Bureau Of Indian Standards (BIS)

A new professional society BIS was inaugurated in dept on 19th Feb 2024.

Activities like orientation, competitions were held.

6.2.1 Orientation on “Bureau of Indian Standards”

was conducted on 19th February 2024 in the Civil Department Seminar Hall – CADD lab. Followed by Indian Standard code writing competition across the campus.





FACULTIES AND STUDENTS IN BIS ORIENTATION PROGRAMME





**SRI SIVASUBRAMANIYA NADAR
COLLEGE OF ENGINEERING**
(AN AUTONOMOUS INSTITUTION - AFFILIATED TO ANNA UNIVERSITY)
KALAVAKKAM , CHENNAI - 603110

DEPARTMENT OF CIVIL ENGINEERING
SSN ICE (UK) STUDENT CHAPTER
presents



seminar
on
"Introduction to IStructE"

Speaker
Ms. Yasmin Becker
(CEO of The Institution of Structural Engineers, UK)

THURSDAY
29 FEBRUARY 2024
11.00AM
SEMINAR HALL
- CAD LAB

Dr.Surendar Natarajan
FACULTY COORDINATOR

Dr.N.SIVAKUMAR.CEngMICE
HEAD OF THE DEPARTMENT



FACULTIES AND STUDENTS INTERACTION "INTRODUCTION TO ISTRUCTE"



6.3 INSTITUTION OF CIVIL ENGINEERS (ICE) UK

This time ICE UK students chapter conducted various events like seminar, guest lectures on high rise building and irrigation structures, workshop on STAD-Pro, Site visit and National level competition

6.3.1 SEMINAR ON INTRODUCTION TO ISTRUCTE

On 28th February 2024 we had our speaker Ms.Yasmin Becker introduce our students to IStructE,UK which is similar to our student chapter ICE. The perks and membership details about the council were explained on full fledge to our students.





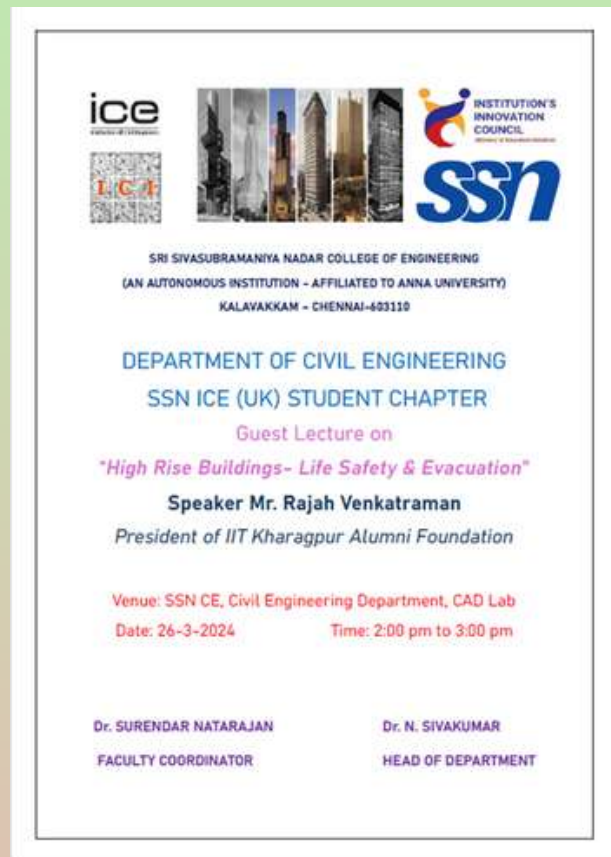
FACULTIES AND STUDENTS INTERACTION “INTRODUCTION TO ISTRUCTE”



6.3.2 GUEST LECTURE

HIGH RISE BUILDINGS- LIFE SAFETY AND EVACUATION

On 26th march 2024 we had our speaker Rajah Venkataraman, The president of IIT Kharagpur Alumni Foundation indulge our students about high rise buildings. Resource person explained the students about the features in a high-rise building for safety and evacuation and its advantages.



Students were exposed to many existing high-rise buildings and its features and the speaker shared his experiences while working for those buildings.





**STUDENTS INTERACTION WITH RESOURCE PERSON
RAJAH VENKATARAMAN**



GUEST LECTURE ON “IRRIGATION STRUCTURES- OUTLINE AND MODEL STUDY APPLICATIONS OF HYDRAULIC STRUCTURES”

- Assistant Engineer Mr. C.Balaji, water resources department, Institute of hydraulics and hydrology Govt of TamilNadu, gave our students and overview on “irrigation engineering”. He delivered an insightful talk covering several critical topics. They analysed various dam models, including the Froude number's role in assessing hydraulic behaviour and stability
- AE proposed a water bridge project along the Adyar River in Chennai, aimed at mitigating flooding during the rainy season by effectively channelling excess water. Additionally, they discussed the mouths of various rivers in Tamil Nadu, highlighting how the size and shape of these river mouths significantly influence flooding patterns, emphasizing the need for strategic planning in flood management.






SRI SIVASUBRAMANIAM NADAR
COLLEGE OF ENGINEERING
AN AUTONOMOUS INSTITUTION - AFFILIATED TO ANNA UNIVERSITY
KALAVAKKAM, CHENNAI - 603110
DEPARTMENT OF CIVIL ENGINEERING
SSN ICE (UK) STUDENT CHAPTER

TIME

12:45 pm - 1:45pm

DATE

17 May, 2024

Guest lecture on

**"IRRIGATION STRUCTURES-
OUTLINE AND MODEL STUDY
APPLICATIONS FOR HYDRAULIC
STRUCTURES"**

speaker

C.BALAJI
ASSISTANT ENGINEER
WATER RESOURCES DEPARTMENT
INSTITUTE OF HYDRAULICS AND HYDROLOGY,
POONDI

DR.SURENDAR NATARAJAN
FACULTY COORDINATOR

DR.N.SIVAKUMAR CEngMICE
HEAD OF THE DEPARTMENT

GUEST LECTURE ON
7-05-2024



6.3.3 SITE VISIT – VIDYA GYAN SCHOOL

To make practical knowledge orient civil engineering students were taken for site visit. This time students were taken to vidya gyan school at OMR, Chengalpattu district on 17th April 2024 under the guidance of Dr. Surendar Natarajan and Dr. Srinath Rajagopalan. The students Acquired knowledge on school building design, PPE, Precast walls, and Landfilling techniques.

ice **ICI** **SSN**

**SRI SIVASUBRAMANIYA NADAR
COLLEGE OF ENGINEERING**
(AN AUTONOMOUS INSTITUTION - AFFILIATED TO ANNA UNIVERSITY)
KALAVAKKAM, CHENNAI - 603110

DEPARTMENT OF CIVIL ENGINEERING
SSN ICE (UK) STUDENT CHAPTER

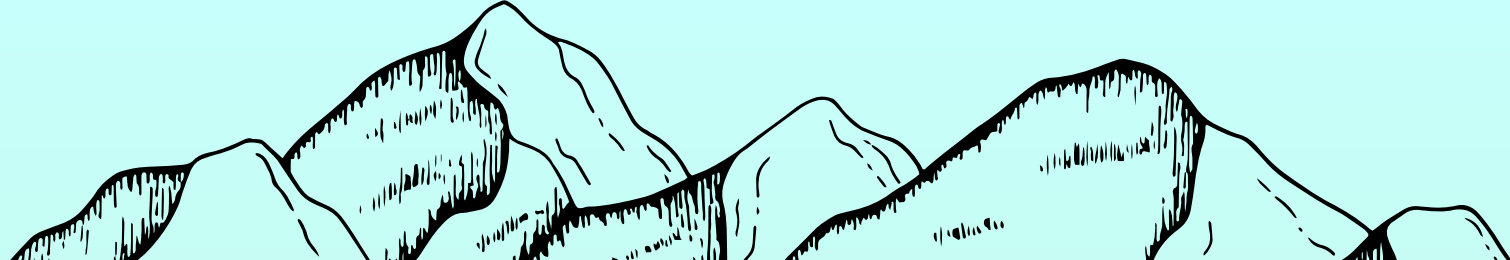
"SITE VISIT - VIDYA GYAN SCHOOL"

**APRIL 17
2024
8.30AM**

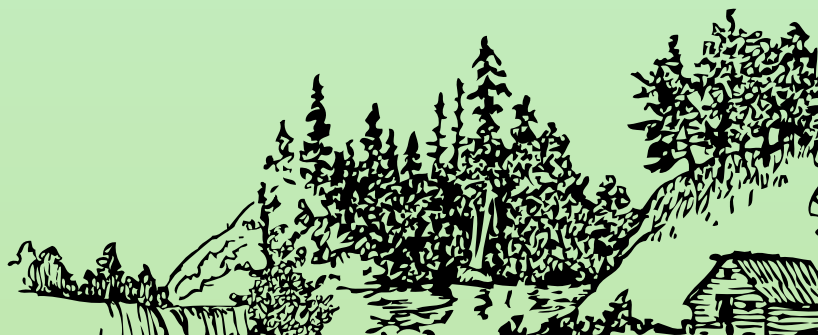
**PICK UP :
SSNCE
DROP:
VIDYAGYAN
SCHOOL**

Dr. Surendar Natarajan
FACULTY COORDINATOR

Dr. N. SIVAKUMAR
HEAD OF THE DEPARTMENT



SITE VISIT TO VIDYA GYAN SCHOOL





6.3.4 WORKSHOP ON BENTLEY STAAD PRO

- On 24th and 25th April of 2024 the second- and third-year students of civil department had a hands on training on structural design and analysis using bentley STAAD PRO. Staad basic simple frame building analysis with wind and seismic loads were taught.



ice Student Chapter
Institution of Civil Engineers
Membership

TechApps INSTITUTIONS INNOVATION COUNCIL IC4 SSN
Indian Concrete Institute

**HANDS ON WORKSHOP ON
STRUCTURAL DESIGN
AND ANALYSIS USING
BENTLEY STAAD PRO**

Date: 24 April - 25 April 2024
Time: 09:00 AM - 03:30 PM
Venue: CADD Lab, Civil Department

Organised by the Institution of Civil Engineers (ICE – UK)
SSN Student Chapter, Department of Civil Engineering.
Institution of Civil Engineers is a Registered Charity in
England & Wales (no 210252) and Scotland (SC038629).

Dr N Sivakumar, HOD
Dr Surendar Natarajan, Faculty Coordinator

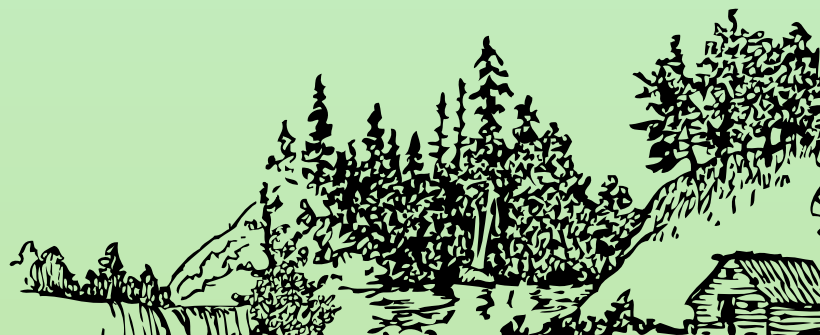
Contact us: icessnchapter@gmail.com

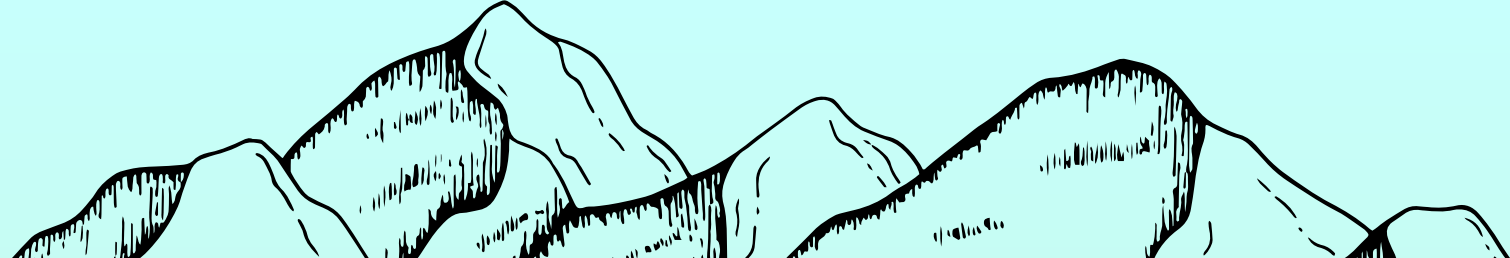


**HANDS ON WORKSHOP ON STRUCTURAL DESIGN AND ANALYSIS
USING BENTLEY STAAD PRO 24/4/2024 TO 25/04/2024**

6.3.5 SSN ICE INNOVATION CHALLENGE 2024 (NATIONAL COMPETITION)

- On 10th of April 2024, we had a competition of 2 rounds on the topic 'Sustainable and Decentralized Urbanization' with participants all over India. With 2 rounds in the competition, namely Abstract Submission and Presentation round, 6 teams were selected for the final round out of 24. Three prizes worth 6000/- were given to the winners. Students from various colleges participated in events







Student Chapter

Membership



SSN – ICE STUDENT INNOVATION CHALLENGE 2024

Topic: Sustainable and Decentralized Urbanization

- Virtual Competition with cash prizes worth 6,000 INR
- No registration fee
- Registration deadline : 14 April 2024, 23:59 IST

[Click here](#) to Register

Organized by the Institution of Civil Engineers (ICE – UK) SSN Student Chapter, Department of Civil Engineering.

Institution of Civil Engineers is a Registered Charity in England & Wales [no 210252] and Scotland (SC038629).

Contact us: icessnchapter@gmail.com

Idea/Approach Details

Our Solution:

- Urban analysis and land suitability prediction combines image processing, deep learning, 3D mapping, Lidar camera and GPS-enabled drones to facilitate sustainable and decentralized.
- Lidar Drones capture images and location data, feeding them into deep learning models for analysis.
- The lidar data can be analyzed to assess environmental factors.
- Using machine learning algorithms, the collected data is then analyzed to assess the suitability of the urban area for the current population.
- If it does not satisfy the conditions for sustainable, nearby lands are explored and the analysis are done for identifying potential sites.

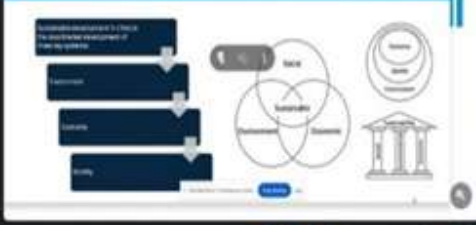


Student D



Student N

SUSTAINABILITY A KEY TO LIFE:



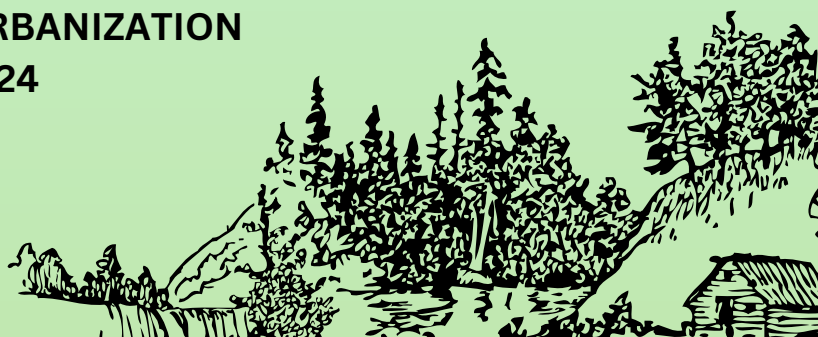


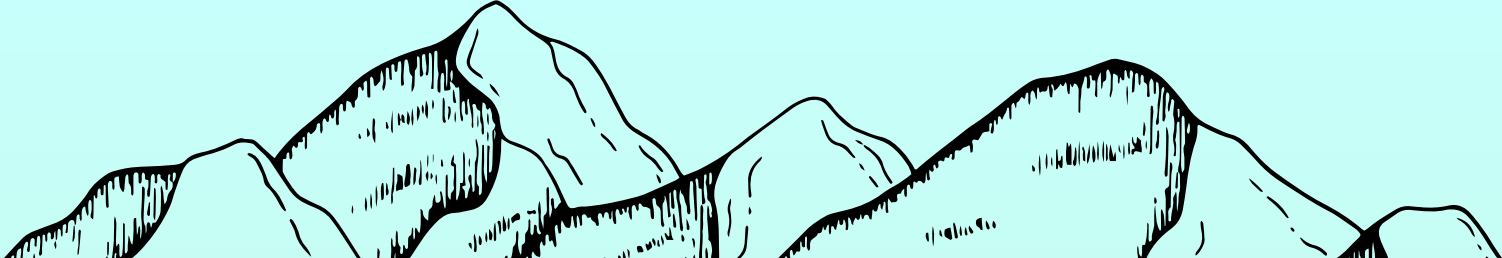
Student N



Student A

NATIONAL COMPETITION- SUSTAINABLE AND DECENTRALIZED URBANIZATION 10-4- 2024

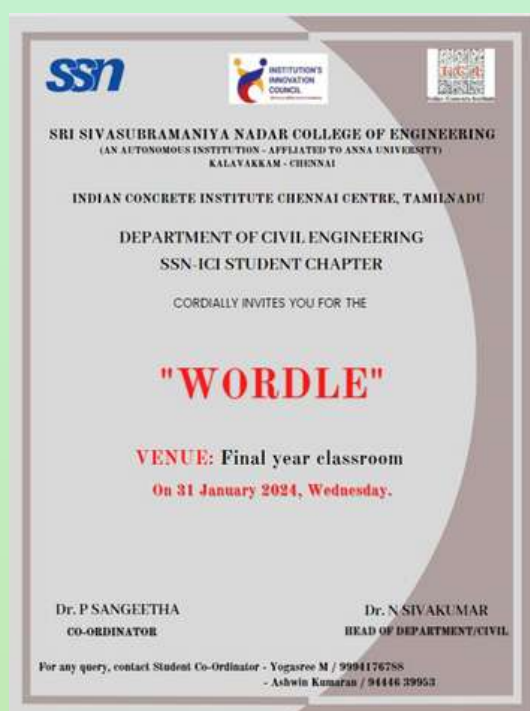


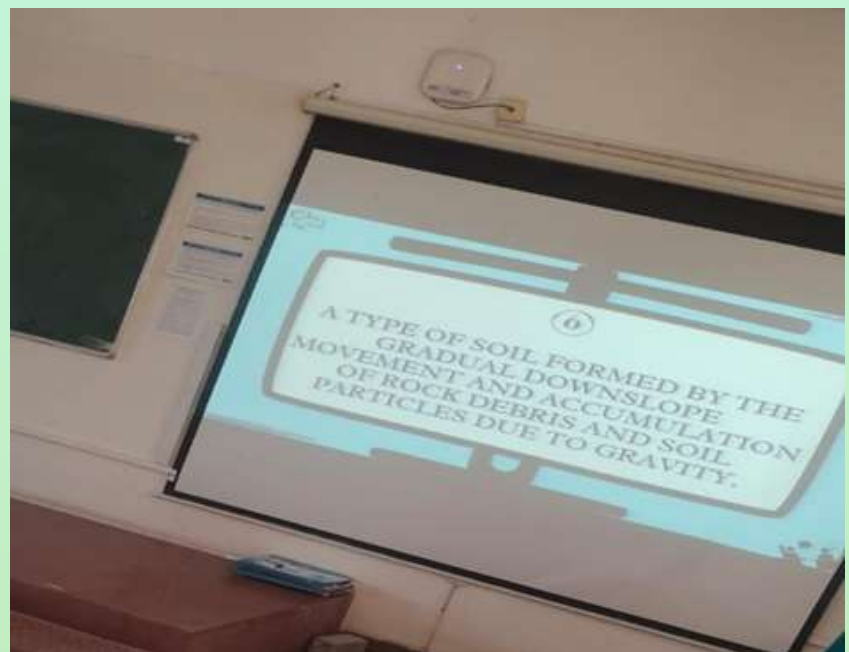
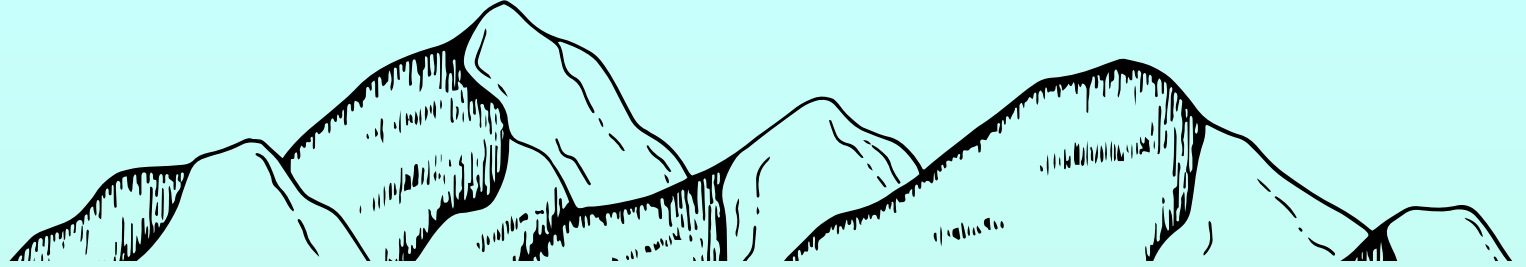


6.4 ICI-INDIAN CONCRETE INSTITUTION (ICI)

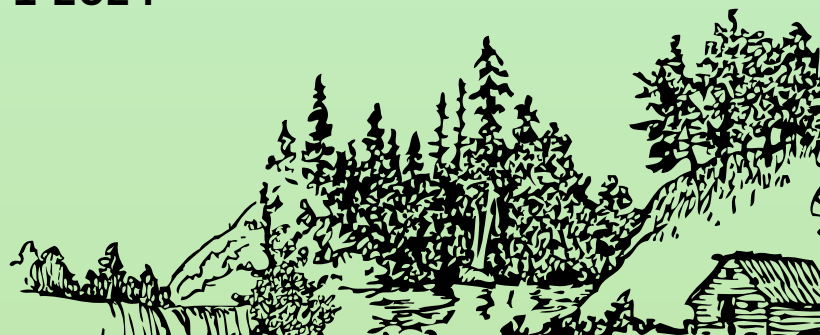
6.4.1 QUIZ - WORDLE CHALLENGE

- On January 31, 2024, a Wordle challenge was conducted for 3rd year civil engineering students through offline with more than 30 participants.
- The challenge majorly focused on fundamental concepts of civil engineering. This event aimed to help students brush up on their basic knowledge. Participants found the challenge to be both interesting and engaging. Many students appreciated the opportunity to revisit core topics in a fun and interactive way. Overall, the event was deemed useful and effective in reinforcing essential civil engineering principles.





WORDLE CHALLENGE -31-1-2024



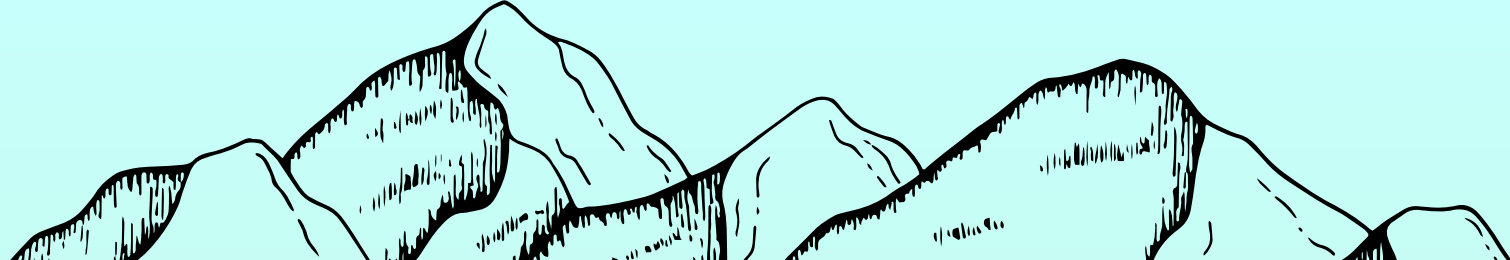


6.4.2 GUEST LECTURE - BLENDED CEMENT

On February 5, 2024, a guest lecture was delivered by Er. Muralidharan for the civil engineering students through offline. The lecture focused on various blends of cement, including double and triple blends. Er. Muralidharan provided detailed explanations on the use of slag, fly ash, and GGBS as alternatives when blended with cement. He discussed the benefits and applications of these blended cements in modern construction.



The session spotlighted the environmental and performance advantages of using such materials. Students gained valuable insights into the practical aspects of cement blending. The lecture was well-received, with students appreciating the detailed and informative content. Overall, the guest lecture successfully enhanced the students' understanding of advanced cement technologies.

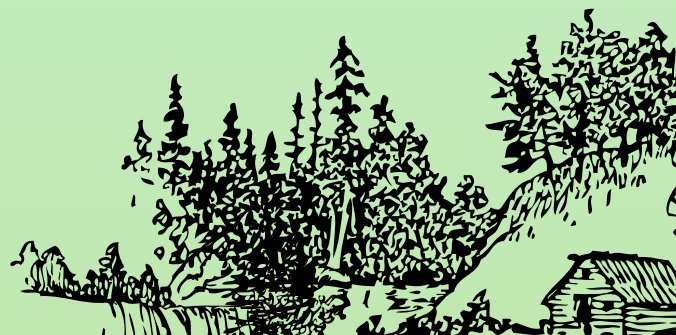


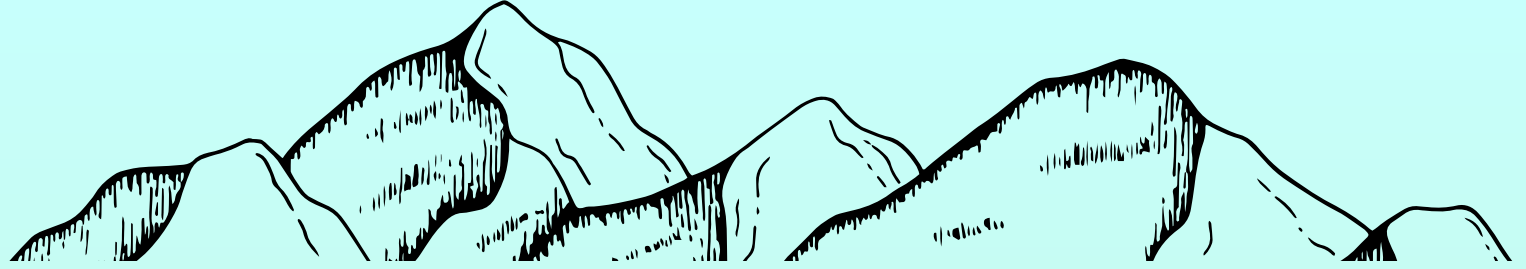
6.4.3 SEMINAR - FINITE ELEMENT ANALYSIS FOR STRUCTURES

- On February 26, 2024, a seminar was conducted for civil engineering students, featuring Dr. K. Jayabal as the speaker. The topic of the seminar was “Finite Element Analysis (FEA) for structures”. Dr. Jayabal provided an in-depth overview of FEA principles and their application in structural engineering.



- HE EXPLAINED PRECISELY THE IMPORTANCE OF FEA IN ANALYZING AND DESIGNING COMPLEX STRUCTURES.
- The seminar covered various techniques and tools used in FEA, along with practical examples and case studies. Students found the seminar highly informative and appreciated the detailed explanations.



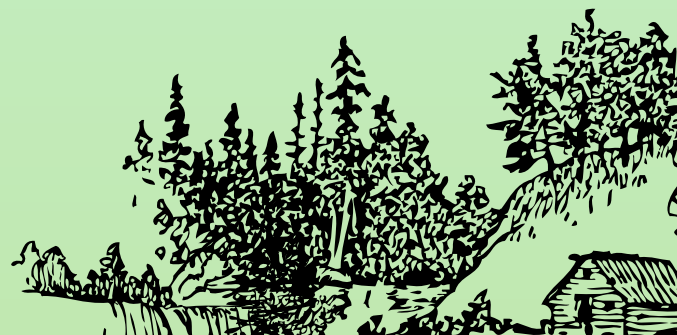


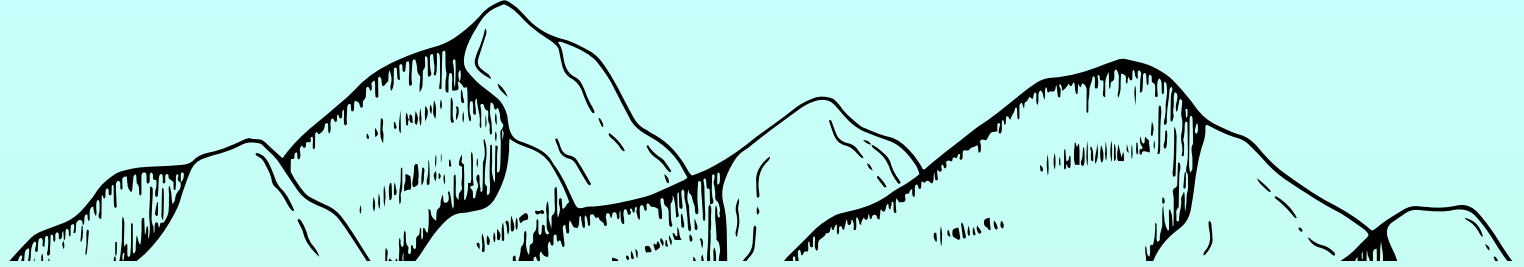
- The session enhanced their understanding of advanced analytical methods in structural engineering. Overall, the seminar was successful in broadening the students' knowledge of finite element analysis.



6.4.4 SSN-ICI TECH FEST 2024

- On March 22, 2024, the SSN ICI student chapter hosted the 'SSN ICI Tech Fest,' an intercollegiate event, Coordinated by Dr. Sangeetha P and Dr. N. Sivakumar.
- The Tech Fest featured four events: a quiz, a treasure hunt, a paper presentation, and a cube test. We had participants from all across Tamil Nadu, eager to be a part of the event.
- The paper presentation, judged by Dr. P. Sangeetha, showcased students presenting their research findings.

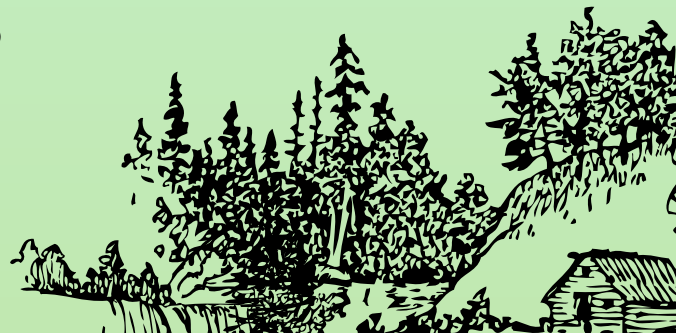


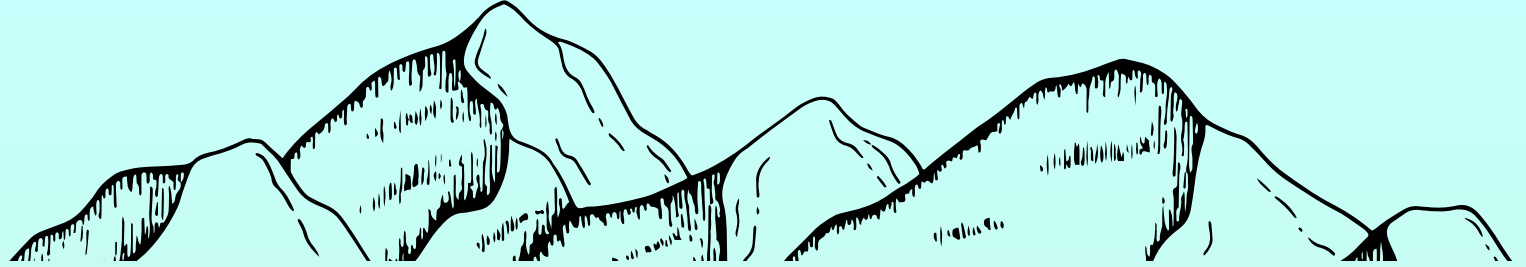


- The quiz, designed as a snake and ladders game, involved 15 teams of three members each. For the treasure hunt, general instructions were provided, and the first team to collect all hints and the final answer was declared to be the winner. The cube test saw six teams from various colleges bringing their casted cubes to be tested in the laboratory, with the winner being the team whose cube strength was closest to 25 MPa.
- The valedictory function was presided over by Dr. N. Sivakumar, HOD of the Civil Department at SSN College of Engineering. Over 30 participants engaged in different events, finding the Tech Fest both knowledgeable and entertaining.



ICI FEST EVENTS





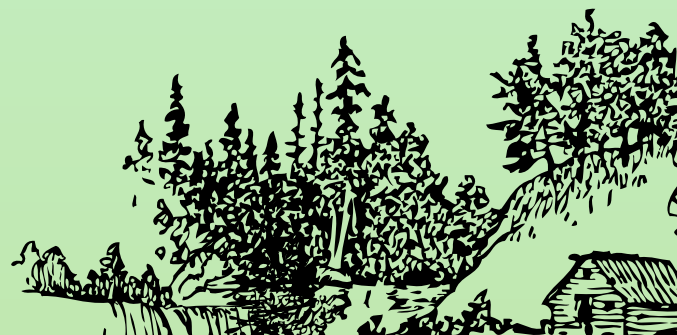
SNAKES AND LADDERS

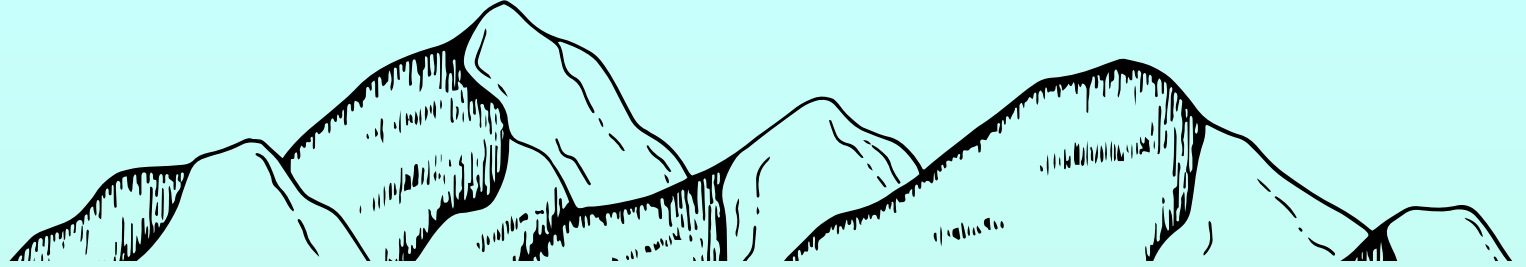


TREASURE HUNT



PAPER PRESENTATION

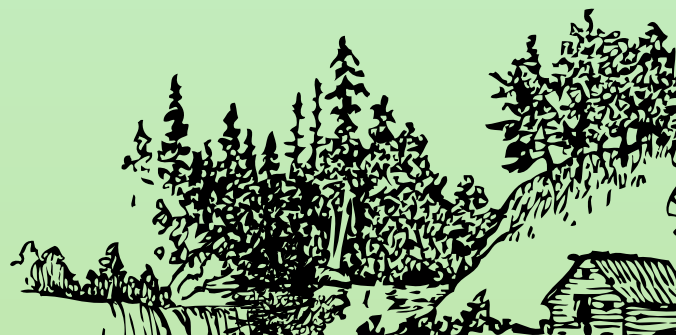


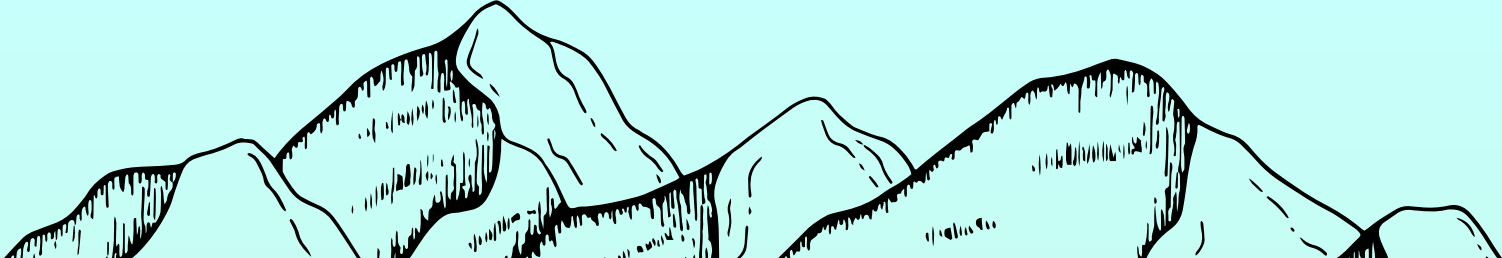


CUBE TEST

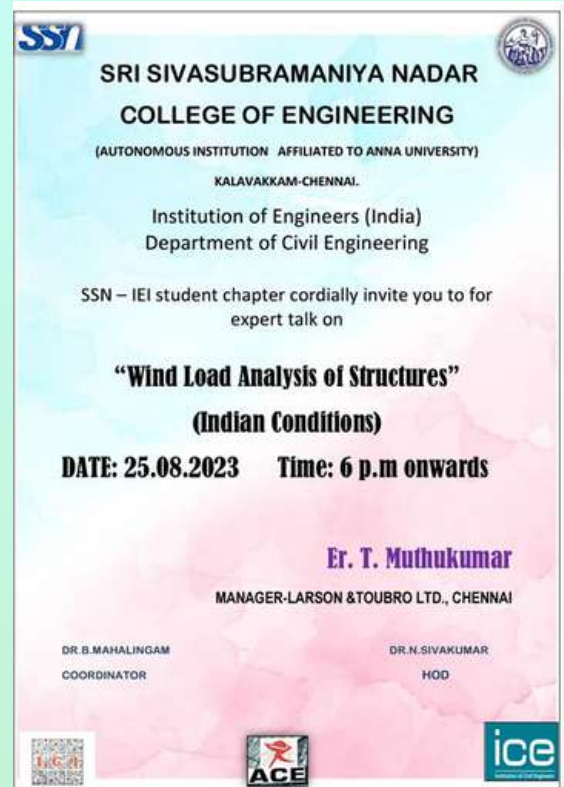
6.5 INSTITUTION OF ENGINEERS INDIA (IEI)

On 25th August 2023, the IEI student chapter at our college organized an informative and engaging expert talk on the topic "Wind Load Analysis of Structures (Indian Conditions)." The event aimed to bridge the gap between academic learning and practical industry knowledge by providing students with insights into real-world engineering challenges and solutions. The guest speaker for the occasion was Er. T. Muthukumar, a distinguished Manager at Larson & Toubro Ltd., Chennai, who brought with him a wealth of experience and expertise in structural engineering.



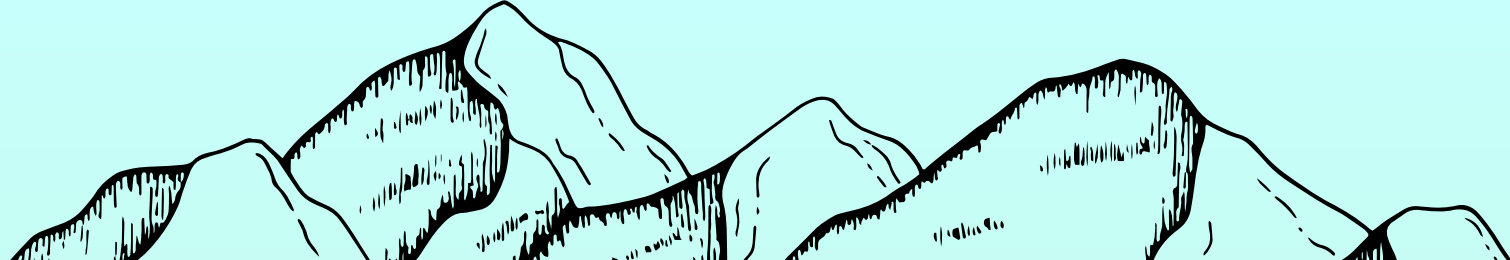


Er. Muthukumar, with his extensive experience and expertise in structural engineering, provided a comprehensive analysis of the challenges and methodologies involved in wind load assessment for buildings and infrastructure in India.



**IEI STUDENT CHAPTER
(INNAGURATION 25-8-2023)**

His talk covered essential aspects such as the impact of regional wind patterns, design considerations, and the application of relevant standards and codes. The session was highly informative, offering students a deep understanding of practical approaches and real-world applications in the field. The event was well-received, with enthusiastic participation from students and faculty alike, highlighting the importance of such interactions in bridging academic knowledge and industry practices.



The event concluded with an interactive session where Er. Muthukumar encouraging questions and discussions from the audience. Students and faculty members actively participated, seeking clarification on various aspects of wind load analysis and sharing their own insights.

6.6 IGBC- INDIAN GREEN BUILDING COUNCIL

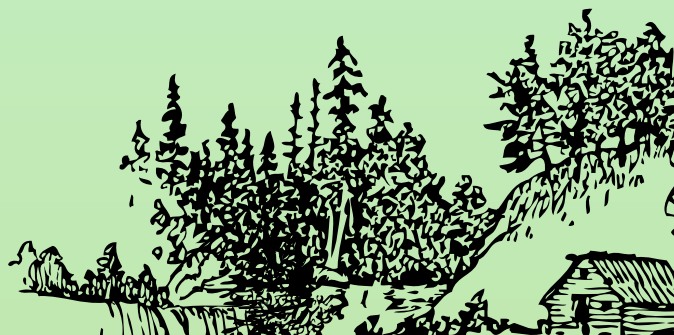
SUSTAINABLE WEEK

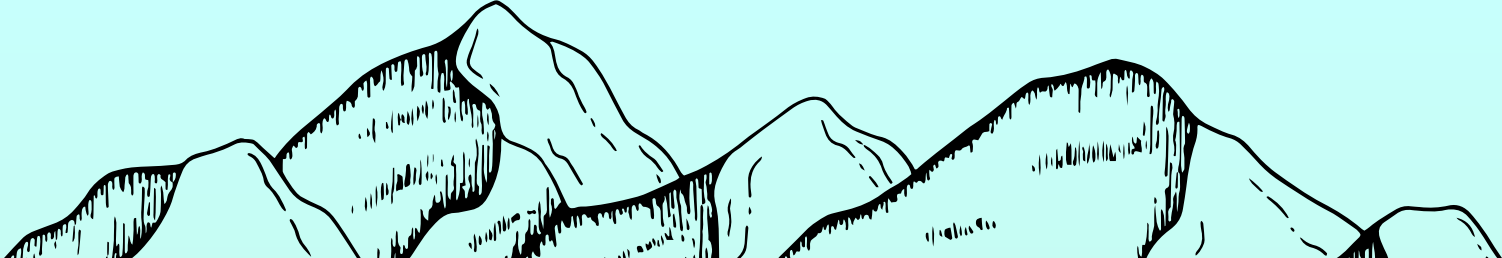
6.6.1 ART CONTEST

- An online art contest was held on the sustainable week (11th to 18th may) by our IGBC student council in collaboration with the NSS unit of SSN.



- The theme of this art contest was “GREEN AROUND THE CIRCLE “. Over 30 students participated and submitted their stunning artworks which were then evaluated by our team. Winners were announced for the same.





6.6.2 PRESENTATION

On the 6th day of the sustainability week, a presentation event was arranged offering an opportunity for the bright minds of SSN to showcase their insights on social entrepreneurship, green engineering and economics in sustainability. Around 15 teams participated and shared their ideas on the topics.



The poster is for a presentation event on May 16, 2024. It features logos for SSN, SSN Engineering College, and the ECE Department. The title is 'Day 6 - Presentation'. The text describes the session where participants will present to judges, with rules regarding slide count (12 slides), timing (based on team count), and topics (Social Entrepreneurship, Green Engineering, Economics in Sustainability). The venue is Central Seminar Hall, ECE Dept. The date and time are 16th May 2024, 1:15pm - 3:30pm. Attendance is 3 hours. There is a small number 8 in a circle at the bottom right.

Day 6 - Presentation

In this session, participants as team will be asked to present in front of the judges. Preparation of presentation should be based on the rules given below:

- 1) The slides for presentation should be within 12 slides.
- 2) The timing for each presentation will be decided based on the enrollment of teams count.
- 3) Topics: Social Entrepreneurship, Green Engineering, Economics in Sustainability

Venue: Central Seminar Hall,
ECE Dept

16th May 2024
1:15pm - 3:30pm

Attendance
3 hrs

8



6.7 MOU

- An MoU was signed between Sri Sivasubramnaiya Nadar College of Engineering and the Confederation of Real Estate Developers Associations of India (CREDAI) 30.01.2024. The main agenda of the MoU is to create a platform for students to experience the current ongoing trends in the construction industry.



MOU WAS SIGNED BETWEEN SSN CE AND CREDAI ON 30.01.2024.

- Prof. Dr. N. Sivakumar, HoD, CE and Prof. Dr. K. Ramanjaneyulu met Prof. Dr.-Ing Balthasar Novak, Institute for light weight structures and conceptual design (ILEK), University of Stuttgart, Germany, on 21-5-2024 at IIT Madras. Prof. Balthasar Novak was briefed about SSNCE and made a proposal to him for an Mou between SSNCE and University of Stuttgart, Germany, for exchange of students and faculty and collaborative research. Prof. Balthasar Novak agreed to visit SSNCE during his next visit to India to get to know more about SSNCE. He would also facilitate a meeting between the Institutions for steps towards an Mou. Also, invited him to participate in SPICE 2025.



**PROF. DR.-ING BALTHASAR NOVAK INSTITUTE,
UNIVERSITY OF STUTTGART, GERMANY**





7. STUDY TOUR

- Industrial visit for II-year Civil Engineering Students were arranged to Coorg, Chickmagalur and students visited Golden temple, HR Dam under the banner of "SSN ICE(UK) student Chapter" from 15-3-2024 to 19-3-2024.

Coorg

Day1 : March 14, 2024

Location: Coorg, Karnataka, India

Namdroling Monastery (Golden Temple) located in Coorg, Karnataka, India. The trip aimed to provide students with a unique opportunity to learn about The architectural works in Golden Temple, Tibetan building style, Tibetan Buddhism, cultural heritage.

Highlights of the Visit:

1. **Architectural Analysis:** The civil engineering students were fascinated by the intricate architectural details of Namdroling Monastery, including the ornate facades, colorful murals, and traditional Tibetan designs. They conducted on-site assessments of structural stability and analyzed the use of materials such as wood, stone, and clay.
2. **Construction Techniques:** Observing local artisans at work provided valuable
3. **Sustainability Considerations:** The trip prompted discussions on the ecological impact of monastery construction and the importance of sustainable practices. Students examined how the use of locally sourced materials and traditional building techniques contributes to environmental conservation and community resilience.
4. **Cultural Exchange:** Interacting with monks and nuns offered students a deeper understanding of Tibetan culture and spiritual traditions. They gained appreciation for the holistic approach to architecture, which reflects harmony with nature and spiritual values.





II-YEAR CIVIL ENGINEERING STUDENTS- INDUSTRIAL VISIT

Day -2 Chikmagalur

Date: March 15, 2024

Location: Chikmagalur, Karnataka, India

• Our journey began as we ascended towards Mullayanagiri, the highest peak in Karnataka. The changing landscape offered valuable insights into soil composition. At the lower foothills, we observed red lateritic soil, a common feature of the Deccan Plateau, known for its good drainage but low fertility. As we climbed higher, the soil transitioned to a darker, more organic type, likely influenced by the increased rainfall and denser vegetation. The winding roads leading to Mullayanagiri showcased excellent examples of road construction for navigating steep terrains. Hairpin bends and switchbacks combined with proper drainage channels alongside the roads demonstrated strategies for ensuring safe driving conditions and preventing erosion during heavy monsoon rains.



- Eco Point, a scenic stop along the way, provided a glimpse into soil conservation practices. Retaining walls constructed with locally sourced stones served the purpose of preventing landslides on slopes. Additionally, the layered vegetation with deep-rooted plants further contributed to soil stabilization.
- Seethalagiri, a popular tourist destination, offered insights into local building styles. Many structures incorporated traditional materials like wood and clay bricks, well-suited for the region's climate. Sloping roofs, a common design element, offered a practical solution for effectively shedding rainwater.
- Budangiri, a pilgrimage site with historical significance, displayed some interesting examples of religious structures built using stone. The use of thick walls and load-bearing structures suggested their ability to withstand the test of time, providing valuable lessons on traditional building materials and techniques.
- Z-Point, known for its panoramic view, highlighted the importance of proper road safety measures in hilly regions. Guardrails and crash barriers strategically placed along the sharp edges.

DAY-3

Date: March 18, 2024

Company: Matrix PMC Consortium Pvt. Ltd.

Industry: Project Management & Quantity Surveying

Location: Bangalore, India

- Project Management Consultancy : Matrix PMC assists clients in planning, organizing, and controlling construction projects from inception to completion. They provide services such as feasibility studies, scheduling, cost estimation, risk management, and procurement.
-
- Quantity Surveying: They offer quantity surveying services to ensure accurate measurement and calculation of materials required for a construction project. This helps in cost control and efficient resource allocation.





- **Quantity Audit:** Matrix PMC can conduct quantity audits to verify the accuracy of quantities claimed by contractors. This helps clients identify any discrepancies and avoid potential cost overruns.
- **Quality Audit:** The company provides quality audit services to ensure that construction projects meet the required standards and specifications
- **Value Engineering:** Value engineering is a systematic process of analyzing the function of a product or service to ensure that the required functionalities are delivered at the best possible cost. Matrix PMC helps clients optimize project designs to achieve better value for money.
- **Structural Designing:** The company has a team of structural engineers who can design safe and efficient structures for various construction projects.
- **Energy Audit:** Matrix PMC offers energy audit services to help clients identify areas where they can improve the energy efficiency of their buildings. This can lead to significant cost savings in the long run.

Industrial Visit Activities

During our visit, we were provided with a comprehensive presentation on the company's services and expertise in project management and quantity surveying. The presentation highlighted real-world projects undertaken by Matrix PMC and showcased their approach to project delivery. We were also given a tour of the company's office and had the opportunity to interact with the staff, including engineers, quantity surveyors, and project managers.

The staff at Matrix PMC were very knowledgeable and enthusiastic about their work. They answered our questions patiently and provided valuable insights into the field of project management and quantity surveying. We learned about the various challenges faced in the construction industry and how Matrix PMC helps clients overcome these challenges through their expertise and experience.





Manchanabele Dam

Date of Visit: March 18, 2024

Location: Manchanabele Dam, Karnataka, India

Key Observations:

- **Construction and Design:** The dam stands as a testament to engineering marvel, with its sturdy concrete structure spanning across the Arkavathi River. The design incorporates modern techniques for stability and longevity

- **Hydroelectric Power Generation:** We learned about the turbines and generators housed within the dam, which harness the flow of water to produce electricity. The capacity of the power station and its contribution to the local grid were impressive.

- **Water Management:** Manchanabele Dam plays a crucial role in regulating water flow, especially during monsoon seasons, to prevent floods downstream. Additionally, it facilitates irrigation for agricultural lands, enhancing productivity in the region.

- **Environmental Impact:** The visit included discussions on the ecological impact of the dam, including habitat alteration and mitigation measures. Understanding the balance between development and environmental conservation was enlightening

- **Tour of Facilities:** We had the opportunity to tour the dam premises, including control rooms, spillways, and the reservoir area. Safety protocols were strictly followed, ensuring a smooth and educational experience.

Learnings:

- **Engineering Excellence:** Witnessing the intricate infrastructure of the dam underscored the importance of precision engineering in large-scale projects.



- **Water Resource Management:** The visit highlighted the significance of responsible water management for sustainable development and livelihoods
- **Environmental Stewardship:** Balancing development with environmental preservation emerged as a critical consideration in infrastructure projects like dams.



II-year Students Industrial Visit - Manchanabele Dam

8. PUBLICATIONS

- Sangeetha P & Shanmugapriya M (2023), "Predicting the strength of seashell concrete using Adaptive Neuro-Fuzzy Inference System: An experimental study", *Iteckne*, Vol. 20, No.1, pp. 1-19,
 - Srinath Rajagopalan, Aswin Sriram & Shobana Purushothaman (2024). "Sorpton kinetics of chromium (VI) in synergetic biochar derived from *Saccharum officinarum* and *Prosopis Juliflora*", *Indian Journal of Chemical Technology*, Vol 31, Q4, pp 31-38, SCIE, (0975-0991)
- Sangeetha P, (2023), "Behaviour of cold-formed steel built-up beams under flexural loading ", *Building Materials and Structures*, Vol. 66, No. 2300011P, pp. 1-9, WoS, doi: 10.5937/GRMK2300011P. Elsevier, Online ISSN: 2214-7853



- P. Naveenkumar, R. Prakash, P. Sangeetha (2023), “Analytical and Experimental Comparison of the Composite Space Truss with Plain and Profiled Decking Sheets Employing Headed-Stud and Channel-Stud Shear Connector,”Arabian Journal for Science and Engineering, Springer Science and Business Media LLC WoS, Electronic ISSN.
- Jijo James and Sivapriya S.V., (2024),"Characteristics of Fiber-Reinforced Cement-Sand Blocks with Quarry Dust as Replacement for Sand", The Scientific World Journal, Volume 2024, Article ID 1914803, 13 pages, (Online)
- Rajkumar Ratnaraju (2024), "Experimental Investigation of Buried HDPE Pipe", Building Materials and Structures, Vol.67, Web of Sciences
- P. Sangeetha, V.E. Annamalai & P. Kaythry (2023), "Durability studies on concrete with partial replacement of cement and coarse aggregate by seashell waste", Materials Today: Proceedings, Published online, Q2, pp.1-7, SCOPUS, (2214-7853)
- Geetha, R., Vijayalakshmi, R., Prakash, R., and Sathia, R(2024), "Concrete crack analysis using a deep belief convolutional neural network", Building Materials and Structures, Vol. 67(1), pp. 1-10, WOS, (2217-8139),
- Vijayalakshmi, R., Praveen Kumar, R., and Tamilarasan, S (2023), "Performance of sustainable lightweight foam concrete with synthetic micro and macro fibers as reinforcement", Journal of Materials and Engineering Structures, Vol. 10(4), pp. 569-579, WOS, (2170-127X).
- Surendar Natarajan (2023). “Identification of Surface and Groundwater Interaction by Isotopic Hydrological Study - A Critical Review for Kelambakkam Region, Chennai, India”. Nature Environment and Pollution Technology Vol.22, issue 3, pp.1457-1468, Q4. Web of science, 0972-6268.
- Vani Haridasan, Kavitha Muthukumaran, B. Mahalingam, K Hariharanath, S. Bharathi Vasur., (2024), "Examining the determinants of academic buoyancy among Indian Engineering Students", Migration letters, Vol. 21, no. S3, pp. 1496–1510, Scopus and Web of Science, (ISSN 1741-8984).





- Sangeetha, P., Prithika Saishree, S., Sheena Grace, D., Yuvalatha, P., Yuvarani, P. (2024). Effect of External Ring Stiffener and GFRP Strip Wrapping on the Buckling Behavior of Cold-Formed Steel Tubular (CFST) Column. In Recent Advances in Structural Engineering. IACESD 2023. Lecture Notes in Civil Engineering, vol 455. Springer, Singapore.
- Dhanya Vishnu, Balaji Dhandapani, Sivapriya Vijayasimhan, Arasi Rajendran, Madhav Mukunthan, Mohan Pandiyan, Aadithya Shankar, K. Senthilkumar Lima, (2024), "Removal of Metal Ions from Wastewater Using Co-Integrated Superparamagnetic Nanoparticles", Chemical Engineering and Technology , Vol. 1, Q2, pp.1-9, WoS,
- Kavitha Muthukumaran, Vani Haridasan, B. Mahalingam, K Hariharanath, D Yuvaraj, "Investigating the Aftermath: Factors Shaping The Well-Being of Adolescent Girls and Young Women in the Wake of the Pandemic", Migration Letters, Vol. 21, No. S3, pp. 1511–1523, Scopus and Web of Science, (ISSN 1741-8984).
- Kanchanadevi, Nawal Kishor Banjara and K. Ramanjaneyulu (2024), "Investigation on effectiveness of reinforced HSFRC overlay in flexural strengthening of RC beams", Journal of Structural Engineering, Vol.50, Nos.4 and 5, October 2023-January 2024 , pp.295-309, Scopus indexed, ISSN:0970-0137
- Kanchanadevi, K. Ramanjaneyulu and P. Gandhi (2024), "Investigation on the behavior of concrete composite slab system with different levels of interface shear design", Sadhana – Academy Proceedings in Engineering Sciences, Vol. 49:108, March 2024, pp.1-16, Scopus and Web of Science indexed,



9. CONFERENCES

- Dr. Surendar Natarajan presented a paper titled "Estimation of Surface and Groundwater Interaction by Stable Isotopic Techniques-A Case Study on Chengalpattu District-OMR Region in the 28th Conference on Hydraulics, Water Resources, River, and Coastal Engineering (HYDRO 2023 INTERNATIONAL), Organized by the Department of Civil Engineering, National Institute of Technology, Warangal, under the aegis of The Indian Society for Hydraulics (ISH), Pune, during December 21-23, 2023.
- Sangeetha P., Manikandan D, Kartheeswaran J, Saranya M & Yuvasri Raja (2024), "Study on Properties of Concrete with Silicon Carbide Waste as Partial Replacement of Aggregate", In: Proceedings of International conference on Sustainable Practices and Innovations in Civil Engineering (SPICE 2024), Feb 14-15, Sri Sivasubramaniya Nadar College of Engineering, Chennai, India, pp. 12.
- Sangeetha P., (2024), "Numerical Investigation on the Cold-Formed Steel-Concrete Composite Beam under Two-point Flexural Loading", In: Proceedings of International conference on Sustainable Practices and Innovations in Civil Engineering (SPICE 2024), Feb 14-15, Sri Sivasubramaniya Nadar College of Engineering, Chennai, India, pp. 70.
- Vinoth.V and Sivapriya.S.V.(2024),"Re-use of Waste Materials in Geotechnical Practice", In: Proceedings of International conference on Sustainable Practices and Innovations in Civil Engineering (SPICE 2024), Feb 14-15, Sri Sivasubramaniya Nadar College of Engineering, Chennai, India, pp.10.
- Sivapriya.S.V. Shabar Shabir and Shahista Ali (2024),"Analyzing the Feasibility of Using Construction Demolished Waste as a Backfill Material - In: Proceedings of International conference on Sustainable Practices and Innovations in Civil Engineering (SPICE 2024), Feb 14-15, Sri Sivasubramaniya Nadar College of Engineering, Chennai, India, pp.17.
- Bijivemula Sruthi Reddy and Sivapriya.S.V., (2024),"Permeability Study of Soil Mixed with Polyurethane", In: Proceedings of International conference on Sustainable Practices and Innovations in Civil Engineering (SPICE 2024), Feb 14-15, Sri Sivasubramaniya Nadar College of Engineering, Chennai, India, pp.45.



- Rajkumar R (2024), "Study on the Environmental Impact of High-Rise Structures" In: Proceedings of International conference on Sustainable Practices and Innovations in Civil Engineering (SPICE 2024), Feb 14–15, Sri Sivasubramaniya Nadar College of Engineering, Chennai, India, PP. 56.
- Rajkumar R (2024), "Experimental Study on the effect of Superplasticizer in Fresh and Hardened Concrete" In: Proceedings of International conference on Sustainable Practices and Innovations in Civil Engineering (SPICE 2024), Feb 14–15, Sri Sivasubramaniya Nadar College of Engineering, Chennai, India, PP. 57.
- Rajkumar R, Santhosh S and Gayathri G (2024), "Comparative Study of Steel and Bamboo as Reinforcement in Flexure and Compression members " In: Proceedings of International conference on Sustainable Practices and Innovations in Civil Engineering (SPICE 2024), Feb 14– 15, Sri Sivasubramaniya Nadar College of Engineering, Chennai, India, PP.58.
- Sangeetha P., Dhanus S, Ganapathi Nikitha Reddy, Hrushikesh Ba J and Sreeharini S T (2024), "Flexural Capacity of Cold-Formed Steel Gapped Built-up Channel Sections with Stiffeners", In: Proceedings of Sustainable Practices and Innovations in Civil Engineering (SPICE 2024), Feb 14–15, Sri Sivasubramaniya Nadar College of Engineering Chennai, India, pp.
- Sasurudha .M, Sumathira.B, Vignesh. M and Sivapriya S.V (2024), "Arachis Hypogaea Shell Fiber as a tertiary Soil Stabilizing Agent in Inorganic Soil", In: 8th International Conference on Recent Advancements in Chemical, Environmental & Energy Engineering, March 15 and 16th, 2024, Chennai, India , pg12.
- Arunthathi Sendilvadelua, Balaji Dhandapania, Sivapriya S.V (2024), "A effect of solid fraction of digestate ash on the strength and swelling characteristics of clayey soil", In: 8th International Conference on Recent Advances in Chemical, Environmental & Energy Engineering, March 15 and 16th, 2024, Chennai, India, pg 39.
- P.K. Suresh, N. Surendar, R. Sundaravadivelu, K. Dhanasekar (2023) Studies on Estuary of Thamirabarani River, Tamilnadu, India in MATEC Web of Conferences 384, SPICE 2023, SSN CE, India 03001.International



- Bijivemula Sruthi Reddy and Sumetha R, "Evaluating the influence of fines on the characteristics of pervious concrete" in the International Conference on Sustainable Practices and Innovations in Civil Engineering (SPICE 2024) organized by the Department of Civil Engineering, on Feb 14 & 15 , 2024, Chennai, India.

- Sivapriya S.V, Ganesh Kumar.S, Saranya.N and Anjali Yadav (2024). "Function of natural and industrial waste as soil reinforcement of a Cohesionless Soil", In: Proceedings of Women Indian Geotechnical Conference – 2024, March 8-9th , Chennai, India, Indian Geotechnical Society. International.

- Sivapriya S. V, Muttharam.M, Jijo James and Sivaraj R (2024). "Experimental Evaluation of laterally loaded single pile in Stratified soil", In: Proceedings of Women Indian Geotechnical Conference – 2024, March 8-9th , Chennai, India, Indian Geotechnical Society. International.

10. FACULTY ACTIVITIES

10.1 EXTERNAL RECOGNITION

- Dr. N. Sivakumar has been nominated as a DC Panel member for scholar, "Viswanathan G" pursuing his/her Ph.D., program under "Anna University" on "28-12-2023".

- Dr. N. Sivakumar has been appointed as Institution of Civil Engineers (ICE) UK International representative for India (Chennai) with effect from 07 March 2024.

- Dr. N. Sivakumar has acted as External examiner for the viva voce of a PhD scholar at SRM IST, Kattankulathur on 04 March 2024.

- Dr. Rajkumar R attended the DC meeting of the scholar, Vanjinathan pursuing his Ph.D. program under Sathyabama Institute of Science and Technology, Chennai on 08/02/24 held at Research Centre, Sathyabama Institute of Science and Technology, Chennai.

- Dr.N.Sivakumar has attended the DC meeting for research scholar at SRM University, Kattankulathur.

• Dr. Ramanjaneyulu K has been nominated as a member of the Doctoral Advisory Committee (DAC) of Ph.D. Scholar, "Mr. Sivayogaraj (23PHD1321)" pursuing Ph. D. under Prof. Elavenil S., School of Civil Engineering, VIT Chennai, vide letter dated 2-05-2024.

• Dr. R. Rajkumar acted as an External Examiner for Project Viva Voce Examination at St. Joseph Institute for Science and Technology, Chennai, on 28 March 2024.

• Dr. R. Rajkumar acted as an External Examiner for Project Work Examination at Sri Venkateswara College of Engineering on 28-05- 2024.

• Dr. P. Sangeetha has received "Certificate of Advisory Board Membership" from Journal of Research on Engineering Structures & Materials.

• Dr. P. Sangeetha ICI student chapter - civil received an “Outstanding Student Chapter Award 2023” from Indian Concrete Institute on 09/01/2024.

• Dr. P. Sangeetha has attended the DC meeting of the scholar, Mr. Mohammed Javeed Siddique pursuing his Ph.D., program at VIT University on 18/04/2024 through Online platform.

• Dr. Sangeetha P delivered an invited lecture titled "Steel Concrete Composite Structures" in the Faculty Development Program “Recent Advances in Structural Engineering” (RACE2024) at Hindustan Institute of Technology and Science, Padur on 09-05-2024.

• Dr. Sangeetha P has been invited as an external auditor for the question paper and evaluation of answer scripts by the COE of Sona College of Technology, Salem on 11-05- 2024.

• Dr. Sangeetha P has been invited as an external auditor for academic and administrative audit by the IQAC cell of Sri Sai Ram Engineering College on 17-05-2024.

• Dr. R. Vijayalakshmi acted as session chair for the International Conference on Sustainable Environment & Civil Engineering (ICSECE’24) at Easwari Engineering College on 17/04/24.

• Dr. S.V Sivapriya delivered an invited lecture titled "Sustainable materials in soil stabilization" as a part of "Second Six Days Workshop on Emerging Trends & Applications in Civil Engineering" organized by "SRM Institute of Science and Technology" on "29.01.2024" via " Online platform".



• Dr. S. V. Sivapriya has been appointed to the Program Advisory Committee in Agni College of Engineering, Chennai on 20 -03-2024.

• Dr. S.V. Sivapriya has attended the DC meeting for PhD topic confirmation for research scholar at SRM University, Kattankulathur on 29/04/2024.

• Dr. S. V. Sivapriya has delivered an invited lecture titled "Landslides: Landslide: Cause, Consequence, Mitigation and Prediction" as a part of "3rd IEEE International Conference on Artificial Intelligence for IoT," organized by "VIT, Vellore" on "26.04.2024" held via "Online platform".

• Dr. Surendar Natarajan has acted as resource person in five-day International Faculty Development Program on “Artificial Intelligence & Machine Learning in Civil Engineering” at SNIT, Adoor-Kerala organized by Department of Civil Engineering at Sree Narayana Institute of Technology Adoor from 19-2- 2024 to 23-2-2024.

• Dr. Surendar Natarajan acted as Invited Speaker titled "Flood Susceptibility Mapping by Multi-Criteria Decision Analysis a Study on Idukki District, Kerala-India" in First Indian Conference on Disaster Resilient Infrastructure I-DRI 2024 from 7th to 8th March 2024 at National Institute of Technology , Puducherry.

• Dr. Surendar Natarajan has delivered an Invited lecture in Faculty Development Program on "Integrating Geo-Spatial & ML Techniques organized by Shri Vishnu Engineering College for Women: Bhimavaram (Autonomous), Andhra Pradesh on 25-05-2024 through online.



10.2 RESEARCH SCHOLARS NEWS

• Dr. N. Sivakumar has been appointed as joint-supervisor on 02/01/2024 for the PhD scholar Mr. Vinay Venkatraman from Shiv Nadar University, Chennai.

• Dr. P. Sangeetha has conducted the First DC meeting for full time scholar Ms. Prithvi R (Ph.D. scholar) on 8-1-2024 at 2.00 pm through online mode.

• Dr. R. Vijayalakshmi has conducted the first doctoral committee meeting for Ms. T. Karunyaa (Reg No. 24231991124) on January 9th, 2024 (Tuesday) at 10:15 AM through online mode.

• Dr. R. Vijayalakshmi has conducted the first doctoral committee meeting for Ms. R. Keerthana (Reg No. 24221991160) on January 8th, 2024 (Monday) at 2:00 PM through online mode.



- Dr. R. Vijayalakshmi conducted the first doctoral committee meeting for Mr. Dinesh Kumar V (Reg No. 24141991181) on February 1st, 2024 (Thursday) at 11:15 AM through online mode.

- Dr. R. Vijayalakshmi has conducted the first doctoral committee meeting for. Ms. T. Karunyaa (Reg No. 24231991124) on January 9th, 2024 (Tuesday) at 10:15 AM through online mode.

- Dr. S. V. Sivapriya has conducted First Monitoring Meeting for Ms. Sruthi Reddy (M.S research scholar) on 09.01.2024 by 11.00 am through online.

- Dr. S. V. Sivapriya conducted the First DC meeting for Mr. Shivashankar (Ph.D. scholar) on 09.01.2024 at 10.30 am through online mode.

- Dr. S. V. Sivapriya conducted the First DC meeting for Ms. Beaula Jasmine (Ph.D. scholar) on 19.01.2024 at 2.00 pm through online mode.

- Dr. S. Ramana Gopal has conducted the first doctoral committee meeting for. Mr. Tamizharasan N (Reg No. 24121991146) on January 9th, 2024 (Tuesday) at 10:15 AM through online mode.

- Dr. Aswin Sriram has conducted the first doctoral committee meeting for. Ms. Easwasry P (Reg No. 24221991173) on January 10th, 2024 (Tuesday) at 10:30 AM through online mode.

- Dr. Aswin Sriram has conducted the first doctoral committee meeting for. Ms. Mala C (Reg No. 24221991174) on January 10th, 2024 (Tuesday) at 3.00 PM through online mode.

- Ms. S. Pavithra registered as a full-time scholar under Dr. Sivapriya S.V under Anna University, as on March, 2024.



10.3 Workshops / Webinars attended

- Dr. S. V. Sivapriya attended an Online Webinar on 'Circular Economy for sustainable waste management' held on 27th October 2023, organized by Dept. of Civil Engineering, Adithya Institute of Technology, Coimbatore

- Dr. N. Sivakumar has attended a Webinar on Innovative construction techniques in Signature Bridge, Delhi and it was organized by Ultratech cement on January 6th, 2024.



- Dr. Manthiram Karthik has attended an Online webinar on "Investigations of Groundwater contamination with NAPL Petroleum Spills and Remediation" held on 8th February 2024, organized by University of Illinois, Chicago.
- Dr. Manthiram Karthik has attended a Webinar on "The Many Faces of HDPE Geomembranes and the Effect on the Service Life" held on 29th February 2024, organized by University of Illinois Chicago, USA.

10.4 Events conducted

- Dr. S. V. Sivapriya has organized a "Chit-Chat Session" delivered by "Ms. Jemimah J" on "12.01.2024" held via "Online platform" for "2 & 3rd Year of study of students" under the banner of "Association of Civil Engineers."
- Dr. R. Vijaya Lakshmi, Dr.P.Sangeetha & Dr. Sivapriya organized a 5th International conference on Sustainable Practices and Innovations in Civil Engineering (SPICE '24) organized by the Department of Civil Engineering, Sri Sivasubramaniya Nadar College of Engineering, Chennai, and held on 14th and 15th February 2024.
- Dr. Srinath R and Dr. Aswin Sriram G organized a 6-day Faculty Development Program on "Comprehensive Industrial Sustainability: Carbon, Environmental Impact and Safety Enhancement (CISES)" on 5-2-2024 to 10-2-2024 at Civil Engineering Department Sri Sivasubramaniya Nadar College of Engineering , Chennai.
- Dr. S.V. Sivapriya has organized "Live Streaming of Gilli movie " on 25.03.2024 held at Mini Auditorium for All students under the banner of "Kraciva"
- Dr. S. V. Sivapriya has organized "National Safety Day" along with CREDAI, Chennai on 4th, March 2024 in CREDAI Chennai, Teynampet.
- Dr. Surendar Natarajan has organized a guest lecture titled "Guest Lecture on "High Rise Buildings- Life Safety & Evacuation" on "26-3-2024 for "civil engineering students" under the banner of "SSN ICE(UK) student Chapter" at SSN CE. Mr. Rajah Venkatraman President of IIT Kharagpur Alumni Foundation acted as speaker.





- Dr. S.V. Sivapriya has organized a guest lecture on "Orientation of Bureau of Indian Standard" delivered by Mrs.G.Bhavani. Scientist E, Head of Chennai Office, BIS on 19.02.2024 for civil engineering students under the Association of Civil Engineers.
- Dr. Ramana Gopal S has organized a guest lecture on the topic "Finite Element Analysis for Structures" Dr. K. Jayabal, from IITDM, Kancheepuram on 26/12/2024.
- A Seminar was organized by the Department of Civil Engineering on the topic "Outcome Based Education" delivered by Prof. Ganesh Samudra, NUS Singapore on 24/02/2024.
- Dr. Surendar Natarajan & Dr.N.Sivakumar organized a Seminar on "Introduction to IStructE". Ms.Yasmin Becker CEO The Institution of Structural Engineers, UK acted as speaker of the event conducted under SSN ICE (UK) Student Chapter.
- Dr. S. V. Sivapriya acted as organizing committee member for "Women Indian Geotechnical Conference" organized by College of Engineering Guindy Anna University from 08-03-2024 to 09-03.2024.
- Dr. S.V. Sivapriya has organized "Live Streaming of Gilli movie " on 25.03.2024 held at Mini Auditorium for All students under the banner of "Kraciva"
- Dr. S. V. Sivapriya has organized "National Safety Day" along with CREDAI, Chennai on 4th, March 2024 in CREDAI Chennai, Teynampet.
- Dr. Surendar Natarajan has organized a guest lecture titled "Guest Lecture on "High Rise Buildings- Life Safety & Evacuation" on "26-3-2024 for "civil engineering students" under the banner of "SSN ICE(UK) student Chapter" at SSN CE. Mr. Rajah Venkatraman President of IIT Kharagpur Alumni Foundation acted as speaker.
- Dr. Aswin Sriram has organized the VAC titled "Quality Control in Construction" for the II-year civil engineering students during Feb-March 2024. Mr. Sai Prasanna from AIS Consulting - UK, Mr. Prasad - Architect, Mr. Prasad Selvam - L&T were part of the experts who delivered the VAC sessions to the students.
- Ms. Sumetha has coordinated two Value Added Course sessions on 21-03-2024 and 22-03-2024 on "Quality Control and Management" by Mr. Prasad Selvam S R, Senior Manager, L&T Constructions as part of the Value-Added Course on "Practical Aspects of Civil Engineering"





- Ms. Sumetha has Co-ordinated a Value-Added Course session on 22-03-2024 on "Quantity Take-off" by Mr. Muthukumar D, Chief Manager, L&T Constructions as part of the Value-Added Course on "Practical Aspects of Civil Engineering".
- Dr. Srinath, Dr. Aswin Sriram G and Ms. Sumetha R coordinated the World Water Day 2024 celebration on 25-03-2024. The event included a project presentation and water treatment system model demo followed by a discussion session with students.
- Dr. Sangeetha P has organized an ICI Fest for the students of Civil Engineering on 22/03/2024.
- Dr.Sangeetha P coordinated the training program for women engineers to work from home to balance their work life.
- Dr. S. V. Sivapriya organized an "Appreciation Day" on 30/04/2024 under the banner of Association of Civil Engineers " in Civil Engineering Department.
- Ms. R. Sumetha organized a session on "Career Prospects for Civil Engineers" as part of the Value-Added Course on "Practical Aspects of Civil Engineering" by Mr. Sivaji Gandham, Director - Project Management at CBRE South Asia Private Limited on 17/04/2024.
- Ms. R. Sumetha organized a session on "Safety in construction & legal Aspect Safety Management" as a part of the Value-Added Course on "Practical Aspects of Civil Engineering" by the team from CBRE South Asia Private Limited on 17/04/2024.
- Dr. Aswin Sriram conducted Value added course titled "Quality Control in Construction" for second year students from February to April 2024.
- Dr. Aswin Sriram organized a session, "Why Quality" by Mr. Ferno Susai, HVAC Consultant on 16/04/2024 as part of the Value-added course titled Quality Control in Construction.
- Dr.Surendar Natarajan Organized Hands on Workshop on Structural Design and Analysis Using Bentley STAAD PRO under ICE (UK) student chapter from 24/4/2024 to 25/04/2024.
- Dr.Surendar Natarajan Organized a Site visit under ICE(UK) student chapter to Vidya Gyan School for Civil Engineering students on 17/04/2024.



- 
- Dr. S. V. Sivapriya organized a guest lecture titled "Importance of Triaxial Test in Soil Testing" delivered by "Mr. Karthikeyan M, Geotechnical Engineer, Minerva Soil Testing Pvt., Ltd., Chennai" on "20.05.2024" held via "Online platform" for "2, and 3rd year students" under the banner of "Association of Civil Engineers"
 - Dr. Aswin Sriram conducted a Seminar on Introduction to Startups for Civil Engineering Students, delivered by Ms. Roopa Kannan on 16.05.2024 held at the Department of Civil Engineering for first year students.
 - Dr. Surendar Natarajan organized a guest lecture titled "Irrigation Structures Outline & Model Study Applications for Hydraulic Structures" delivered by "Er. Balaji C, Assistant Engineer (PWD), Institute of Hydrology & Hydraulics, Poondi" on "17.05.2024" for civil engineering students" under the banner of "ICE (UK) students' chapter.
 - Dr. Surendar Natarajan organized a National level Competition on "Sustainable and Decentralized Urbanization on 14-4-2024" for Civil Engineering Students across Nation under the banner of SSN - ICE Student Innovation Challenge 2024: ICE (UK) Student Chapter on 27-4-2024.

10.5 Alumni Visits

- Naresh Ashwen Ve S (2018-2022) batch visited Civil Department on 24.02.2024 and reminisced his college days experiences. Naresh is an avid sportsperson and has represented our Sri Sivasubramaniya Nadar in Sepaktakraw (foot volleyball) at university levels. He received his appreciation award from the current Tamil Nadu Sports Minister on 23.02.2024.
- Vel Kruthik (2018-2022) Batch visited Civil Department on 01.03.2024 and interacted with our present third years on the Job prospects after college. Vel Kruthik is working in J&F (Previously Hochtief) which is an internationally recognized engineering consultancy firm specializing in MEP (Mechanical, Electrical, Plumbing), structural engineering, and BIM (Building Information Modeling) services. They have a team of over 500 engineers and detailers across five countries. Vel kruthik is working in Chennai Branch, put up at Guindy. He also interacted with our HOD and discussed the internship opportunities in J&F for Sri Sivasubramaniya Nadar third year students.



- Mr. Vaishnav Krishnan and Mr. Naveen Prasath of 2019-23 batch visited the campus and interacted with the alumni coordinator about their job portfolio and industry requirements on 14th March 2024.
- Mr. Nambirajan T SRF IIT Roorkee, alumnus of Batch 2012-2016 visited our department on 24-05-2024. He discussed with Alumni Coordinator and HOD about his research activities.
- Mr. Kilwish Nighjo, alumnus of Batch 2019-2023 visited department on 09-05-2024. He discussed with Alumni Coordinator and HOD about his entrepreneurship activities.

10.6 Notable Visitors

- Er. Muralidharan, ICI chairman has visited us and inaugurated the 6-day Faculty Development Program on "Comprehensive Industrial Sustainability: Carbon, Environmental Impact and Safety Enhancement (CISES)" on 05/02/2024.
 - Mr. Girish Viswanathan, Director Technical-Earthonomics Engineers "handled a session for the 6-day Faculty Development Program" on "Comprehensive Industrial Sustainability: Carbon, Environmental Impact and Safety Enhancement (CISES)" on 06/02/2024.
 - Dr. S.V. Srinivasan, Senior Principle Scientist CSIR CLRI Chennai "handled a session for 6-day Faculty Development Program" on "Comprehensive Industrial Sustainability: Carbon, Environmental Impact and Safety Enhancement (CISES)" on 07/02/2024.
 - Mr. P. M Chandrasekaran, QMS Auditor Tuv Nord Chennai "handled a session for 6-day Faculty Development Program" on "Comprehensive Industrial Sustainability: Carbon, Environmental Impact and Safety Enhancement (CISES)" on 08/02/2024.
 - Dr. Murali Janakaraj Director, Innovotek private limited, Chennai "handled a session for 6-day Faculty Development "on "Comprehensive Industrial Sustainability: Carbon, Environmental Impact and Safety Enhancement (CISES)" on 09/02/2024.
 - Mr. Natarajan Shankar Design Engineer at Walliflower Designs "handled a session for 6-day Faculty Development Program" on "Comprehensive Industrial Sustainability: Carbon, Environmental Impact and Safety Enhancement (CISES)" on 10/02/2024.





- Dr. Sasitharan, A/L Nagapan Associate Professor, Department of Civil Engineering and built environment, from University Tun Hussein Onn Malaysia (UTHM), Malaysia delivered a keynote session during SPICE 2024 conducted on 14th and 15th February 2024 at Sri Siva Subramania Nadar College of Engineering , Chennai.
- Dr. Bonaventura H.W. Hadikusumo from Professor, Construction Engineering and Infrastructure Management, Asian Institute of Technology, Thailand delivered an online keynote session during SPICE 2024 conducted on 14th and 15th February 2024 at Sri Siva Subramania Nadar College of Engineering, Chennai.
- Dr. Palani G. S Chief scientist, CSIR - Structural Engineering Research Centre, Chennai., Chennai acted as a keynote speaker during SPICE 2024 conducted on 14th and 15th February 2024 at Sri Siva Subramania Nadar College of Engineering, Chennai.
- Dr. S. Surya Prakash from IIT Hyderabad acted as a keynote speaker during SPICE 2024 conducted on 14th and 15th February 2024 at Sri Sivasubramania Nadar College of Engineering, Chennai.
- Dr. S. Ganesh Kumar Senior Scientist, Geotechnical Engineering, CSIR, Roorkee acted as a keynote speaker during SPICE 2024 conducted on 14th and 15th February 2024 at Sri Sivasubramania Nadar College of Engineering, Chennai.
- Dr. Prakash Nanthagopalan Associate Professor, Construction Technology and Management, Department of Civil Engineering, IIT Bombay. acted as a keynote speaker during SPICE 2024 conducted on 14th and 15th February 2024 at Sri Sivasubramania Nadar College of Engineering, Chennai.
- Dr. K. Jayabal, Associate Professor IIITDM Kancheepuram has delivered a Guest lecture on “Finite Element Analysis for Structures” on 26/02/2024.
- Mrs.G.Bhavani. Scientist E, Head of Chennai Office, visited the civil engineering department and interacted with students regarding “BIS” on 19.02.2024 for civil engineering students under the Association of Civil Engineers.
- Ms. Yasmin Becker CEO the Institution of Structural Engineers, UK visited Sri Sivasubramania Nadar College of Engineering, Civil Engineering Department on 29-2-2024 and delivered a Seminar on “Introduction to IStructE.”





Mr. Prasad Selvam S R, Senior Manager Larsen & Toubro Ltd., Infrastructure IC visited and handled two sessions on Quality Control and Management - Building Materials and In-situ Construction as part of the Value-Added Course on 21-03-2024 in “Practical Aspects of Civil Engineering”.

- Mr. Muthukumar D, Chief Engineering Manager at Larsen & Toubro Ltd., EDRC Nuclear Group, visited and handled a session on Quantity Take-off as part of the Value Added Course on 22-03-2024 in "Practical Aspects of Civil Engineering".

10.7 Faculty Development Programme

- Dr. P. Sangeetha has attended FDP on 'Network Reliability in WSN for Agricultural Applications' sponsored by SPARC held from 5th to 9th, January 2024 organized by Department of ECE, SSN College of Engineering, Chennai.

- Dr. Surendar Natarajan participated in Online Short-Term Course (e-STC) on 'Computational Methods in Water Resources Engineering and Management (COM-WREM 2024)" held from 1/3/2024 to 5/3/2024, organized by Dept. of Civil Engineering, National Institute of Technology Hamirpur, Himachal Pradesh.

- Dr. Rajkumar attended a Faculty Development Program through Virtual mode on Recent Advances in Civil Engineering (RACE 2024) from 11th to 15th March (5 Days), organized by Department of Civil Engineering, Sathyabama Institute for Science and Technology, Chennai, Tamil Nadu.

- Dr. Srinath Rajagopalan has participated in Faculty Development Program on "Universal Human Values II" held from 25-03-2024 to 30-05-2024, organized by All India Council for Technical Education (AICTE).

- Dr. Surendar Natarajan has participated in Faculty Development Program on "Universal Human Values II" held from 25-03-2024 to 30-05-2024, organized by All India Council for Technical Education (AICTE).





10.8 Patent Info

- Dr.Y.K. Sabapathy was granted a patent on “Short Rigid Fibre Reinforced Concrete, with Patent No: 507984. Patentee: Sri Sivasubramaniya Nadar College of Engineering

10.9 Project News

- Dr.Ramanjaneyulu has secured DST grant of Rs 87 Lakhs as Co-PI in collaboration with SERC.

Dr. Sangeetha P as PI submitted a project proposal titled “Microstructural, Strength and Durability Characteristics of concrete with Seashell Waste as partial replacement of cement and aggregates” for amount of Rs. 28,01,324/-

- Dr. S. V. Sivapriya as PI submitted a project proposal titled “Behaviour of compaction pile with partial and full replacement of sand with copper stag for soil stabilization” for amount of Rs. 26,98,000.

- Dr. R. Vijayalakshmi as PI submitted a project proposal titled “Development of natural fiber-reinforced polymer composites for repair and retrofitting of structural members” for an amount of Rs. 25,50,008/-

- Dr. N. Sivakumar as PI, Dr.Srinath Rajagopalan and Dr.Surendar Natarajan as Co-PI submitted a research proposal for Rs 5,00,000 to DST Under Vaibhav Scheme on 15-3-2024 titled "Nature based solutions for disaster and climate resilience A case study of Chennai". Collaborator is Prof. Dr.R.Balasubramaniam, NUS.

- Dr. V.E. Annamalai Dr. A. Shahina, Dr. T.T. Mirnalinee, Dr. Srinath Rajagopalan, Dr. Ashwin Sriram, Mr. Ajith PK, Dr. Devi Ramamoorthy submitted a proposal on Unveiling the Potential of AI to Combat Plastic Pollution Proposal under AICoE Make AI in India and Make AI Work for India Submitted on January 2024 for INR 1,92,20,000.



10.10 Industrial Collaborations:

- Dr. S. V. Sivapriya has carried out a site visit & consultancy work to prepare a report and suggest a foundation for 5 sites for Minerva Soil Testing Pvt. Ltd for Rs. 18,500/-.
- An MoU was signed between Sri Sivasubramnaiya Nadar College of Engineering and the “Confederation of Real Estate Developers Associations of India” (CREDAI) on 30.01.2024. The outline of the MoU is to create a platform for students to experience the current ongoing trends in the construction industry.
- Dr. Surendar Natarajan and Dr. R.Vijayalakshmi has organized an Industrial visit to II year Civil Engineering Students to Coorg, Chickmagalur visited HR Dam under the banner of "SSN ICE(UK) student Chapter" from 15-3-2024 to 19-3-2024.
- Dr. P Sangeetha has carried out a consultancy work to Aryabhata Brandt Urban Analytical Service Ltd. to enumerate vehicle using CCTV data placed in Chennai on 07/03/2024.

10.11 Other Activities

- Dr. N. Sivakumar has reviewed one manuscript for Construction and building materials-Elsevier.
- Dr. S. V. Sivapriya has reviewed one manuscript for the journal 'Mechanics of Advanced Composite Structures'.
- Dr. S. V. Sivapriya has reviewed one manuscript for the journal 'Cogent Engineering'.
- Civil Engineering Department has undergone NBA Accreditation Audit from 15th December to 17th December 2023 for Undergraduate course.
- Dr. N. Sivakumar has reviewed one paper for construction and building materials- Elsevier.
- Dr. S. V. Sivapriya has reviewed one manuscript for the journal 'Australian Journal of Multi-Disciplinary Engineering' published by Taylor and Francis.
- Dr. P. Sangeetha has reviewed one manuscript for the journal 'Research on Engineering Structures and Materials' published by a research group.

• Dr. Sangeetha P has reviewed one manuscript for the journal 'Innovative Infrastructure Solutions' published by Elsevier B.V.

• Dr. N. Sivakumar has reviewed one manuscript for Construction and Building Materials- Elsevier.

• Dr. Rajkumar R chaired a Technical Session in the 5th International conference on Sustainable Practices and Innovations in Civil Engineering (SPICE '24) organized by the Department of Civil Engineering, SSNCE and held on 14th and 15th February 2024.

• Dr. Manthiram Karthik chaired a technical session in the 5th International Conference on Sustainable Practices and Innovations in Civil Engineering - SPICE 2024, held on 14-15th February 2024, organized by Sri Siva subramaniya Nadar college of Engineering, Chennai.

• Dr. Surendar Natarajan chaired a technical session in the 5th International Conference on Sustainable Practices and Innovations in Civil Engineering - SPICE 2024, held on 14-15th February 2024, organized by Sri Siva subramaniya Nadar college of Engineering, Chennai.

• Dr. Aswin Sriram G chaired a technical session in the 5th International Conference on Sustainable Practices and Innovations in Civil Engineering - SPICE 2024, held on 14-15th February 2024, organized by Sri Siva subramaniya Nadar college of Engineering, Chennai.

• Dr. Srinath Rajagopalan chaired a technical session in the 5th International Conference on Sustainable Practices and Innovations in Civil Engineering - SPICE 2024, held on 14-15th February 2024, organized by Sri Sivasubramaniya Nadar College of Engineering, Chennai.

• Ms. Sumetha R chaired a technical session in the 5th International Conference on Sustainable Practices and Innovations in Civil Engineering - SPICE 2024, held on 14-15th February 2024, organized by Sri Siva subramaniya Nadar college of Engineering, Chennai.

• Dr. S. V. Sivapriya reviewed a manuscript for the journal "Multiscale and Multidisciplinary Modeling, Experiments and Design", published by Springer.

• Dr. N. Sivakumar reviewed a manuscript for QEIOS journal.

• Dr. N. Sivakumar reviewed two papers for Construction and building materials Journal- Elsevier

Dr. N. Sivakumar reviewed a manuscript for Institution of Engineers India - Series A journal.



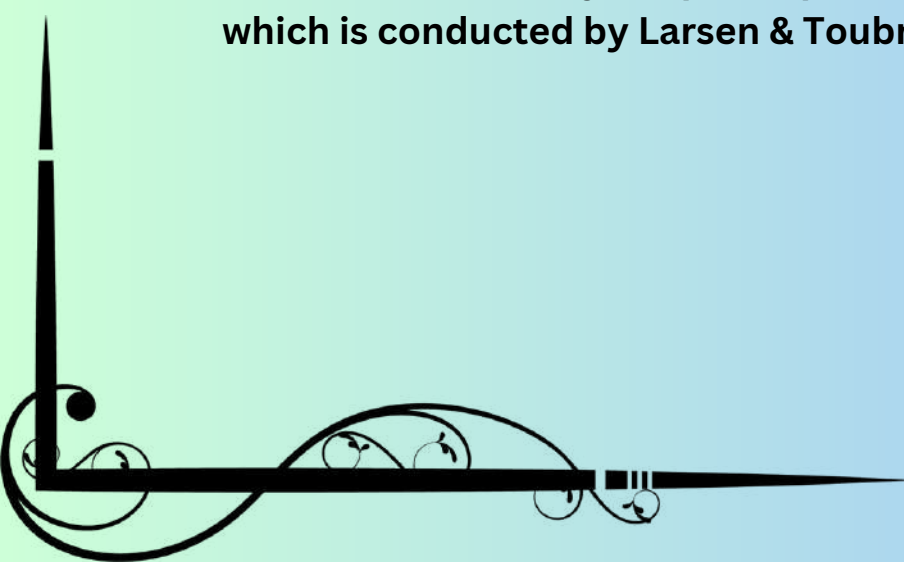
- Dr. S.V. Sivapriya has obtained a Deep India Foundation membership - 24059.
- Dr. N. Sivakumar reviewed a manuscript for Research on Engineering Structures and Materials journal.
- Dr. N. Sivakumar has reviewed one manuscript for the journal Construction and Building materials Elsevier.
- Dr. N. Sivakumar has reviewed one manuscript titled “Thickening mechanism under high compression stress based on double yield stress: Comparison between compression and compression-shear coupling” for the journal Construction and Building materials Elsevier.
- Dr. N. Sivaar Thickening mechanism under high compression stress based on double yield stress: Comparison between compression and compression-shear coupling for the journal Construction and Building Materials Elsevier.
- Dr. P. Sangeetha has reviewed one manuscript for the 'KSCE Journal of Civil Engineering' published by Springer.
- Dr. S. V. Sivapriya has reviewed one manuscript for the journal 'Ocean Engineering' published by Elsevier B.V.
- Dr. Sivakumar N has completed a certificate course on "Leadership skills and team management" from Alison, USA and the duration of course is 12hrs.
- Dr. Sivakumar N has reviewed two manuscripts for Construction and Building Materials- Elsevier.
- Dr Sangeetha P has reviewed one manuscript for the journal 'Innovative Infrastructure Solutions' published by Springer.
- Dr Sangeetha P has reviewed one manuscript for the journal 'Research on Engineering Structures and Materials' published by MIM Research Group.
- Dr. K. Ramanjaneyulu is involved in preparation of details w.r.t "Centre of Excellence for Sustainable materials", along with other colleagues Dr. Sangeetha and Dr. Sivapriya.
- Dr. K. Ramanjaneyulu is involved in formulating feedback forms to get feedback from stake holders w.r.t R2021 Curriculum and Syllabus, along with colleague Ms. Sumetha.

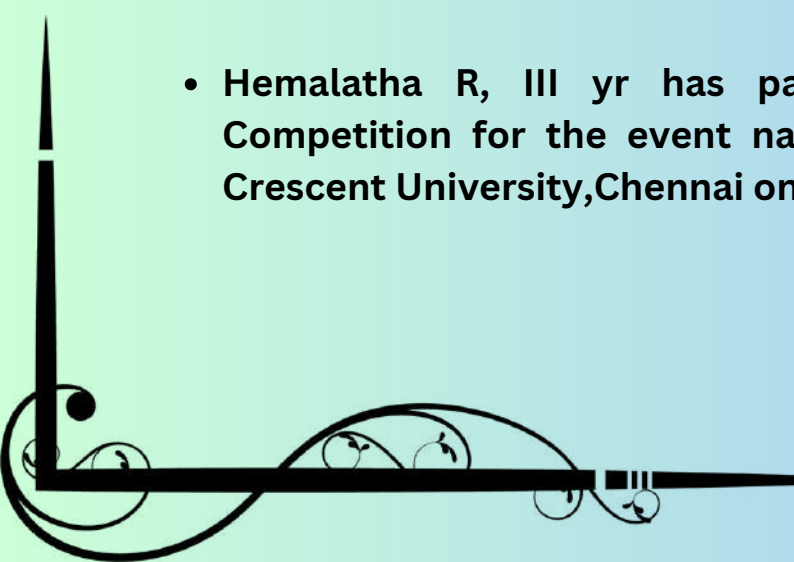


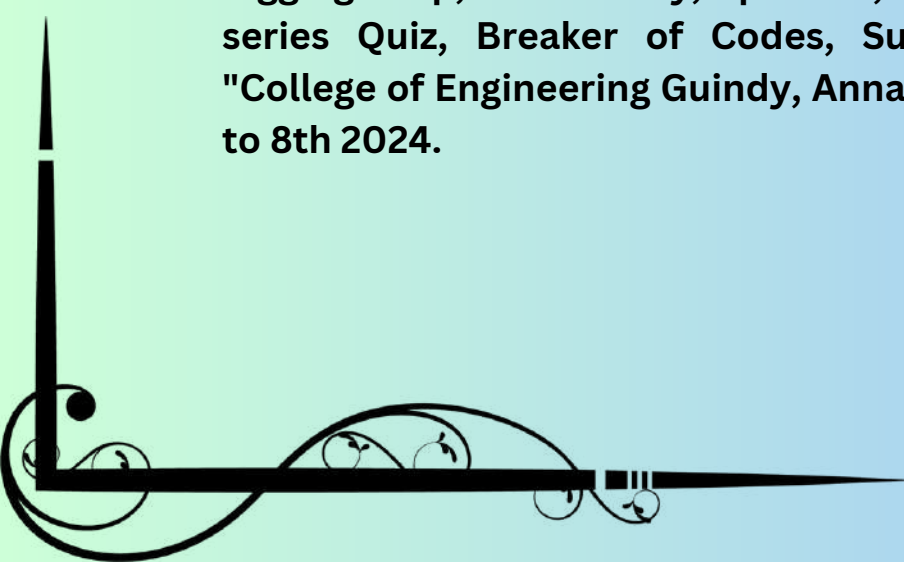
11. STUDENT ACTIVITIES

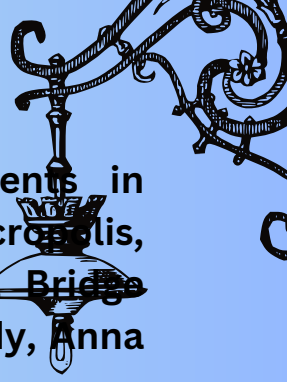
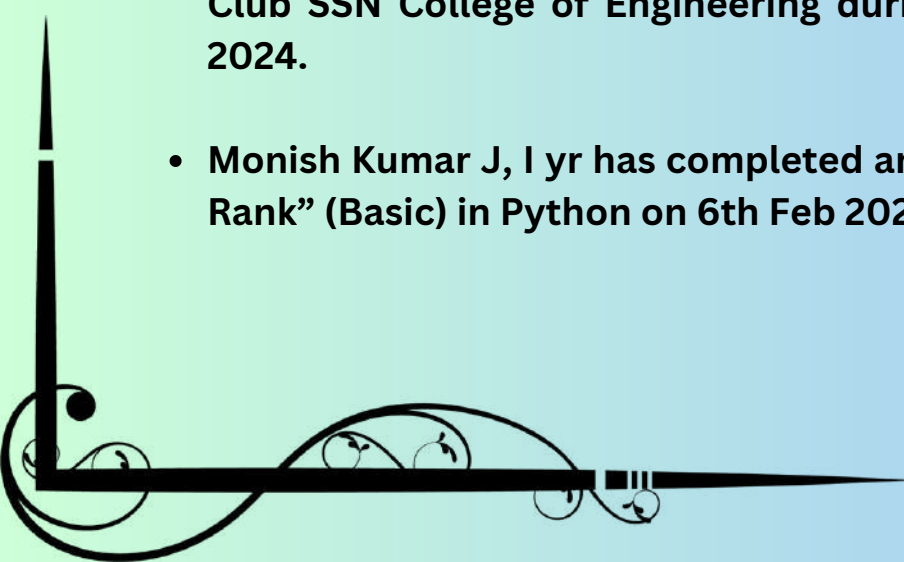
11.1 STUDENT EXTERNAL RECOGNITION CO-CURRICULAR

- Kuchi Phani Soumika, IV year has participated in Workshop on "DGPS, Drone and LIDAR: The Future of Surveying Techniques" conducted on 19th October 2024.
- Kuchi Phani Soumika, IV year has attended a webinar on Navigating the pathways of publishing high quality journals - By Elsevier."
- S. Dakshetha, III year has participated in Quizathon 2.0 organized by ICI, Student's chapter.
- S. Dakshetha, III year has participated in Workshop on "DGPS, Drone and LIDAR: The Future of Surveying Techniques" conducted on 19th October 2024.
- Kalaimagal V P (batch 2020-2024), IV year has received a Certificate for AutoCAD Workshop from Learn Delta.
- Kalaimagal V P (batch 2020-2024), IV year has received a certificate for Paper presentation at Sairam Engineering College from the topic of Water Quality Prediction in Chennai District Using Machine Learning Techniques
- Shabar Shabir (batch 2020-2024), IV year has presented the paper in 5th sustainable practices and innovation in Civil engineering 2024 which was held on 14th and 15th February 2024.

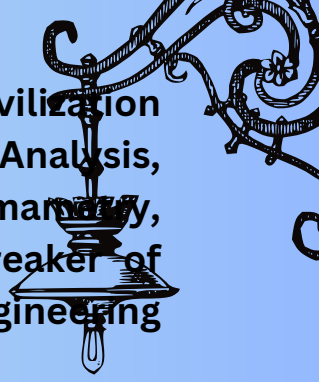
- 
- **Shahista Ali (batch 2020-2024), IV year has presented the paper in 5th sustainable practices and innovation in civil engineering during 14th and 15th 2024.**
 - **S. Dakshetha (batch 2021-2025), III yr has acted as an organizer in SPICE 2024 International Conference which was conducted during 14th and 15th 2024.**
 - **S. Dakshetha (batch 2021-2025), III yr has participated in the Quiz on Quality and Standards 2.0 conducted by BIS in February 2024.**
 - **Jeevitha R (batch 2021-2025), III yr participated in national level quiz competition under the topic of 'Quality and standards -2' conducted by Bureau of Indian Standards (BIS) in February 2024.**
 - **S. Harini (batch 2021-2025), III yr participated in national level quiz competition under the topic of 'Quality and standards -2' conducted by Bureau of Indian Standards (BIS).**
 - **Yogesh B (batch 2020-2024) IV yr has conducted a workshop on STAAD-Pro to the second year (batch 2022-2026) on 21-2-2024 under Student-teaching- student initiative.**
 - **Adarsh C from IV-year Civil Engineering has obtained IGBC AP Associate certification from CII- Indian Green Building Council with a score of 101/110.**
 - **Raviraam of III year participated in a hackathon TECHGIUM which is conducted by Larsen & Toubro 26th December 2023.**
 - **N.Annamalai of III year participated in a hackathon TECHGIUM which is conducted by Larsen & Toubro on 26th December 2023.**
- 

- 
- N. Annamalai III year participated and won a First prize in Infinity Hunt (TREASURE HUNT) which is conducted by the department of civil engineering SSN - ICI Student Chapter.
 - Vanaja M J IV year has made an Academic achievement and received second rank in 7th semester in civil engineering department.
 - R.Hemalatha, III yr won in the Inter college Competition for “Civilian 2024” conducted in Crescent University, Chennai on “02/04/2024.
 - Kanishkumar. S, IV yr has won a medal for the event named. "CONCRAZE" from Anna University- ICI (Indian concrete institute) as on 30/04/2024.
 - Thosi.G, IV yr has won a medal for the event named "CONCRAZE" from Anna University- ICI (Indian concrete institute) as on 30/04/2024.
 - Vedajanani S, IV yr has won a medal for the event named "CONCRAZE" from Anna University- ICI (Indian concrete institute) as on 30/04/2024.
 - S. Poorneshwaran, III yr won in the Inter college Competition of the event name “Civilian 2024” conducted in Crescent University, Chennai on 02/04/2024.
 - Anbunathan, III yr won in the Inter college Competition for the event name “Civilian 2024” conducted in Crescent University, Chennai on 02/04/2024.
 - Hemalatha R, III yr has participated in the Inter college Competition for the event name “Civilian 2024” conducted in Crescent University, Chennai on 02/04/2024.
- 

- 
- Dakshetha , III year has been a campus Ambassador of IITM for CEA fest on 29/04/2024.
 - Dakshetha , III year has been elected as an Assistant treasurer of ACE from 2023 to 2024 conducted on 30/04/2024.
 - Dakshetha , III year had participated in Bridge it, photography, land auction, start up and mix design conducted by Crescent College Chennai(Civiclan 2024) on 02/04/2024.
 - Dakshetha , III year Won 1st prize in flip tac toe, 1st prize in fireless cooking, 2nd prize in paper presentation, 2nd brain buzzer quiz, 3rd prize in quick fix conducted by Agni college (Refuerzo 2024) on 13/04/2024
 - Dakshetha , III year Won 1st price in mix design and 3 rd prize in start-up conducted by crescent college, Chennai (Civiclan 2024) on 02/04/2024
 - Dakshetha ,III year has participated in "Cube competition on mix it right" Conducted by SRM Easwari engineering college and received the certificate on 04/04/2024.
 - C.Adarsh, has participated in Concrete cube test competition conducted by Indian Concrete Institute along with SRM Easwari engineering college on 3/4/ 2024.
 - Saarusha, III yr has participated in several events in “Civilization 2024” namely (AutoCAD, Acropolis, Reveal the civil, Geowiz, digging deep, Primametry, Aptitude, Cricket Quiz, Kollywood Quiz, series Quiz, Breaker of Codes, Sustainable Artistry) held at "College of Engineering Guindy, Anna University" held on May 6th to 8th 2024.
- 

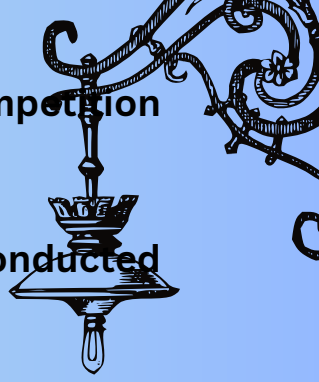
- 
- Kaviya Malar S, I yr has participated in several events in “Civilization 2024” namely (Archibuildo, Green building, Acropolis, bob the builder, reveal the civil, Geowiz, Digging deep, Bridge battle, Prima metry) held at " College Of Engineering Guindy, Anna University " held at May 6th to 8th 2024.
 - Nishta M N, III yr has participated in several events in “Civilization 2024” namely (AutoCAD, Acropolis, Reveal the civil, Geowiz, digging deep, Primametry, Apitude, Cricket Quiz, Kollywood Quiz, series Quiz, Breaker of Codes, Sustainable Artistry) held at "College of Engineering Guindy, Anna University" held at May 6th to 8th 2024.
 - Vinnie Silviyaa A, I yr has participated in ISRO online training program on “Exploration of The Solar System” conducted by ISRO from 24- 4-2024 to 10-05-2024.
 - Srinidhi Seran, III yr has participated in several events in “Civilization 2024” namely (AutoCAD, Acropolis, Reveal the civil, Geowiz, digging deep, Primametry, Aptitude, Cricket Quiz, Kollywood Quiz, series Quiz, Breaker of Codes, Sustainable Artistry) held at "College of Engineering Guindy, Anna University" held at May 6th to 8th 2024.
 - Monish Kumar J, I yr has completed an Online course in Coursera- Google IT Support Professional Certification and received certificate 1st October 2023.
 - Monish Kumar J, I yr has successfully completed the training in Google Cloud Study Jam conducted by Google Developer Student Club SSN College of Engineering during October 2023 to January 2024.
 - Monish Kumar J, I yr has completed an online course titled “Hacker Rank” (Basic) in Python on 6th Feb 2024.
- 

- 
- Monish Kumar J, I yr completed an online course on Amazon Web Services Webinar Awesome Day online conference on 16th November 2023 (Certification issued: 7 December 2023)
 - R Anbunathan, III yr has participated in several events in "Civilization 2024" namely (Archibuildo, Green building, Acropolis, bob the builder, reveal the civil, Geowiz, Digging deep, Bridge battle, Prima metry) held at "College of Engineering Guindy, Anna University" held at May 6th to 8th 2024.
 - Hemalatha R, III yr has participated in several events in "Civilization 2024" namely (Archibuildo, Green building, Acropolis, bob the builder, reveal the civil, Geowiz, Digging deep, Bridge battle, Prima metry) held at "College of Engineering Guindy, Anna University" held at May 6th to 8th 2024.
 - Poorneshwaran S, III yr has participated in several events in "Civilization 2024" namely (Archibuildo, Green building, Acropolis, bob the builder, reveal the civil, Geowiz, digging deep, Bridge battle, Prima metry) held at "College of Engineering Guindy, Anna University" held on May 6th to 8th 2024.
 - Rajalakshmi B, III yr has participated in several events in "Civilization 2024" namely (Archibuildo, Green building, Acropolis, bob the builder, reveal the civil, Geowiz, digging deep, Bridge battle, Prima metry) held at "College of Engineering Guindy, Anna University" held on May 6th to 8th 2024.
 - Harini, III yr has participated in several events in "Civilization 2024" namely (AutoCAD, Natural draft cooling tower – Analysis, Acropolis, Reveal the civil, Geowiz, digging deep, Primametry, Apitude, Cricket Quiz, Kollywood Quiz, series Quiz, Breaker of Codes, Sustainable Artistry) held at "College of Engineering Guindy, Anna University" held on May 6th to 8th 2024.
- 

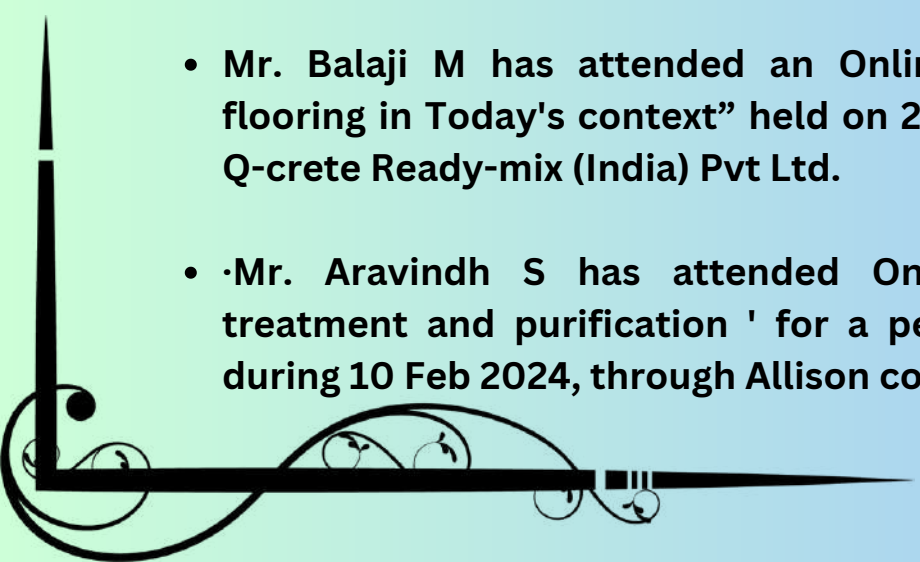
- 
- Jeevitha, III yr has participated in several events in “Civilization 2024” namely (AutoCAD, Natural draft cooling tower – Analysis, Acropolis, Reveal the civil, Geowiz, digging deep, Primametry, Apitude, Cricket Quiz, Kollywood Quiz, series Quiz, Breaker of Codes, Sustainable Artistry) held at "College of Engineering Guindy, Anna University" held on May 6th to 8th 2024.
 - Rahiena A, III yr has participated in several events in “Civilization 2024” namely (Autocad, Natural draft cooling tower – Analysis, Acropolis, Reveal the civil, Geowiz, digging deep, Primametry, Apitude, Cricket Quiz, Kollywood Quiz, series Quiz, Breaker of Codes, Sustainable Artistry) held at "College of Engineering Guindy, Anna University" held on May 6th to 8th 2024.

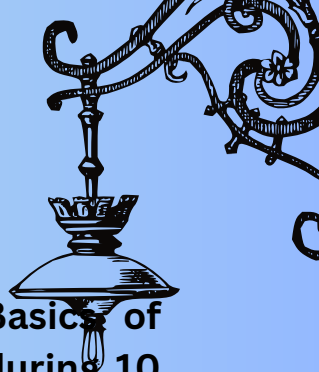
11.2 STUDENT EXTERNAL RECOGNITION EXTRA-CURRICULAR ACTIVITIES:

- PRASHANT S OF IV YEAR HAS WON 1ST PLACE IN GROUP DANCE COMPETITION IN KCT COLLEGE, COIMBATORE ON 22ND MARCH 2024.
- PRASHANT S OF IV YEAR HAS RUNNERS UP IN GROUP DANCE COMPETITION IN VIT CHENNAI, SRM KATTANKULATHUR, PATRICIAN COLLEGE OF ARTS AND SCIENCE.
- PRASHANT S OF IV YEAR HAS SECURED THIRD PLACE IN VIT VELLORE'S GROUP DANCE COMPETITION.
- PRASHANT S OF IV YEAR PARTICIPATED IN GROUP DANCE COMPETITION CONDUCTED IN IIM BANGALORE, CIT CHENNAI, CEG CHENNAI, REC CHENNAI.
- KUCHI PHANI SOUMIKA OF IV YEAR, PARTICIPATED IN TECHOFEST - THEME GROUP DANCE CONDUCTED BY CEG.
- KUCHI PHANI SOUMIKA OF IV YEAR, PARTICIPATED IN TECHOFEST - SOLO DANCE CONDUCTED BY CEG.

- 
- Prashant, IV year has won 1st place in dance competition conducted by Sastra University on 03/04/2024.
 - Prashant, IV year Won 1st place in dance competition conducted by Alagappa College of Technology 05/04/2024.
 - Prashant, IV year has Won 1st place in dance competition conducted by IIITDM Kancheepuram.
 - Ananth SP II year secured 3rd Place in a state-level Inter-college Election awareness Quiz on 13th April 2024 at Amma Maaligai Auditorium, Rippon Building, Greater Chennai Corporation and won cash prize rupees 5000 among 170 teams that participated across state.

12. NON-TEACHING STAFF ACTIVITIES

- Mr. Aravindh S has attended an Online Webinar on “Non-Tiled flooring in Today's context” held on 28th Dec 2023, organized by Q-crete Ready-mix (India) Pvt Ltd.
 - Mr. Princely K has attended an Online Webinar on “Non-Tiled flooring in Today's context” held on 28th Dec 2023, organized by Q-crete Ready-mix (India) Pvt Ltd.
 - Mr. Parthiban C has attended an Online Webinar “Non-Tiled flooring in Today's context” held on 28th Dec 2023, organized by Q-crete Ready-mix (India) Pvt Ltd.
 - Mr. Balaji M has attended an Online Webinar on “Non-Tiled flooring in Today's context” held on 28th Dec 2023, organized by Q-crete Ready-mix (India) Pvt Ltd.
 - Mr. Aravindh S has attended Online course titled 'Water treatment and purification ' for a period of One day attended during 10 Feb 2024, through Allison course.
- 



- **Mr. Princely K** has attended Online course titled 'Basics of Building Surveying' for a period of One Day attended during 10 Feb 2024, through Alison.
- **Mr. Parthiban C** has attended Online course titled 'How to estimate the cost of construction' for a period of One day attended during Feb 10, 2024, through Alison.
- **Mr. Balaji M** has attended Online course titled 'Introduction to Land Surveying' for a period of One day attended during June 2024, through Alison.
- **Mr. Balaji** has completed an Online course titled 'Basics of computer-Aided Design' for a period of One day attended during April 2024, through Alison.
- **Mr. Princely** has completed an Online course titled 'Basics of computer-Aided Design' for a period of One day attended during April 2024, through Alison
- **Mr. Parthiban** has completed an Online course titled 'Basics of computer-Aided Design' for a period of One day attended during April 2024, through Alison
- **Mr. Aravindh** has completed an Online course titled 'MS Project Basic' for a period of One day attended during April 2024, through Alison
- **Ms. Deborah G** has completed an Online Course on the topic “Safety in the Workplace” for the period of two weeks on 16/04/2024.

13. STUDENT ARTICLES

RECENT ADVANCEMENTS IN THE NANOMATERIAL APPLICATION IN CONCRETE AND ITS ECOLOGICAL IMPACT

KAVIYA MALAR S
1 YEAR CIVIL

Introduction:

Nanotechnology is revolutionizing the construction industry by introducing materials with enhanced properties and innovative functionalities. The integration of nanomaterials into construction processes promises to significantly improve the performance, durability, and sustainability of construction materials. This article explores the advantages and disadvantages of nanomaterials in construction, with a particular focus on their application in the concrete industry. By understanding the potential and challenges of nanotechnology, we can better appreciate its impact on modern construction practices.

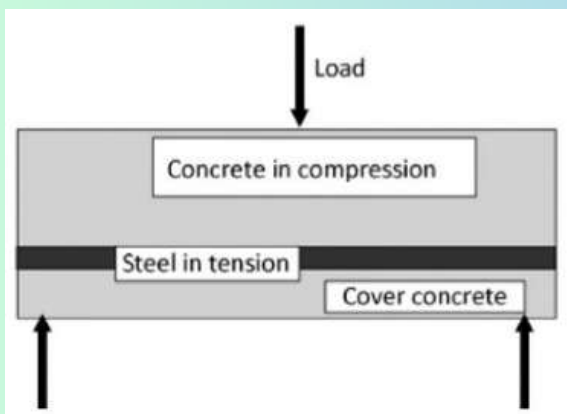
Nanomaterial Application in Concrete Industries:



Concrete has been extensively reviewed in several research works as a Nano enabled material, with many studies confirming the utilization of several nanomaterials. Figure 6 shows the applications of nanomaterials in concrete.

There is a relation between the bulk properties and microstructure, and therefore researchers are continuously trying to establish this relationship in concrete. In the following section, we will discuss the application of different nanomaterials such as Nano silica, carbon nanotubes (CNTs), ferric oxide, and nano-titanium oxide in concrete industries. It can be noted that majority of nano-based concrete products are still at the laboratory-scale level, and only a few products, such as Nano silica particles (Gaia) and polycarboxylate nanoproducts, have been commercialized and are used by the industry. Nanoparticle-incorporated concrete is also known as Nano concrete, and more commercialization is required.

Reinforced concretes are composite materials made up of various constituent materials with distinct properties that complement each other . For reinforced concretes, the component materials are mostly concrete and steel (Figure 1). Figure 2 shows semidry concrete that contains only enough water for the cementitious materials to hydrate and should be compacted using a roller. Current concrete structures require structural components that have improved mechanical properties and higher durability. This can be achieved by the incorporation of nanostructured materials in concrete materials that can improve their mechanical properties. The use of nanomaterials in concrete structures has been confirmed to provide increased durability and higher mechanical strength, which reduce their maintenance needs or any requirement for quick replacement.



APPLICATION OF NANO MATERIALS:

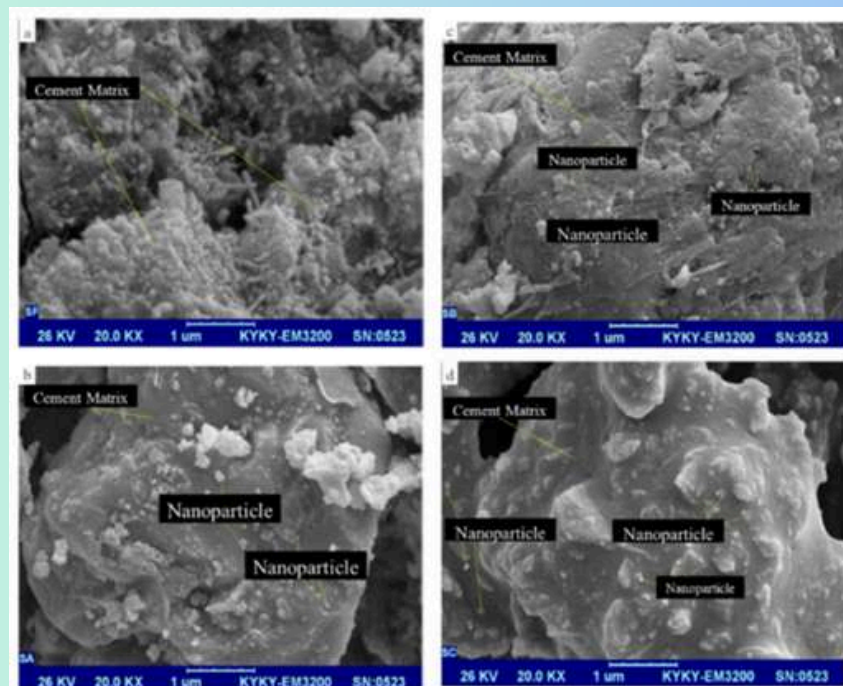
Table 1. Some of the utilizations of nanomaterials in the construction industry.

Sl. No.	Nanomaterial Used	Application Area in Construction	Properties
1	Aluminium oxide nanoparticles	Asphalt concrete, timber	Increased serviceability
2	Carbon nanotubes	Concrete	Crack prevention, mechanical durability
3	Titania nanoparticles	Concrete	Self-cleaning, increased degree of hydration
4	Silica nanoparticles	Concrete	Rapid hydration, reinforcement of mechanical strength
5	Copper nanoparticles	Steel	Formability, corrosion resistance
6	Iron oxide nanoparticles	Concrete	Abrasion-resistant, increased compressive strength
7	Clay nanoparticles	Bricks and mortar	Increased surface roughness and compressive strength

Sl. No.	Nanomaterial Used	Function	Details
1	Nanosilica	Overcome physical deteriorations —shrinkage	Nanosilica aggravated the drying shrinkage when admixed in cement composites
2	Carbon nanotubes	Overcome physical deteriorations —shrinkage	The admixed CNT decreased the porosity of the cementitious matrix
3	Nanosilica	Overcome physical deteriorations —freeze – thaw damage	Nanosilica reduced the frost damage
4	Nanosilica	Overcome physical deteriorations —freeze – thaw damage	Nanosilica improved the freeze – thaw resistance
5	Nanosilica	Overcome physical deteriorations —freeze – abrasion/erosion	Nanosilica increased the abrasion resistance
6	Nano-TiO ₂	Overcome physical deteriorations —freeze – abrasion/erosion	Nano-TiO ₂ increased the abrasion resistance
7	Nanosilica	Overcome chemical deteriorations —sulfate attack	Nanosilica decreased the mortar expansion
8	Nanosilica	Overcome chemical deteriorations —thermal degradation	Nanosilica increased the thermal resistance of the cement mortar
9	Carbon nanotubes and nanosilica	Improvement of mechanical properties	Compressive and flexural strength were enhanced for the nano-admixed mortar
10	Carbon nanotubes and nanosilica	Improvement of mechanical properties	Nanomaterials improved the compressive strength

FERRIC OXIDE (Fe₂O₃):

The optimum incorporation of ferric oxide nanoparticles in concrete specimens might increase the compressive strength. Kani et al. The properties of cement composites and mortars in the presence of ferric oxide nanoparticles as the modifier. The cement composite was synthesized by the sol-gel technique with the complex ligand tetraethylammonium orthosilicate. Ferric oxide nanoparticles were incorporated at 2.0, 4.0, and 6.0 wt % concentrations in the cement composite; whereas for mortars, 2.0, 3.0, and 4.0 wt % of ferric oxide nanoparticle concentrations were employed. Figure 10 presents the scanning electron microscopy images of the cement composite with (a) 0.0 wt %, (b) 2.0 wt %, (c) 4.0 wt %, (d) and 6.0 wt % of ferric oxide nanoparticles. The test results confirmed a variation in the molecular structure and phase composition of the cement composites, resulting in stronger bonds in the silicate network, with an extremely ordered arrangement of nanomaterials in them. The mechanical properties of mortar samples increased with inclusion of ferric oxide nanoparticles, and a 3.0 wt % dosage was recognized as the optimal concentration.





ADVANTAGES:

- **Enhanced Mechanical Properties:**

Nanomaterials can significantly improve the compressive and tensile strength of construction materials.

- **Increased Durability:**

They enhance resistance to wear, corrosion, and environmental degradation, leading to longer-lasting structures.

- **Self-Healing Concrete:**

Certain nanomaterials enable the development of concrete that can automatically repair cracks, extending the lifespan of buildings.

- **Thermal Insulation:**

Nanomaterials improve the thermal insulation properties of construction materials, contributing to energy efficiency.

- **Reduced Carbon Footprint:**

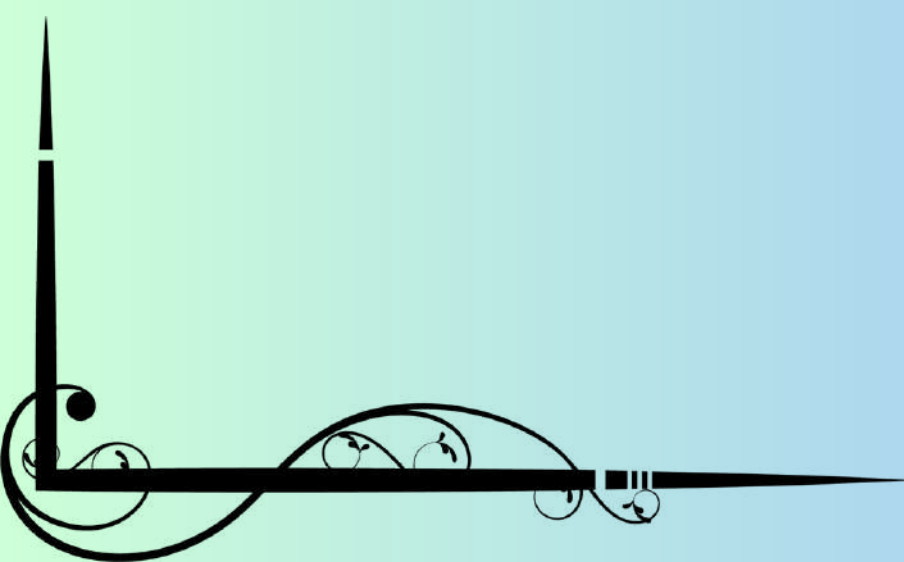
Nano-catalysts can lower the required temperatures for production processes, reducing energy consumption and emissions.

- **Better Surface Finishes:**

They provide improved surface finishes, increased color vibrancy, and resistance to staining and UV degradation.

- **Functional Surface Properties:**

Nanomaterials can impart water-repellent, anti-graffiti, and self-cleaning properties to surfaces, reducing maintenance costs.



DISADVANTAGES:

- **High Cost:**

The production and application of nanomaterials can be expensive, limiting their use in cost-sensitive projects.

- **Health Risks:**

The long-term health impacts of exposure to nanomaterials are not fully understood, posing potential risks during manufacturing and application. Proper safety measures are crucial.

- **Technical Challenges:**

Integrating nanomaterials into traditional construction processes requires specialized knowledge and equipment, posing challenges for some construction companies.

- **Environmental Impact:**

The disposal and potential bioaccumulation of nanomaterials are ongoing environmental concerns. Responsible disposal methods are being developed.

- **Regulatory Hurdles:**

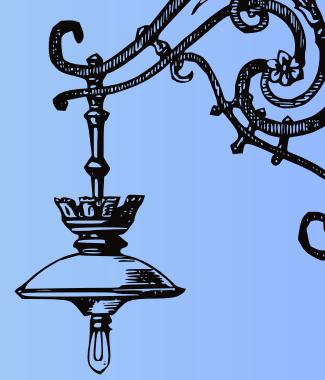
Regulatory approval for the use of nanomaterials can be time-consuming and complex due to evolving standards and guidelines.

- **Uncertain Long-Term Performance:**

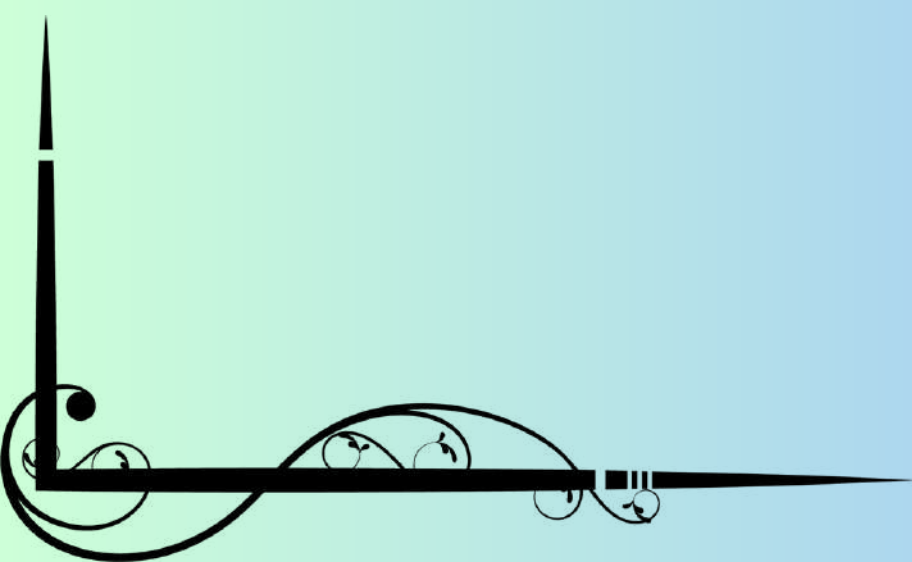
The long-term behavior and performance of nanomaterials in real-world conditions are not fully understood, posing risks for critical infrastructure projects. More research is needed.

CONCLUSION:

Nanomaterials hold great promise for transforming the construction industry by enhancing the mechanical properties, durability, and functionality of construction materials. However, challenges such as high costs, health risks, and environmental concerns need to be addressed to fully realize their potential. Continued research and development, along with regulatory advancements, are essential to overcoming these hurdles and promoting the widespread adoption of nanotechnology in construction. The future of construction lies in the innovative application of nanomaterials, leading to more resilient, efficient, and sustainable structures. This study offered a complete and detailed analysis of improvement in concrete's properties with the addition of nanomaterials, its risk evaluation, related health issues, and environmental implications of nanomaterial-based materials for the application in concrete sector. The review focused on the environmental impact and the future scope of the nano-based concrete materials. It was clearly noted that the nanostructured materials have higher capability in smart infrastructure applications with superior strength concrete frameworks. This study also featured a discussion on the prevailing issues and barriers to the commercialization of nano-based construction materials that harness the benefits of nanoparticles. It can be concluded that the application of nanomaterials in the construction sector can offer both risks and benefits. Presently, the nanomaterials are existing in some specific commercial items, and some of these are labeled, whereas some are not labeled.



Hence, it is important that the construction sector must have satisfactory knowledge on the nanomaterials, and this will enable them to take safer selections. The main findings from this study are expected to raise awareness on the probable effect of construction wastes with nanomaterials in it and the importance of proper regulations regarding the final disposal of these construction wastes. As the production of concrete is accountable for higher than 5.0% of total emission of CO₂ globally, the addition of nanomaterials into the concrete mix reduces the essential size of concrete structures, leading to a lower emission of CO₂ thereby making concrete an eco-friendly construction material. Thus, the environment pollution could remarkably decreased by applying high strong cement-based composites manufactured utilizing different nanostructured materials. Consequently, in the area of construction, the manufacture of nano-based materials is going to perform a substantial part toward sustainable development in the coming period. The application of nano-based concrete materials is beneficial with respect to enhanced engineering properties of cement materials, particularly for the production of sustainable as well as self-healing concretes.



SMART WATER MANAGEMENT SYSTEM BY IOT & AI S SELF-HEALING CONCRETES.

**E.EZHILARASAN
2ND YEAR CIVIL ENGINEERING**

WHAT IS A SMART WATER MANAGEMENT SYSTEM & HOW DOES IT WORK?

Effective water management involves the thoughtful organization, creation, delivery & supervision of water reserves using different IoT technologies. These technologies aim to enhance transparency and promote a more mindful & sustainable utilization of water resources. This idea covers a range of areas such as agriculture, farming, industry, services and urban areas. Its diverse uses span from monitoring household water consumption to checking water levels, ensuring the purity of drinking water, detecting chemical leaks in rivers near industrial areas, observing pressure shifts in pipelines & evaluating the water quality in aquariums. These examples are just a small selection of the many helpful applications.





Microcontrollers and sensors like ultrasonic, flow, temperature, salinity, conductivity, humidity, pressure and luminosity sensors are installed on pipes or pumps to monitor water levels, flow rates, temperature & water quality in real-time. Information and signals captured by these sensors are transmitted via the Internet to a cloud server, where they undergo processing and analysis, frequently supported by AI technology. The processed information is then transmitted to a user terminal for review and consultation. The system is capable of managing and overseeing the utilization and quality of water resources while also aiding in the upkeep of the necessary equipment

TYPES OF IOT-POWERED WATER MANAGEMENT SOLUTIONS

Smart Water Metering Solutions: Smart water meters help in real-time measurement of water usage and transmit this data from consumers to providers. These solutions not only streamline water management but also enhance the precision of billing processes.

Smart Dam Monitoring: These systems monitor the water level across all parts of a dam. If any unusual changes are detected an alert will be sent to the authorities automatically.

Smart Irrigation Systems: These agricultural solutions are commonly employed and can function as an independent component within smart farming setups. Smart irrigation enables farmers to efficiently utilize water resources preventing excessive usage. Sensors gauge soil moisture levels and adapt watering schedules accordingly. Additionally, monitoring water quality holds significance in farming outcomes playing a pivotal role in boosting overall productivity.



Smart Water Leak Detectors: Frequently, undetected water losses from fitting problems and pipe leaks can persist for extended periods. This leads to additional damage to pipes and disruptions in water supply. IoT sensors play an important role in the timely detection of such issues preventing the potential for more severe consequences.

CHALLENGES IN IMPLEMENTING SMART WATER MANAGEMENT:

Developing a smart water management system can optimize water usage and tackle the issue of water scarcity in various regions. However, there are certain complexities involved.

High Installation Costs:In certain areas, especially in developing nations, dealing with this issue is a significant struggle due to the extremely high costs of infrastructure development.

Limited Network Reach:When intelligent gadgets are set up in areas with weak signals like basements, the system might struggle to ensure immediate data exchange.

Problems with Interoperability:This new challenge is connected to the one before it. Various companies might create IoT devices for a single smart water system which could lead to difficulties in making them interact smoothly with one another.

Lack of Standardization:The absence of universally recognized standards among IoT system developers in water management causes challenges in aligning & integrating tools provided by various vendors

CONCLUSION:

The integration of AI and IoT in water management systems offer a promising solution for optimizing resource usage, detecting leaks, predicting water quality issues, and enhancing overall efficiency. By leveraging real time data and intelligent algorithms, these technologies enable proactive decision making and sustainable practices, ultimately contributing to more resilient and responsive water infrastructures.

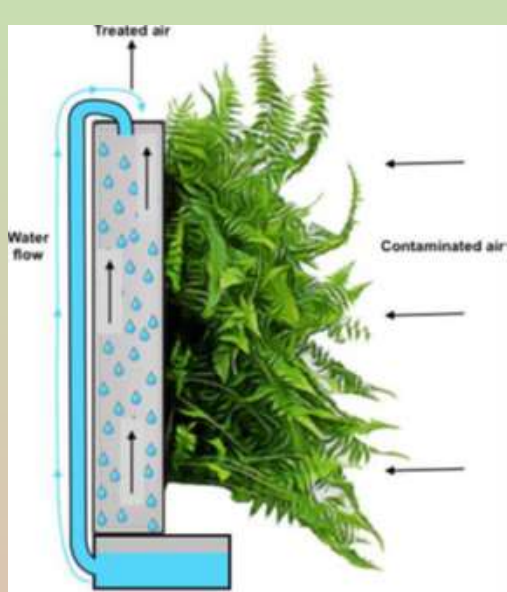
AIR POLLUTANTS REMOVAL USING BIOFILTRATION TECHNIQUE: A CHALLENGE AT THE FRONTIERS OF SUSTAINABLE ENVIRONMENT

SRI NIRANJANI K
SECOND YEAR CIVIL ENGINEERING

INTRODUCTION:

Air pollution is a central problem caused by industries during the production process. The control of this pollution is essential for the environment and living organisms as it creates harmful effects. Biofiltration is a current pollution management strategy that concerns removing Odor, volatile organic compounds (VOCs), and other pollutants from the air. Recently, this approach has earned vogue globally due to its low-cost and straightforward technique, effortless function, high reduction efficacy, less energy necessity, and residual consequences not needing additional remedy. Many of the pollutants are carcinogenic, causing cancer and tumours, deteriorating human health and the environment. Other techniques that are used to eliminate air pollutants are costly and require maintenance.

Biofiltration is the alternative technique, which can be used to remove air pollutants emitted mainly from organic product-based companies, for example, paint industries, pharmaceutical industries, and also by vehicles, municipal sources, substance adjustment landfill-related procedures, etc. Paint application and manufacturing companies utilize solvents are the major pollutants with about 60%, pollutant generator. It is economical to remove pollutants and requires less maintenance.



HISTORY OF BIOFILTRATION:

The biofilter was first discovered by German scientist Bach in 1923. Over time, biofilters and bioreactors have been adopted as typical ways of controlling pollution. During the 1960s and 1970s, biofilters were effectively utilized within West Germany to resist smells from various causes, such as sewage processing plants, fertilizing soil, food treatment, and chicken and pig ranches.

Different plans were examined for the air circulation framework and a few sieve constituents with higher natural exercises and lower flow resistance than soil. Fertilizer from municipal solid waste (MSW) was utilized as a sieve substance in 1966. Since the mid-1980s, Germany has progressively utilized biofiltration to control VOC and air pollutants radiated from manufacturing plants. After a long research period, the biofilter is now used to treat from a simple single compound containing gas (methanol) to a mixture of contaminants (BTEX).

IMPORTANT POINTS ABOUT BIOFILTERS:

The packing material should be chosen carefully because it affects the biofilter's overall cost and size. Its particle size should be according to contaminants. This could improve the general activity of the filter bed by adding inactive solids like polystyrene beads to decrease compaction, broaden bed life, and increase absorbency.

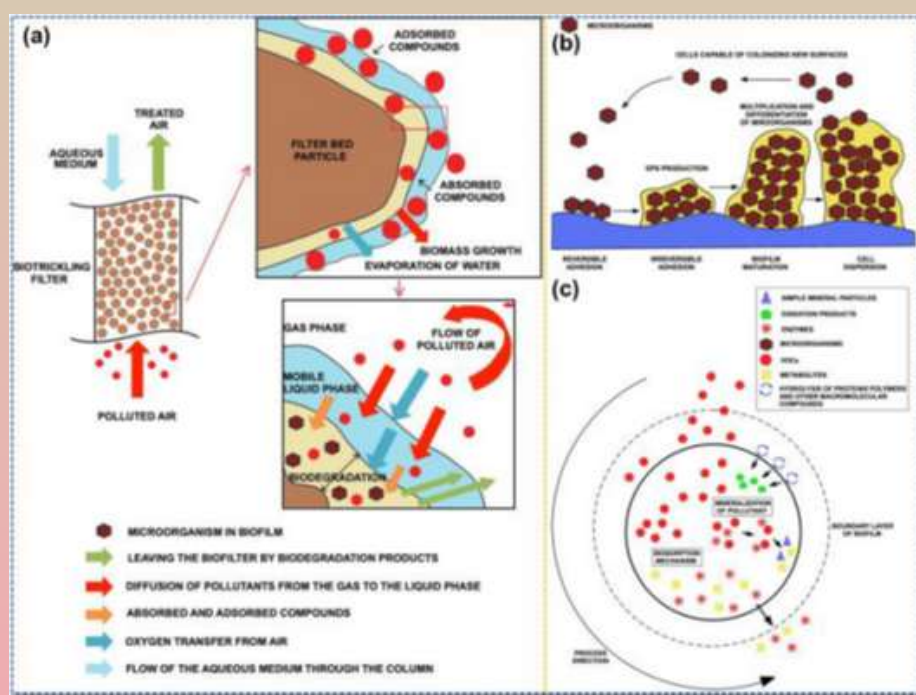
HEALTH AND SAFETY CONCERNS:

There have been few investigations on the probable wellbeing and care with the use of biofilters. The dependence on natural microbes in manure, soil, or fertilizer will cause people sensitive to these organisms to wear a facial covering to limit contact with airborne bacteria and Mold microorganisms. Breathing assurance is suggested during development, upkeep, and media elimination.

BIOFILTRATION TECHNIQUE:

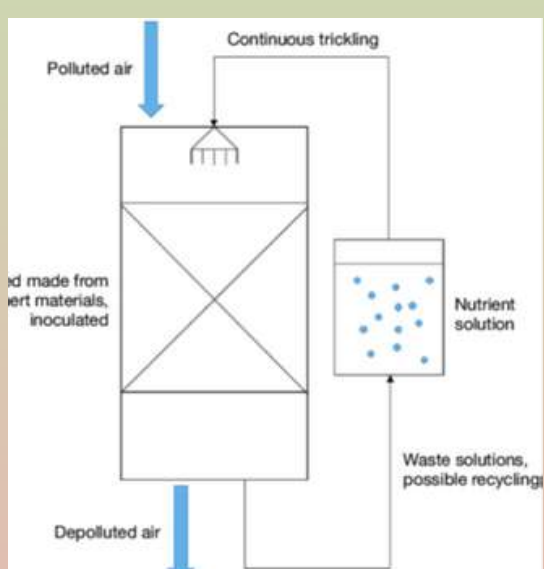
A biofilter for controlling air toxins comprises at least one bed of biologically active material; essentially, a mixture dependent upon manure, fertilizer, or soil filter beds is commonly 1 m in height. The polluted off-gas is vented from the producing source through the filter. In a specific adequate time, the air pollutants will diffuse within a wet, biologically active layer (biofilm) surrounding the filter particles. Aerobic degradation (AD) of the target will happen in the biofilm if microbes, fundamentally microorganisms, are available that may use them. The total biodegradation of air pollutants is CO₂, water, and bacterial biomass.

The oxidation of decreased sulphur complexes and chlorinated organic mixtures creating inorganic acid compost, for the most part, made from city surplus, wood pieces, bay, or leaves has commonly been the premise of sieve substances utilized in current applications in Europe, even though compost and a heather mixture have additionally been used. Initially, the biofilters built in the U.S. were generally “soil beds” for which biologically active mineral soils were utilized as sieve constituents. Marycz et al proposed a biofiltration study on fungi to dismiss volatile hydrophobic contaminants. The removal of gas impurities in biofiltration results from an intricate blend of different biological and physicochemical spectacles. The procedure of air sanctification through biological techniques applies microbes, most often bacteria and fungi, to deteriorate the VOC into nontoxic constituents. Suspended fungal cells adhere to the column’s bed filler surface within the first step. The foremost one, named biosorption, entraps the gas contaminants on the exteriors of microbe cells. A bidirectional interaction ensues: contaminant molecules diffuse within the cells, although enzymes and metabolites transit into the contrasting path.



USE OF BIOTRICKLING FILTERS:

Bio trickling filters are better than conventional biofilters because of their continuous changing of eluent (fluid rivulet of water with or without extra supplements practical to the intense media) resulting in reseeded of microbes, controlled pH, and therefore increased efficiency of the biofilter. A continuous water supply reduces the acidification of the bed, which results from the acidic byproduct of degradation of CS₂. Elimination of CS₂ is very low upon treatment with bio trickling channels introduced in rayon fibre and cellulose wipes.



DIFFERENT MECHANISMS USED IN BIOFILTRATION TECHNIQUE:

There are two kinds of biodegradation frameworks (not biofilter). Microorganisms are delimited in a rinse fluid communicated with the polluted air and absorber within bio scrubbers.

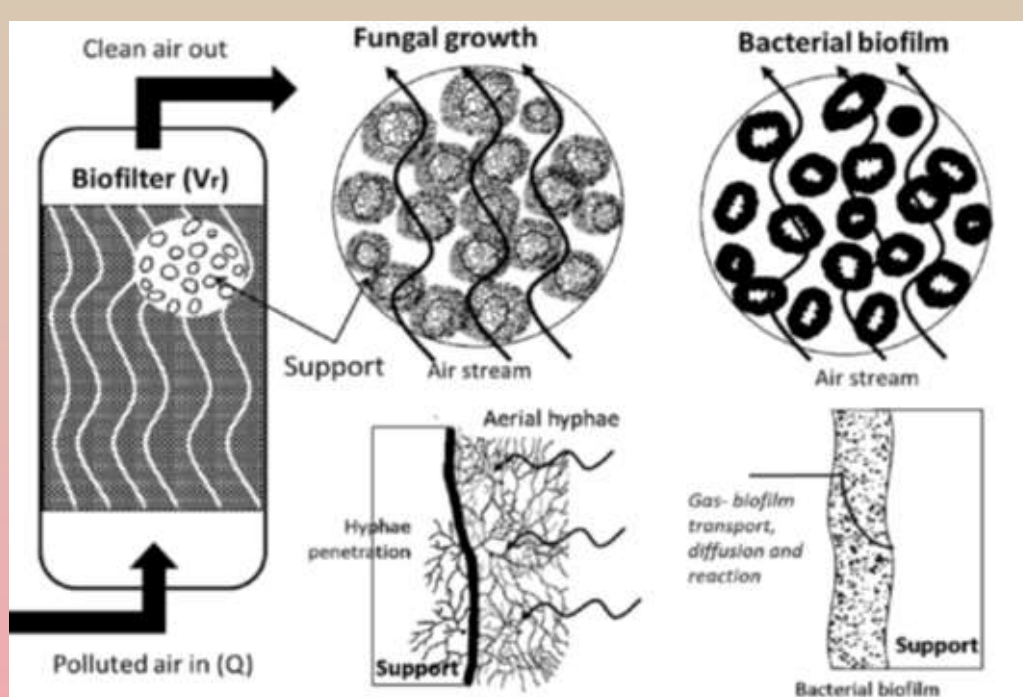
This part will emphasize biofilters, frameworks where the microbes are delimited on a solid substance, like fertilizer, soil, granular activated carbon (GAC), diatomaceous earth, or inactive synthesized substances. With flue gas, the pretreatment equipment biofiltration system varies by the number of beds, packing media used, and how the gas will distribute in the whole packing bed.

USING FUNGI:

VOCs contain organic compounds with an increased vapor pressure at ambient conditions and generally Exist within indoor and outdoor atmospheres. the fungal biofilters may be noticed outperforming their bacterial replication within treating hydrophobic VOCs.

MAINTANANCE:

A biofiltration framework is occasionally required, particularly during the commencement interaction. Also, occasional inspection of the biofilter bed for the level of dampness and supplement content is suggested. Climate can likewise influence the presentation of a biofilter. During substantial precipitation and snow, the biofilter should be observed for an overabundance of water or snow two times per day to ensure no unfriendly gas streams. Expansion of the wood bay coating upon the biofilter exterior might forestall the compaction instigated by a substantial downpour.





ADVANTAGES:

- It is cost effective as less cost is required in construction and management.
- Low energy is needed and this is beneficial to the environment. One of the significant benefits of utilizing a biofilter is that it can deal with advanced inlet gas flow rates of 100–100,000 m³ h⁻¹ compared to other air contamination regulator machinery.
- The dependability of biofiltration for the processing of VOCs has been confirmed in a massive number of articles as it is more appropriate to process a low absorption and high volume of VOCs in a profitable method.
- Additionally, biofilters are great at caring for poorly soluble pollutants in water because of the better superficial area accessible for mass transfer.

DISADVANTAGES:

- It reduces its activity when not in use; i.e., in the shutdown period and when loading of gas is for a short period, they survive by endogenous respiration as they do not get nutrients from the environment.
- Filter beds require glucose to attain a high removal rate after shutdown.
- A biofilter is not well suited for sudden changes as industrial operations have variable changes in which products changing daily or weekly are not suitable for biofilters.
- Also, it needs pilot plants to determine the retention time of contaminants for effectible removal.

- • WITH VOC ELIMINATION LIMITS OF MORE THAN 100 G/M³ H, IT MIGHT BE HARD TO KEEP AN APPROPRIATE MOISTURE LEVEL IN AN EXTENSIVE SYSTEM, EVEN WITH AUTOMATIC MEASUREMENT AND CONTROLS.
- • IF THE FLOW RATE IS HIGHER, THE WATER WITHIN THE BIOFILTER BED WILL BE TAKEN AWAY BY THE FLOW, CAUSING THE BIOFILTER TO DRY OUT.

CONCLUSION:

IN SUMMARY, DESPITE NUMEROUS INVESTIGATIONS ON THE PERFORMANCE OF PRESERVED PLANTS, THERE IS A DETERMINATE INVESTIGATION ON THE CALCULATION OF ESSENTIAL CHARACTERISTICS OF ACTIVE BIOFILTERS TO DISMISS VOCs. THE ANALYSIS DOCUMENTED HERE ESTIMATES THE FUNCTIONING OF A BIOFILTER CONCERNING DIFFERENT AIR POLLUTANT REDUCTION EFFICIENCIES. THE RANGE AND APPROVAL OF BIOFILTRATION HAVE BEEN OBSERVED FROM BIOTECHNOLOGY ADVANCEMENTS THAT DELIVER IN-DEPTH UNDERSTANDING CONCERNING THE DESIGN. IT MAY OPTIMIZE THE PROCEDURE EXCLUSIVELY TO ACCOMPLISH HIGH SUBTRACTION PROFICIENCIES WITH LOW ENERGY CONSUMPTION AND SIGNIFICANTLY ACQUIRE THESE REMOVAL EFFICACIES OVER LONG PERIODS WITH LITTLE CARE.

East Fort: The Historic and Bustling Heart of Thiruvananthapuram

Karthick Vikraam. I
Third year Civil engineering

Introduction:

East Fort, or Kizhakke Kotta, stands as one of the most vibrant and historically rich areas in Thiruvananthapuram. Known for housing the illustrious Sree Padmanabha Swamy Temple, it is a bustling hub teeming with tourists, shops, and commercial activities. This area, which has seen the rise of many important kingdoms from Travancore to modern-day Thiruvananthapuram, has been declared a heritage site by the State Government.



Historic Significance:

Visitors to East Fort are greeted by its imposing white gateway, constructed in 1747 by King Marthanda Varma. This gateway faces the famous Chalai bazaar and is a significant landmark. The fort includes multiple important gates such as Vettimurichakotta, Nariadachankotta, Padinjarekotta, and Azheekotta.

Cultural Landmarks:

Sree Padmanabha Swamy Temple: Situated directly in line with the East Fort gate, this seven-storied temple is a blend of Kerala and Dravidian architectural styles. It is dedicated to Lord Padmanabha, an incarnation of Lord Vishnu.

Methan Mani: Near the temple, this unique clock features a man's face with two goats on either side.

C.V.N. Kalari: Located near the Vettimurichakotta Gate, it is a renowned school for Kalaripayattu, a traditional martial art form.

Royal Heritage:

Inside East Fort, there are several structures used by the erstwhile royal family. These include palaces and buildings reflecting traditional as well as western architectural styles. Notable among them is the Ananthavilasam Palace, built in 1880 by King Vishakam Thirunal in Baroque and Rococo styles.

Other significant sites include:

Kuthiramalika (Horse Palace):

Named for the wooden carvings of horses along its upper floors.

Navarathri Mandapam: Known for hosting the annual ten-day Navarathri music festival.



Modern-day East Fort:

Today, East Fort is the heart of Thiruvananthapuram, serving as the central bus depot for the city's bus services run by the state-run KSRTC. It is connected to other parts of the city by MG Road and is close to the city's Central railway station and the Central Bus Stand for long-distance buses. Nearby attractions include cinemas, cultural venues, and shopping malls.



COMMERCIAL HUB:

East Fort has evolved into a major commercial hub with numerous jewellery and clothing stores such as Alukkas, Alappat, Josco, Prince, and Kalyan. The area facing East Fort and the Padmanabha Swamy Temple is among the most expensive real estate in Trivandrum.

EDUCATIONAL AND CULTURAL INSTITUTIONS:

Attakulangara Government Central High School: Established in 1889, this school has produced many notable alumni and has had distinguished teachers.

Kuthiramalika Palace Museum: Built by Maharaja Swathi Thirunal Rama Varma, it is a key attraction within the fort complex.

PARKS AND PUBLIC SPACES:

Gandhi Park: Located in front of the fort, it is a popular venue for social and political gatherings. Recently remodeled, it offers a view of the fort entrance illuminated at night.

Putharikandom Maithanam: Another site for political rallies, located opposite East Fort.

Religious Sites:

Pazhavangadi Ganapathi Temple: Located within East Fort, it is a significant temple dedicated to Lord Ganesha.

Hanuman and Ganapathi Temples: Additional temples within the fort premises add to the area's spiritual ambiance.

Conclusion:

East Fort remains a vital cultural, commercial, and historical center in Thiruvananthapuram. Its rich heritage, combined with its modern-day significance, makes it a unique blend of the past and present. From the majestic Sree Padmanabha Swamy Temple to the bustling commercial streets and historic palaces, East Fort offers a glimpse into the vibrant life and history of Thiruvananthapuram.

SELF-HEALING CONCRETE: THE FUTURE OF DURABLE INFRASTRUCTURE

AKSHAIKRISHNARAJ SO
3RD YEAR CIVIL ENGINEERING

INTRODUCTION:

Concrete is the most widely used construction material globally due to its strength, durability, and versatility. However, it is prone to cracking, which can lead to costly repairs and structural failures. To address this issue, researchers have developed self-healing concrete, an innovative material designed to autonomously repair cracks and extend the lifespan of structures. This technology has the potential to revolutionize the construction industry by reducing maintenance costs, enhancing safety, and promoting sustainability.

MECHANISMS OF SELF-HEALING CONCRETE:

Self-healing concrete employs several mechanisms to repair cracks, including:

1. Microbial-Induced Calcite Precipitation (MICP):

- **Process:** This method involves embedding bacteria such as *Bacillus* species into the concrete. When cracks form and water seeps in, the bacteria activate and convert nutrients like calcium lactate into calcium carbonate (limestone), which fills and seals the cracks.

- **Advantages:** MICP is effective in sealing small to moderate cracks and can improve the overall durability of the concrete

. 2. Encapsulation of Healing Agents:

- **Process:** This approach incorporates capsules containing healing agents (e.g., epoxy, polyurethane) within the concrete matrix. When cracks occur, the capsules break open, releasing the healing agents that then react with the surrounding concrete to seal the cracks.

- **Advantages:** Encapsulation provides a robust self-healing mechanism, especially for larger cracks, and can be tailored to different types of healing agents for specific applications.

3. Crystalline Admixtures:

- **Process:** Crystalline admixtures are added to the concrete mix. These admixtures contain chemicals that react with water to form insoluble crystals, which grow and fill the cracks.

- **Advantages:** This method is particularly effective for waterproofing concrete and enhancing its resistance to chemical attacks.

4. Shape Memory Materials:

- **Process:** Shape memory polymers or alloys are embedded in the concrete. These materials can return to their original shape when exposed to specific stimuli (e.g., temperature changes), thus closing the cracks.

- **Advantages:** Shape memory materials offer a precise and repeatable self-healing process, suitable for dynamic environments where cracks may frequently form and heal.



BENEFITS OF SELF-HEALING CONCRETE:

1. Enhanced Durability:

- Self-healing concrete can significantly extend the service life of structures by preventing the propagation of cracks and subsequent deterioration. This leads to more resilient infrastructure that can better withstand environmental and mechanical stresses.

2. Reduced Maintenance Costs:

- By autonomously repairing cracks, self-healing concrete minimizes the need for frequent inspections and repairs, lowering the overall maintenance costs for infrastructure owners and operators.

3. Improved Safety:

- The integrity of structures is maintained, reducing the risk of structural failures that could lead to accidents and injuries. This is particularly crucial for critical infrastructure such as bridges, tunnels, and high-rise buildings.

4. Environmental Sustainability:

- Extending the lifespan of concrete structures reduces the demand for new construction materials and the associated environmental impact. Additionally, some self-healing methods utilize sustainable materials, further contributing to environmental conservation.

CHALLENGES AND FUTURE DIRECTIONS:

While self-healing concrete offers numerous advantages, several challenges remain:

1. Cost:

- The initial cost of self-healing concrete is higher than traditional concrete due to the additional materials and technologies involved. However, this cost is often offset by the long-term savings in maintenance and repair.



2. Scalability:

- Implementing self-healing concrete on a large scale requires further research and development to ensure consistency and reliability across different applications and environments.

3. Regulatory and Standards Development:

- Establishing industry standards and regulatory frameworks is essential to ensure the safe and effective use of self-healing concrete in construction projects.

4. Long-Term Performance:

- Ongoing research is needed to evaluate the long-term performance of self-healing concrete under various conditions, including extreme weather, heavy loads, and chemical exposure.

CONCLUSION:

Self-healing concrete represents a groundbreaking advancement in construction materials, offering the promise of more durable, cost-effective, and sustainable infrastructure. As research and technology continue to advance, the widespread adoption of self-healing concrete could transform the construction industry, leading to safer and more resilient built environments.

KINETIC ROADS

JEMIMAH
IV YEAR CIVIL ENGINEERING

INTRODUCTION

Kinetic roads represent a groundbreaking innovation in the field of civil engineering, offering a sustainable and energy-efficient solution for powering various applications.

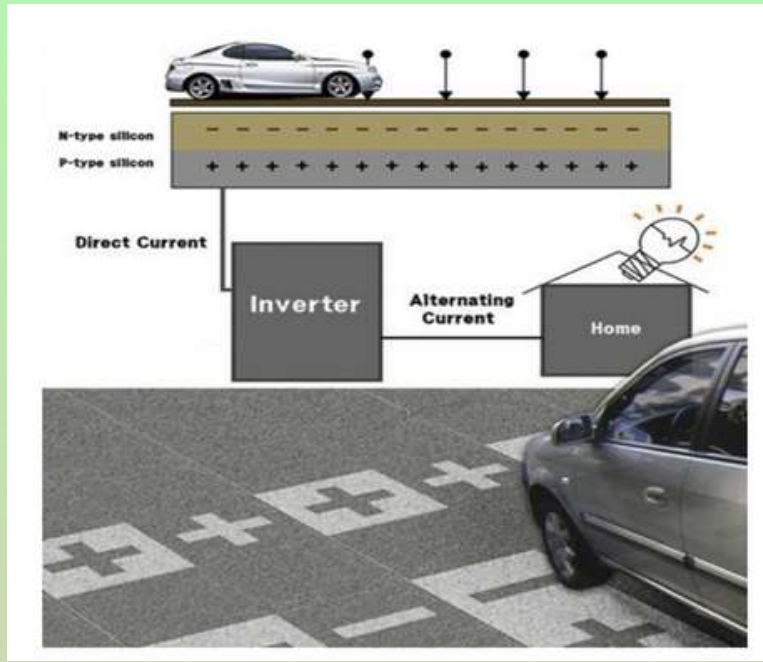
A technology called Lybra, a tyre-like rubber paving that converts the kinetic energy produced by moving vehicles into electrical energy. In addition to improving road safety, the device upgrades and promotes sustainability of road traffic.

WORKING:

Kinetic roads are integrated into the infrastructure of urban and rural areas, serving as a dual-purpose system. These roads are typically equipped with special components such as piezoelectric materials or electromagnetic induction systems placed beneath the surface.

Piezoelectric materials generate an electric charge in response to mechanical stress, such as the pressure applied by vehicles moving over the road surface. In the context of roads, piezoelectric crystals or devices could be embedded in the road to capture the mechanical energy generated by the weight and movement of vehicles. This captured energy could potentially be converted into electrical power.

The basic idea is that as vehicles drive over the road, the mechanical stress from their weight causes the piezoelectric material to deform and generate an electric charge. This charge can then be harvested and used to power streetlights, traffic signals, or other infrastructure.



ADVANTAGES

Renewable Energy Generation:

Kinetic roads provide a sustainable source of energy by harnessing the kinetic energy generated by vehicles, contributing to the reduction of dependency on traditional energy sources.

Reduced Environmental Impact:

As a clean energy solution, kinetic roads help mitigate environmental pollution by decreasing reliance on fossil fuels and promoting a greener infrastructure.

Cost-Effective Maintenance:

The maintenance costs associated with kinetic roads are relatively low, as the technology is designed to withstand the wear and tear caused by vehicular traffic.

14. ALUMINI WRITE UP

A NURTURING COLLEGE EXPERIENCE BY JEYASHREE DURAIPANDIAN (2019-2023).



As an alumnus of SSN College's Civil Engineering Department, I find myself reflecting on a journey that defied traditional expectations and led me to a fulfilling career as a Solutions Engineer in a SaaS startup. SSN College not only equipped me with technical knowledge but also fostered an environment of exploration and growth, enabling me to carve my path in the dynamic world of technology. One of the most remarkable aspects of my time at SSN College was the freedom to explore beyond the confines of my chosen field. Despite pursuing civil engineering, I was encouraged to delve into diverse areas, broadening my perspective and opening doors to unexpected opportunities. This freedom to explore ultimately led me to the thriving industry of Software as a Service (SaaS), where I found my niche as a Solutions Engineer. I urge aspiring professionals to similarly embrace the vast landscape of career options and consider the possibilities presented by industries like SaaS.



The support and guidance provided by the faculty at the department played a pivotal role in my journey. The professors were not just educators but mentors who motivated and inspired me to pursue my dreams relentlessly. Their encouragement instilled in me the confidence to navigate challenges and pursue unconventional career paths. I am particularly grateful for subjects like 'Contract Laws and Management' and 'Project Management,' which not only captured my interest but also equipped me with practical skills essential for my current role. I advocate for the inclusion of these subjects in the department's curriculum to empower future students with valuable knowledge and skills relevant to the evolving industry landscape.

- However, beyond academics, it was the people I encountered during my college years who left a lasting impression on me. The friendships forged and the connections made have been invaluable assets throughout my career. The collaborative environment fostered at SSN nurtured teamwork, communication, and networking skills, which are indispensable in any professional setting. I am deeply thankful for the professors, mentors, and friends who have supported me along this journey.
 - SSN College's Civil Engineering Department provided me with more than just a degree; it offered a platform for self-discovery, growth, and empowerment. It is a testament to the college's commitment to nurturing well-rounded individuals capable of thriving in diverse industries. As I continue to pursue my career in SaaS solutions engineering, I carry with me the invaluable lessons and experiences gained from my alma mater, SSN College.
- 

15. INDUSTRIAL ARTICLE

3D PRINTING IN CONSTRUCTION OF BUILDINGS: A COMPREHENSIVE REPORT

G CHAKRAVARTHI

**MANAGING DIRECTOR ,
GNR CONSTRUCTIONS.**



Introduction:

3D printing, also known as additive manufacturing, has revolutionized various industries, including construction. This technology involves creating three-dimensional objects by layering materials based on digital models. In the construction industry, 3D printing is being used to produce building components and entire structures, offering numerous benefits such as reduced waste, lower costs, and faster construction times.

Applications in Construction:

- 1. Building Components:** 3D printing is used to manufacture individual components like walls, columns, and facades. This allows for intricate designs and precise customization that would be difficult to achieve with traditional methods.
- 2. Entire Structures:** Some companies are developing the capability to print entire buildings. This includes residential houses, offices, and even bridges. The technology can produce complex and durable structures that meet industry standards.



3. Prototyping and Design: Architects and engineers use 3D printing for prototyping and testing designs before actual construction. This helps in identifying potential issues and making necessary adjustments early in the project.

4. On-Site and Off-Site Construction: 3D printers can be deployed directly on construction sites or used in a controlled factory environment. On-site printing reduces transportation costs and logistics, while off-site printing ensures better quality control.

Benefits:

1. Speed and Efficiency: 3D printing significantly reduces construction time. Buildings that typically take months to construct can be completed in weeks or even days.

2. Cost Reduction: The technology reduces labor costs and material waste. It also minimizes the need for formwork and scaffolding, which are expensive and time-consuming.

3. Design Flexibility: Complex and custom designs can be easily produced, allowing for greater architectural creativity and innovation.

4. Sustainability: 3D printing uses precise amounts of materials, reducing waste. Some 3D printers also use sustainable or recycled materials, contributing to eco-friendly construction practices.

5. Improved Safety: Automation reduces the need for workers to perform hazardous tasks, enhancing overall site safety.

Challenges:

1. **Initial Costs:** The initial investment in 3D printing technology and equipment can be high, which may deter some construction companies.
2. **Regulatory Hurdles:** Building codes and regulations need to adapt to accommodate 3D printed structures. Compliance with existing standards can be challenging.
3. **Material Limitations:** While the range of printable materials is expanding, there are still limitations in terms of strength, durability, and suitability for different environments.
4. **Skill Gap:** There is a need for skilled professionals who can operate and maintain 3D printing equipment and integrate it into traditional construction workflows.

Case Studies:

1. **Dubai Municipality Office:** In 2019, Dubai constructed a 3D printed office building, the world's largest 3D printed structure at the time. This project demonstrated the potential of 3D printing in reducing construction time and costs.
2. **ICON's Housing Solutions:** ICON, a construction technology company, has developed a 3D printer capable of producing affordable housing. Their projects in Mexico and the United States aim to address housing shortages.
3. **MX3D Bridge in Amsterdam:** A 3D printed steel pedestrian bridge was installed in Amsterdam. This project showcased the potential for 3D printing in infrastructure projects, combining robotics, digital design, and engineering.

Future Outlook:

The future of 3D printing in construction looks promising. Advancements in technology are expected to reduce costs and expand material options. As regulatory frameworks adapt, wider adoption is anticipated. The integration of 3D printing with other technologies like artificial intelligence (AI) and the Internet of Things (IoT) will further enhance construction processes.

Conclusion:

3D printing is transforming the construction industry by offering faster, cheaper, and more sustainable building methods. Despite some challenges, its benefits make it a compelling option for future construction projects. Continued innovation and adaptation will likely see 3D printing become a standard practice in the industry.

This report highlights the transformative impact of 3D printing on construction, emphasizing its current applications, benefits, challenges, and future potential.



Editorial Team:



**Chief Editor
Dr.N. Sivakumar**



**Faculty coordinator
Dr. Surendar
Natarajan**



Design
N. Jewison Jacob



Editor
Karthuck Vikraam . I

Content writing team



Sasurudha M
II year



Heman S
II Year



Harini S
II Year



Kaviya Malar S
I Year

Sanjay
I Year

Joshika
I Year

Aadhavan
I Year