



SONA CREA

Nineteenth Issue | April 2023



Indian
Concrete
Institute

ICI
STUDENT
CHAPTER

I am gratified to know that the Department of Civil Engineering is bringing out the Nineteenth issue of their technical magazine "SONA CREA" of this academic year (2022 - 2023). This is a productive technical material and subsidiary skill-developing tool for the students. I wish the Civil Engineering Department a very big success in all their ventures. I also applaud the coordination and efforts behind the team to bring out this issue. I wish them all success.



SK
Dr. S.R.R. SENTHIL KUMAR,
Principal



R. Malathy
Dr. R. MALATHY, HoD / Civil,
Convenor/ ICI Student Chapter

I am glad in publishing the nineteenth issue of the magazine "SONA CREA" of our Civil Engineering Department, which is a reference of the most recent trends and activities in the field of AEC. This should serve as a source of guidance for the entire fraternity for building themselves with the beautiful colors. I acknowledge the efforts of the Editorial team who did a mind-blowing job in compiling activities for a year and disseminate them through this Magazine as well as on the website. I am feeling cherished in welcoming students with more innovation in bringing the article with more bright concepts and ideas in the next issue. I wish them success in to be colorful in their future.



ICI STUDENTS CHAPTER
COORDINATOR MESSAGE

A. MEENACHI

AP/ CIVIL | ICI Students Chapter Coordinator

This issue marks the nineteenth issue of our Newsletter SONA CREA, that aims to keep our students past and present updated about the trending one in our Civil Fraternity. This newsletter will feature about the programs, articles, achievements of our students and faculties. We have particularly designed this newsletter also as a platform for the students to update their talents and get exposed to the current technologies. So, I request everyone to use this in an efficient manner. In future expecting more contributions from the entire team to make it more useful and a vibrant one.

"We cannot always build the future for our youth, but we can build our youth for the future."

"My dear friends and juniors , You are the nation-builders. You are the movers of technology. You are the agents of change." It is our fervent hope that the years that you spend in Sona would enable you to equip with future skills. The knowledge that you will gain, the fine qualities that you will imbibe and the technical skills that you will learn to apply will be your major contribution to the nation. So "Learning is a celebration" as per our college's motto and asking everyone of you to utilize and contribute by giving your piece of mind.



Message from ICI
Student Chairman

Keerthivasan

Final Year

ICI Student Chapter Chairman

VISION & MISSION OF THE DEPARTMENT

To become a school of excellence that brings out civil engineers with high technical competencies and promotes high-end research to meet the current and future challenges in Civil Engineering.

MD1 : To become a school of excellence that brings out civil engineers with high technical competencies and promotes high-end research to meet the current and future challenges in Civil Engineering.

MD2: To provide quality education through Centre of Excellence in Research and Consulting with emerging technologies to industry and societal problems.

MD3: To impart knowledge and activities to students with emphasis in developing the leadership qualities and teamwork.

MD4: To impart knowledge and activities to students with emphasis in developing the leadership qualities and teamwork.

MD5: To encourage students to pursue higher education, take competitive exams and industry career with required training.

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

To encourage students to pursue higher education, take competitive exams and industry career with required training.

PEO 1: To encourage students to pursue higher education, take competitive exams and industry career with required training.

PEO 2: To analyze data and technical concepts pertaining to the development of infrastructure, design, sustainability, construction management and any other related field of civil engineering.

PEO 3: To analyze data and technical concepts pertaining to the development of infrastructure, design, sustainability, construction management and any other related field of civil engineering.

PROGRAMME OUTCOMES

Students in the Civil Engineering programme should, at the time of their graduation be able to:

- a) Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to offer a solution to complex engineering problems..
- b) Problem analysis:** Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using the first principles of mathematics, natural sciences, and engineering sciences
- c) Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental property.
- d) Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- e) Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
- f) The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- g) Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of and need for sustainable development.
- h) Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- i) Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- j) Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- k) Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects in multidisciplinary environments.
- l) Life-long learning:** Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES

On completion of the B.E (Civil Engineering) degree, the graduates will be able to:

- Plan, analyze, design, prepare cost estimates and execute all kinds of Civil Engineering Projects.
- Apply modern construction techniques, equipment and management tools so as to complete the project within specified time and funds.

CAREERS FOR CIVIL ENGINEERS

Here are roles ACCORDING TO CATEGORY any graduate civil engineer can think of:

Employee

- Assistant Professor in a college (You need a PhD)
- Government Employee (You need to qualify specific exams)
- Employee in a private company

Freelance Engineer/consultant

- Consultation to public
- Consultation to institutes
- Consultation to companies
- Consultation to government

Businessperson

- Innovator
- Developer
- Private hustler
- Property Dealer
- Coaching Classes
- Manufacturer and supplier
- Trader of construction materials
- Student mentoring through guest lectures

Here are roles ACCORDING TO JOBS TO BE DONE that you can consider worth pursuing:

Consultant

- Vaastu
- Geotech
- Liasoning
- Surveying
- Structural
- Geological
- Fa ade glass
- Environmental
- Green Building
- Health and Safety
- Signages consultant
- Facility Management
- Landscape consultant
- Sports activity consultant
- Glass reinforced concrete

- Lighting designing consultant
- Project Management Consultant
- Structural Water proof consultant
- MEP-Fire fighting , Plumbing, Electrical,HVAC Internal and external audit- In phase-Every 4-6 months

Contractorship

- RCC
- POP
- MEP
- WTP
- STP
- DPC
- Tiling
- Plaster
- Tremix
- Railing
- Precast
- Painting
- Pebbles
- Materials
- Signages
- Blockwork
- Stone work
- CP Sanitary
- Soling works
- Lighting work
- Sports activity
- Water proofing
- Antirust coating
- Piling and drilling
- Labour contractor
- RO/Treatment Plant
- Rebaring contractor
- Welding/Fabrication
- Excavation-JCB, etc
- Furniture and Interior
- Facility management
- Aluform/Plastic form
- Rainwater harvesting
- Marble, granite works
- Anti-termites treatment
- Equipments-Crane, etc

- Door frame, window grill
- Development contractors
- Organic waste composter
- Paver block and curbing stone
- Post tension, pretension slabs
- Fabrication-Shops, site material
- Building services-Storm line, chambers, gutte
- Integral building management system (IBM)-commercial

Material Supplier

- Everything above that a contractor requires

Typical job at a company

- BIM
- Quality
- ERP/SAP
- Surveyor
- Safety officer
- CAD designer
- 3D designers
- Facility Manager

- Material manager
- Planning engineer
- Scheduling and Tracking
- Construction Project manager
- Estimation and Costing- BBS, Material

Valuer

Government Jobs

Redevelopment Expert

Government Contractors

Sustainable Construction

Legal and Contracts Management-Arbitrators



ADVANCED BRIDGE CONSTRUCTION TECHNIQUES

History of Bridges

Bridge study has revealed that people have been carrying out bridge construction since humans first assembled into groups. The initial bridge design was basically felled trees that were utilized for moving over the ditches and rivers, and concrete bridges were rare. With the advance of civilization, techniques were discovered to use rocks, stones, mortar, and other materials for the creation of stronger and extended bridges. Subsequently, as the engineers and physicists advanced in the design, materials, and construction technology, modern materials like steel and aluminum were introduced for bridges.

Modern techniques in bridge construction

- New technologies are expected to meet the challenging and varying requirements, and also offer options that will guide to innovative engineering and bridge construction standards. With the beginning of the new century, bridge construction is being revolutionized.

- Modern construction methods and the latest advanced materials are being evolved.
- Construction technologies like post tensioning, reinforced ground walls, and soil freezing are being developed. Modern surveying techniques are being used that have facilitated the soil selection, and other design parameters, through the use of optical and infrared technology.
- New-generation bridge construction equipment is complex and delicate. It handles heavy loads on long spans under the same constraints that the obstruction to overpass exerts onto the bridge. Safety of operations and quality of the final product depend on complex interactions between human decisions, structural, mechanical and electro-hydraulic components, control systems, and the bridge being erected.

Principle factor for selection method of bridge construction

- Regularity of the span lengths
- Horizontal and vertical profiles of the bridge decks
- Soil strata
- Materials
- Site accessibility
- The time allowed for construction



ACCELERATED BRIDGE CONSTRUCTION TECHNIQUES

ABC is a paradigm shift in the project planning and procurement approach where the need to minimize mobility impacts which occur due to onsite construction activities are elevated to a higher priority.

Intrinsic benefits of the ABC approach include improvements in:

- Safety
- Quality
- Durability
- Social costs and
- Environmental impacts.

From the Owner Agency perspective ABC may require a change in how a project is approached and how it is justified.

As such, Project Planning tools with innovative solutions are provided to help streamline the development process and ensure successful implementation of ABC.

Accelerated Bridge Construction (ABC)

ABC is bridge construction that uses innovative planning, design, materials, and construction methods in a safe and cost-effective manner to reduce the onsite construction time that occurs when building new bridges or replacing and rehabilitating existing bridges.

ABC improves

- Site Constructability
- Total project delivery time
- Work-zone safety for the travelling public

ABC reduces

- Traffic Impacts
- Onsite construction time
- Weather-related time delays

A common reason to use ABC is to reduce traffic impacts (or "mobility impacts" as defined below) because the safety of the traveling public and the flow of the transportation network are directly impacted by onsite construction related activities.

However, other common and equally viable reasons to use ABC deal with site constructability issues. Oftentimes long detours, costly use of a temporary structure, remote site locations, and limited construction periods present opportunities where the use of ABC methods can provide more practical and economical solutions to those offered if conventional construction methods were used.

Why use ABC Technologies?

Approximately one-fourth of the Nation's 600,000 bridges require rehabilitation, repair, or total replacement. However, the work that occurs from on-site construction activities can have significant social impacts to mobility and safety. In many cases, the direct and indirect costs of traffic detours that result from the loss of a bridge during construction can exceed the actual cost of the structure itself. For example, full-lane closures in large urban centres, or on highways with heavy traffic volumes, can have a significant economic impact on commercial and industrial activities in the region. Partial lane closures and other bridge activities that occur alongside adjacent traffic can also

lead to safety issues. Because of the potential economic and safety impacts, minimizing traffic disruptions is a goal that should be elevated to a higher priority when planning bridge related construction projects.

Time Metrics for ABC

To gauge the effectiveness of ABC, two time metrics are used: onsite construction time: The period of time from when a contractor alters the project site location until all construction-related activity is removed. This includes, but is not limited to, the removal of Maintenance of Traffic, materials, equipment, and personnel. Mobility impact time: Any period of time the traffic flow of the transportation network is reduced due to onsite construction activities.

- Tier 1: Traffic impacts within 1 day
- Tier 2: Traffic impacts within 3 days
- Tier 3: Traffic impacts within 2 weeks
- Tier 4: Traffic impacts within 1 month
- Tier 5: Traffic impacts within 3 months
- Tier 6: Overall project schedule is significantly reduced by months to years.

Accelerated Bridge Construction or ABC includes innovative planning and design and use of methods and materials which reduce onsite construction time. This approach may be used for new or replacement bridges and for bridge rehabilitation. The U.S. Department of Transportation Federal Highway Administration

provides online resources which include an Analytic Hierarchy Process to help transportation specialists determine if traditional or ABC methods are the most effective for a specific bridge construction project.

ABC projects use new geotechnical and structural solutions. One of these is the Geosynthetic Reinforced Soil (GRS) Integrated Bridge System (IBS). The GRS-IBS technology alternates geotextile reinforcement fabric sheets alternating with layers of compacted fill material for bridge support. It provides a smooth roadway to bridge transition, and reduces construction costs and time.



Best Practices and Techniques for Accelerated Bridge Construction

ABC has become common practice over the course of the last 20 years. Since it became standardized, experts in ABC have established a number of techniques and best practices.

The Bridge Should Be as Light and Simple as Possible

There are three factors that are incorporated into the design of an ABC project:

- The components must be as light as possible.

- The design must be as simple as possible.
- The design and components should be as simple to erect as possible.

ABC bridges are assembled using prefabricated components. These include utility and infrastructure elements, as well as standard bridge components such as decks, piers, columns, foundations and piles. As such, these components need to be easy to transport and install.

Furthermore, any repairs made to a bridge should improve the load rating and durability of its existing components. This may require the replacement of some of the bridge's old components if they are below contemporary standards.

Project planners should also take care to keep the number of necessary components to a minimum, as well as the number of necessary workers. An ABC project should keep any special

customized components to its minimum and should utilize temporary bracing for safe construction practices.

Bridges Should Be Built Using Repetitive Prefabricated Elements

Prefabricated bridge elements and systems (PBES) are structural bridge components which are built offsite in a precast plant or near the site of the bridge project. Producing these components beforehand minimizes the impact the bridge project has on traffic, utilities, and the general public.

ABC to be more feasible and economical, the number of various types of prefabricated components must be kept to a

minimum and repetitive for the same project. This helps prefabricators to utilize a multiple times the same plant setup for the manufacturing of the precast elements.

Popular ABC Concepts include:

- Precast deck panels and girder systems
- Precast pier systems
- Precast modular abutment systems
- Modular superstructure systems
- Bridge erection systems

Conclusion

Depending on the project requirement you have to adopt the method that suits your requirements. There are different types of methods and each comes with specific advantages.



Shreemathi R S
III-year Civil B

VERNACULAR ARCHITECTURE

Vernacular architecture can be said to be 'the architectural language of the people' with its ethnic, regional and local 'dialects'. Unfortunately, there has been a growing disregard for traditional architectural language around the world due to modern building technology quickly spreading a "loss of identity and cultural vibrancy" through a global pandemic of generic buildings. People have come to see steel, concrete and glass as architecture of high quality, whereas a lot of vernacular methods including adobe, reed or peat moss are often associated with underdevelopment. Ironically, these local methods

are far more sustainable and contextually aware than much contemporary architecture seen today, despite ongoing talks and debates about the importance of sustainability. As a result of these trends, a tremendous amount of architectural and cultural knowledge is being lost. Vernacular architecture in the Southeast Asian regions is usually, as with most vernacular building, built from local materials—in this case, wood. Unfortunately wood rots easily in the humid tropical climate, making it necessary to repair buildings on a regular basis. To deal with the humidity and heat, traditional

Malay Houses were designed to be porous, allowing for cross ventilation through the building to cool it down. Large overhanging roofs allow for open windows in rain and sun, both of which occur on nearly a daily basis. Building on stilts was another way to increase airflow and prevent damage to the house in the event of heavy downpours. However, this knowledge of passive cooling systems seems to have been lost in the midst of urbanization, being replaced by air conditioners that are attached to buildings that were not well designed for the Southeast Asian climate. It is eminent that as Civil engineers it is our utmost duty to protect the culture through vernacular building techniques.

E K Harshini
II year - Civil B



TOTAL STATION



What is total station?

A Total Station is a modern surveying instrument that integrates an electronic theodolite with an electronic distance meter.

A theodolite uses a movable telescope to measure angles in both the horizontal and vertical planes. Traditionally they are manual instruments that come in two types - transit, which rotates in a full circle in the vertical plane, and non-transit, rotating in a half-circle.

Total stations can measure long distances up to 8 miles depending on the equipment they have been equipped with.

Total stations are devices that can be set up on the ground and measure distances, angles, areas, heights, slope.

What are uses?

The total station instrument is mounted on a tripod and is levelled by operating levelling screws. Within a small range instrument is capable of adjusting itself to the level position. Then vertical and horizontal reference directions are indexed using onboard keys.

It is possible to set required units for distance, temperature and pressure (FPS or SI). Surveyor can select measurement mode like fine, coarse, single or repeated.

When target is sighted, horizontal and vertical angles as well as sloping distances are measured and by pressing appropriate keys they are recorded along with point number. Heights of instrument and targets can be keyed in after measuring them with tapes. Then processor computes various information about the point and displays on screen.

This information is also stored in the electronic notebook. At the end of the day or whenever electronic note book is full, the information stored is downloaded to computers.

The point data downloaded to the computer can be used for further processing. There are software like auto civil and auto plotter clubbed with AutoCad which can be used for plotting contours at any specified interval and for plotting cross-section along any specified line.

Least count

In the total station; the least count of the angle is 1" (1 second) and the least count of distance is 1 mm.

Approx price : 3 lakhs

Types of total station

- Scanning Total Station
- Robotic Total Station
- Autolock Total Station
- Total Mechanical Station

Equipment required

- Total station tripod tribrach
- communication cable power cable
- battery pack surveyor controller survey stake mallet

Advantages

- Field work is carried out very fast.
- Accuracy of measurement is high.
- Manual errors involved in reading and recording are eliminate

Advantages

- Calculation of coordinates is very fast and accurate.
- Even corrections for temperature and pressure are automatically made.
- Computers can be employed for map making and plotting contour and cross-sections.
- Contour intervals and scales can be changed in no time.

Disadvantages

- The worker cannot able to observe at the time of working because it complicates his work.
- To perform the work completely it's needed to go back to the office and perform drawings with particular software.
- The instrument is not cheap and is very expensive.

Conclusion

- We enable to know how to measure the horizontal and vertical angles of theodolite and gain knowledge of how to handle the equipment's during the field work.
- The instrument contains sensitive electronic assemblies which have been well protected against dust and moisture.



Nithish Kumar J
III Year Civil B

WASTE & RECYCLED MATERIAL IN CONCRETE TECHNOLOGY

“Waste does not exist in nature because ecosystems reuse everything that grows in a never-ending cycle of efficiency and purpose.”

The environmental sustainability became an important problem from the point of view of natural resources and that of wastes. The construction and the building materials sectors are involved in both processes: building industry is the largest user of natural materials.

Concrete is obtained from natural aggregates, cement and water, compounds which make it a cheap material. For reducing the aggregate and cement consumption, the replacing materials obtained from wastes.

NEED OF RECYCLING THE WASTE MATERIALS

There is a range of environmental and economic benefits in recycling concrete rather than dumping it or burying it in a landfills.

It reduces emission of CO₂, because the cement industry is responsible for 5-7% of worldwide emission of Co₂.

Cheaper source of aggregate than newly mined.

Using recycled material as gravel reduces the need for gravel mining.

It conserves energy, reduces air and water pollution, reduces greenhouse gases, and conserves natural resources.

ROLE OF WASTE MATERIALS IN CLINKER PRODUCTION

- Many waste materials contain basic ingredients that are needed for the manufacturing of cement clinker.
- Fly ash can also be used as source of raw material.
- Lime sludge can be used as a substitutes for lime stone.
- Red mud a waste material from the production of alumina used as a raw material for cement clinker production.
- Phosphogypsum as a mineralizer for making clinker

RICE HUSK ASH (RHA)

- RHA is obtained by burning the rice husk
- In rice milling operation one ton of rice paddy produces 40kg of rice husk, burning of rice husk results in 20% by weight of Ash.
- RHA can be used as supplementary cementitious Materials.



How RHA improves concrete?

OPC reacts with water to form two products

Calcium silicate hydrate

- Gives strength and durability to concrete

Calcium hydroxide

- It causes negative effects on concrete
- Reacts with CO₂ causing efflorescence leading
- Sulphate attacks
- Chemical attacks

Addition of RHA

- Increases calcium silicate hydrate
- Decreases calcium hydroxide

Application of RHA in construction

- High performance concrete
- Insulator
- Green concrete
- Waterproofing (swimming pools & bathroom floors) and rehabilitation.

Uses of RHA

RHA can be used in two distinct ways

- To create HPC : RHA is added to the cement to increase the strength of concrete.
- To create Green concrete: RHA can be used as an substitute of cement to reduce the amount of cement used while maintaining the strength of concrete.

Advantages of RHA

- As the specific gravity of rice husk is very low, so the total dead load of structure is reached.
- Cost of the structure is minimized.
- Eco-friendly in nature



FLYASH CEMENT

- Fly Ash is the ash component of coal liberated during combustion.
- Fly Ash can be incorporated into Portland cement in the one of the three ways.
- Fly Ash addition to Portland cement results in increased workability. In fly Ash cement development of compressive strength is slow.
- At longer period of curing fly Ash concrete develops higher strengths than the normal concrete.

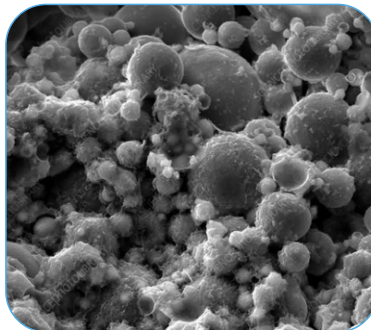


Characteristics of Fly Ash

- Not a specially manufactured product governed by strict rules variation in carbon, particles shape & shape distribution, presence of minerals etc.

- Exhibits different characteristics with different compound.
- No proper processing is available.
- Change in the behaviour of concrete.

Microbial view of Fly Ash



- First used in construction of Hungry Horse Dam in USA.
- In India, first used in Rihad Dam.
- High volume of is current interest.
- Quality of fly Ash is governed by IS:3812-1981.

Fly Ash used in Delhi metro



Advantages of fly Ash

- Addition to fly Ash to concrete minimise or eliminate the expansion due to alkali aggregate reaction.
- Workability. Time of setting.

Recycling of Concrete

- Except structures which have to be preserved as monuments a great number of them have to be demolished sooner or later.
- Concrete accounts of nearly 75% by weight of all construction material.

- Millions of Tons of concrete debris are generated by natural disaster.



Breaking, removing & crushing hardened concrete from an acceptable source.

The final product collected from crushing a separated from other contaminated obtained from construction & demolition waste such as concrete wastes, broken bricks, gravel.

Concrete road beds, road pavement that has been previously used in construction are recycled aggregates.

CONCLUSION

- In coming future recycling of waste materials & by products for concrete technology will achieve new heights.
- As attempts are already being made to use municipal refuse & waste oil as partial substitutes for production of cement clinker.
- We have to promote & development in the area of utilization of waste materials.

Rithikka Shri C S
III Year Civil



PAVEGEN TECHNOLOGY KINETIC FOOTFALL

What is kinetic footfall ?

The electrical energy plays a very important role in almost all industries. Especially in the housing sector, it is a necessary element in construction, completing and maintenance of a building.

There are many sources are available to generate electricity. Few popular sources are Nuclear power, Hydropower, Solar energy, Fossil fuels, etc Some of these are expensive to extract electricity. And also, they largely contribute pollutants to environment pollution. We need a source to generate the electrical energy economically and it should not impact the environment. Kinetic footfall is a new source of electricity, which capture the energy from human footfall to generate electrical energy.

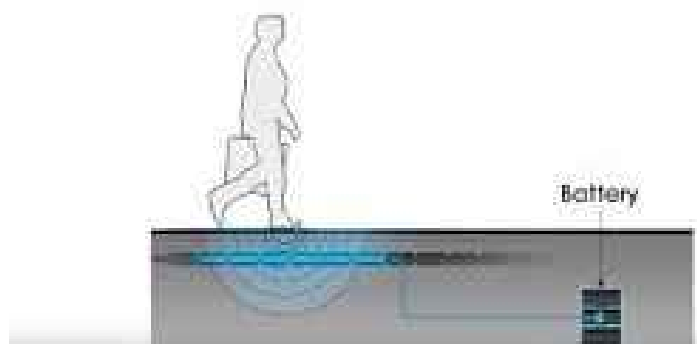
Materials used :

1. The top surface of the flooring is made from recycled rubber and stainless steel.
2. The base of the slab is constructed from over 80% recycled materials with concrete.
3. The size of the single product is 600*450*87mm.

it is a brilliant mind that has thought and discovered the way to use the people walking/ moving on the way both pedestrian & vehicular movements. This technology named as "kinetic footfall" can be a major source of energy generation infrastructure if it gets installed on the streets of most busy streets of salem or can be any city where people love/ prefer to walk to work and fro.

For the people who don't know what kinetic footfall is, Kinetic footfall is the source of electricity that captures the energy from human footsteps and generates electrical energy. Kinetic Footfall is the latest innovative technology majorly can be used in civil engineering/ Infrastructure Sector. It's quite simple, the Energy harvesting floors are easy to install and are environmentally adaptable, as they receive input from human footprints without interfering with pedestrians' daily lives. These systems on the other hand do not release any harmful pollutants into the environment system and can be helpful for reduced natural resources. Overall, Kinetic footfall is the or can be smart energy network.

POWER GENERATING SIDEWALK



In 2017, Pavegen, a UK-based technology company built a sidewalk in London using this kinetic footfall technology.

Types of materials

- Piezoelectric effect.
- Magnetic transducers.
- Micro - generators.
- Static capacitors.

How it works?

- When the material is compressed the atoms press together, enough to change the properties of electrons.
- When the pressure is removed the electrons return to their original shape.
- If the piezoelectric compounds are fitted with an auxiliary circuit then, the returning electrons will be captured and used to create a micro-circuit.
- The energy floor or footpath is constructed using this piezoelectric compounds to capture the electrons.
- When humans start to walk on this floor, the pressure developed on the floor.
- The pressure or kinetic energy will be collected by the piezoelectric compounds of the floor.
- Later, the energy floor converts the kinetic energy into electrical energy



Benefits:

- This can be used indoors or outdoors in high traffic areas and generated electricity from pedestrian footfall.
- this tiles are completely Renewable and Eco friendly technology.
- The top surface is built entirely of recycled materials.
- Less maintenance cost.
- It is waterproof and damproof.



PAVITHRA P
III Year Civil

STUDENTS ACHIEVEMENTS



E.K.Harshini, Sapna V, Sreivithayan, Harish M of BE II Year, has participated and won special price of Dekathon 22 - An Indo Malaysian Hackathon on Process and Product Design jointly organized by St.Thomas College of Engineering and Technology, Chengannur in association with Universiti Teknologi Mara Malaysia, APJ Abdul Kalam Technological University and Kerala Startup Mission, 16-18 November, 2022.



E.K.Harshini of II year has participated in project expo 2022 organized by department of civil engineering, sona college of technology and won first place held on 15.10.2022.



Mohana Priya - 3rd year/Civil & Prabhavathi - 3rd year/Civil Has Participated and Won Gold medal at Anna university zonal level volleyball tournament sona College of Technology women's team WINNER held at PGP college of technology on 19.11.2022

BUILD EXPO PARTICIPATED BY OUR STUDENTS



E.K.Harshini and her team participated in emergng engineers contest held at Build Expo 2022 - 23 campus, Sri Rathina Vel Jayakumar Thirumanan Mandapam, Salem and won II prize as cash Rs. 8000 from Salem Civil Engineers Association between 30.12.2022 to 02.01.2023.

AWARDS RECEIVED BY OUR DEPARTMENT FACULTY



Dr. R. Malathy / Professor & Head & Dean (RGD) has been received best paper award on Alkali Activated Systems of Geopolymer Based Paver Blocks Under Different Curing Conditions in the Second International Conference on Construction Materials and Structures (ICCMS-2022) during 13-19 December, 2022.



Dr. M. Logeshkumar / Associate Professor has been received best paper award on Alkali Activated Systems of Geopolymer Based Paver Blocks Under Different Curing Conditions in the Second International Conference on Construction Materials and Structures (ICCMS-2022) during 13-19 December, 2022.

EVENTS ORGANIZED BY OUR DEPARTMENT FACULTY



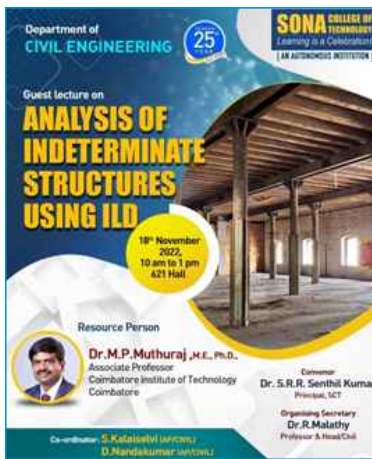
Project expo 2022 or school and college students competition was held on 15.10.2022.



Dr. D. Jegatheeswaran / Professor & Dr. B. Prabu / Assistant Professor Has Organized Online Guest Lecture On Seismic Response Of Concrete And Masonry Buildings On 04.11.2022.



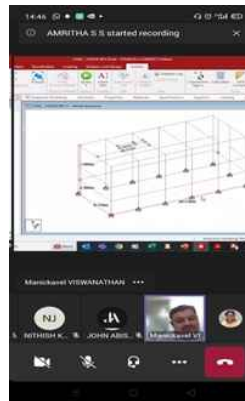
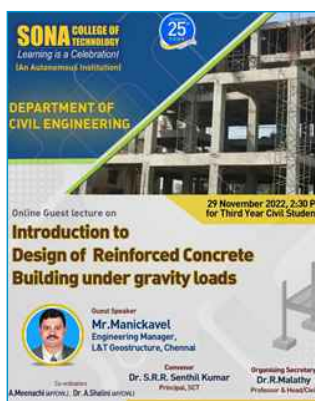
One Day Workshop On Setting Question Papers For Open Book Examinations Held On 07.11.2022.



Mrs. S. KALAISELVI / Assistant Professor and Mr. D. Nandakumar/ assistant professor has organized guest lecture on " Analysis of Interdminate Structures using lid" on 18.11.2022.



Training The Teachers (3t) Intramural lecture series held on 25.11.2022.



Dr.A.Shalini/ AP & Mrs.A.Meenachi / AP has organized online guest lecture on Introduction to Design of Reinforced Concrete Building Under Gravity Loads on 29.11.2022.

EVENTS ORGANIZED BY OUR DEPARTMENT FACULTY



The Civil Engineering Department of Sona College of Technology has organized a motivational session on the "Focus" on 14th December 2022. The lecture was delivered by Mr. Alauddin, Trainer, Department of MBA, Sona College of Technology, Salem. analyzed. The Programme was organized by Dr. B. Prabu, Asst. Prof/Civil and Dr. N. Karupasamy, AP/Civil.



Seminar organises on Building Information Modelling dated on 29.12.2022.

Participation in Seminar / Conference / Workshop / Training/ Webinar etc. by Department Faculty

Name of the Faculty with Designation	Title / Topic	Place of Program
Dr.R.Malathy Professor & Head & Dean (R&D)	“ Application Of Artificial Intelligence , Machine Learning And Deep Learning In Contaminated Site Remediation”	R.V.R & J.C College Of Engineering , Chawdavaram, Guntur, A.P In Association With Indian Geotechnical Society, Guntur Organized BY AIML -007.
Dr.M.N.A.Gulshan Taj/ PROFESSOR	Webinar On “ Application Of Artificial Intelligence, Machine Learning And Deep Learning In Contaminated Site Remediation	R.V.R & J.C College Of Engineering , Chawdavaram, Guntur, A.P In Association With Indian Geotechnical Society, Guntur Organized BY AIML -007.
Dr.R.Malathy Professor & Head & Dean (R&D)	“ Evolutionary Algorithms For Optimal Reservoir Operation”	R.V.R & J.C College Of Engineering , Chawdavaram, Guntur, A.P In Association With Indian Geotechnical Society, Guntur Organized BY AIML -007.
Dr.R.Malathy Professor & Head & Dean (R&D)	“ML & AI” : FUTURE OF CONSTRUCTION	R.V.R & J.C College Of Engineering , Chawdavaram, Guntur, A.P In Association With Indian Geotechnical Society, Guntur Organized BY AIML -007.
Dr.R.Malathy Professor & Head & Dean (R&D)	“ Applications Of Machine Learning And Ai To Building InformationManagement (BIM)”	R.V.R & J.C College Of Engineering , Chawdavaram, Guntur, A.P In Association With Indian Geotechnical Society, Guntur Organized BY AIML -007.
MS. G.K. MONICA NANDINI/ Assistant Professor	Project Management for Organizational Excellence	VIT, CHENNAI
Mrs. A. Meenachi	“Spirituality for peace”	SCT, MBA Conferecne Hall
Mrs. S. Saranya	“Spirituality for peace”	SCT, MBA Conferecne Hall
Ms. G.K. Monica Nandini Assistant Professor	Air Quality Monitoring and Analysis: Challenges and Research Gaps	Kumaraguru College Of Technology, Coimbatore
Dr .M.N.A. Gulshan Taj Professor	Webinar On “ Neural Network And Fuzzy Applications In Traffic Flow Modeling”	R.V.R & J.C College Of Engineering, Chawdavaram, Guntur, A.P In Association With Indian Geotechnical Society, Guntur Organized BY AIML -007.

Conference Presented By Our Department Faculties



Ramalingam Malathy / PROFESSOR & HEAD & DEAN (R&D) of Sona college of technology has presented a paper entitled "Study on Strength Behavior of M20 concrete with treated Recycled coarse aggregate" in the Second International Conference on Construction Materials and Structures (ICCMS-2022) during 13- 19 December, 2022.



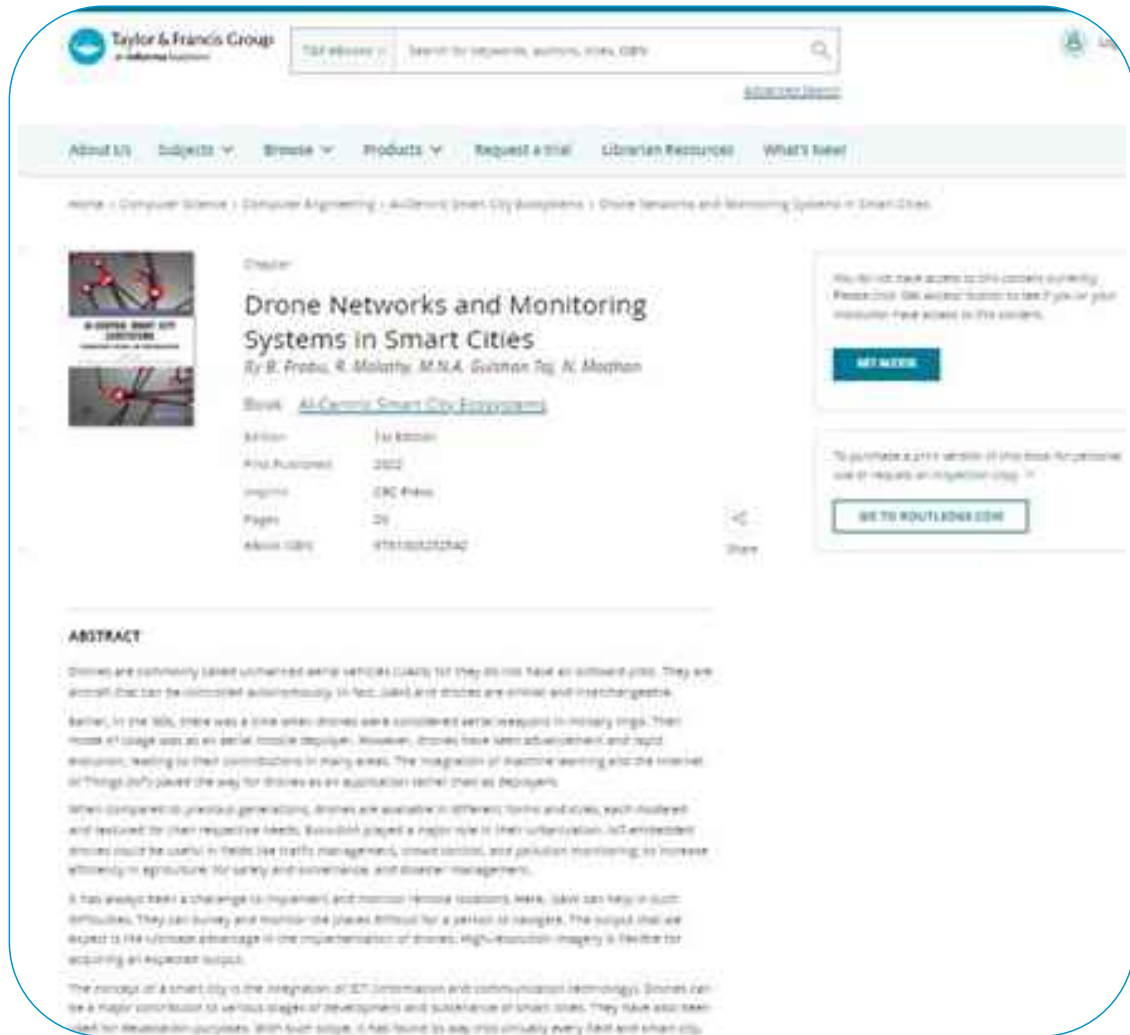
Malathy Ramalingam of Sona college of technology has presented a paper entitled "Influences of magnetized water on Cement mortar properties at different exposure time" in the Second International Conference on Construction Materials and Structures (ICCMS-2022) during 13-19 December, 2022.

MOOC COURSES

Name	Course Name	Certificate Type
Dr.R.Malathy	Design of reinforced concrete structures	Elite+gold(Topper)
Dr. D. Jegatheeswaran	Building Materials and Composites	Elite
Dr. M.N.A. Gulshan Taj	Virtual design communication	Elite+Silver
Dr. M. LogeshKumar	Geotechnical Engineering laboratory	Elite
Dr. Kasi viswanathan	Reinforced Concrete Road bridges	Elite+Silver
Dr. B. Prabu	Geotechnical Engineering laboratory	Elite
Mr. P. Ashok Kumar	Geotechnical Engineering laboratory	Elite+Silver
Mrs. S. Kalaiselvi	Geotechnical Engineering laboratory	Elite+Silver
Mrs. S. Saranya	Geotechnical Engineering laboratory	Elite
Dr. A . Shalini	Geotechnical Engineering laboratory	Elite+Silver
Dr. S. Jagan	Accreditation and outcome based learning	Elite+Silver
MS. G.K. Monica Nandini	Availability and Management of Groundwater Resources	Elite+Silver
Mr. N. Karrupasamy	Building materials and composites	Elite
Ms. M. Govarthani	Availability and Management of Groundwater Resources	Elite
Mrs. A . Meenachi	Bridge Engineering	Elite+Silver
Mr. D. Nandakumar	Plastic Waste management	Elite

BOOK CHAPTER PUBLISHED

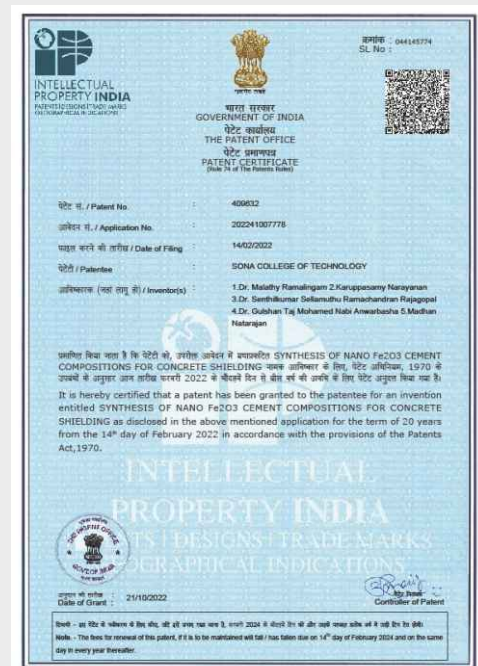
By Our Department Faculty



BOOK CHAPTER PUBLISHED BY OUR DEPARTMENT FACULTY

R & D ACTIVITIES

Dr.R.Malathy / Professor & Head & Dean (R&D),
Mr.N.Karuppasamy/ Assistant Professor,
Dr.S.R.R.Senthilkumar / Principal & Professor,
Dr.M.N.A.GulshanTaj has been
certified that a patent has been granted for an
invention entitle" SYNTHIEIES FOR CONCRETE
SHIELDING" on 21/10/2022.



International Journals Published By Our Department Faculty

Author Name	Title of the Paper	Name of the Journal
Dr. R. Malathy	Study on Flexural Behaviour of Ferrocement Composites Reinforced with Polypropylene Warp Knitted Fabric	MDPI - polymers
Dr. R. Malathy	Utilization of industrial waste materials in concrete filled steel tubular columns	REVISTAMATERIA
Dr. R. Malathy, Dr. Karuppusamy	Effect of organic inhibitor on the corrosion behaviour of reinforced cement concrete	ELSEVIER
Dr. R. Malathy, Dr. Karuppusamy	Resilience and sturdiness of the foundry sand as a result of the partial substitution of cement and fine aggregate	ELSEVIER
Dr. R. Malathy , Dr.Karuppusamy	An Experimental investigation on improvement of concrete serviceability by using ferro sialate based bacterial concrete development	ELSEVIER
Dr. R. Malathy, Dr. Karuppusamy	Study of impact of crumb rubber used as an aggregate in concrete mix	ELSEVIER
Dr. D. Jagatheeswaran	Glass fiber reinforced ultra high strength concrete with silica fume	Gradevinar
Dr. D. Jagatheeswaran	A DOE (Response Surface Methodology) Approach to Predict the Strength Properties of Concrete Incorporated with Jute and Bamboo Fibres and Silica Fumes	Hindawi Advances in Civil Engineering
Dr. D. Jegatheeswaran	Influence of Strength Behavior in Brick Masonry Prisms and Walette Under Compression	PERIODICO di MINERALOGIA
Dr. D. Jegatheeswaran	Influence of strength behavior in brick masonry prism and walette under compression	REVISTAMATERIA
Dr. D. Jegatheeswaran	Prediction of the Mechanical Properties of Fibre-Reinforced Quarry Dust Concrete Using Response Surface and Artificial Neural Network Techniques	Hindawi Advances in Civil Engineering
Dr. Soundarrajan	Sustainable Retrofitting and Moment Evaluation of Damaged RC Beams Using Ferrocement Composites for Vulnerable Structures	Sustainability
Dr. B. Prabu	Use of Trochodendron Aralioides Extract as Green Corrosion Inhibitor for Mild Steel in 1M HCl Solutions	MDPI- Processes
Dr. M. Logesh Kumar	Development of fuel injector relative performance tester and cleaner	API-Conference proceedings
Dr. M. Logesh Kumar	Investigation on Mechanical and Thermal Properties of a Kenaf/ Jute Fiber-Reinforced Polyester Hybrid Biocomposite	Advances in Polymer Technology
Dr. M. Kasiviswanathan	Numerical Parametric Study and Design of Pultruded GFRP Composite Channel Columns	Sustainability
Dr. S. Jagan	Review on Impact of Construction Waste Landfill on Environment and its Reutilization	Ecological Engineering & Environmental Technology
Dr. S. Jagan	Sustainable Utilization of Dumped Concrete Wastes as Fine Aggregates in Concrete – An Experimental Study	International journal of Engineering
Dr. Karuppusamy	Strength characteristics properties of papaya leaf extract as green inhibitor in concrete	Materials Today: Proceedings
P. Ashok Kumar	Mechanical and Thermal Properties of Bamboo Fiber-Reinforced PLA Polymer Composites: A Critical Study	Hindawi International Journal of Polymer Science
P. Ashok Kumar	Application of Internet of Things for structural assessment of concrete structures	Smart Structures and Systems

OUTREACH ACTIVITIES

By Our Department



Inauguration of Interlock Blocking Machines at Vee Technologies, Mamagam held on 12.10.2022.



Dr.R.Malathy/ Professor & Head delivered Special Lecture on IPR on 18.11.2022.



CORNER

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Thiankaran Chandrasekaran

BIM Lead, Noida International Airport
Deputy BIM Engineer, Jacobs



Mr. A.K. Pranesh

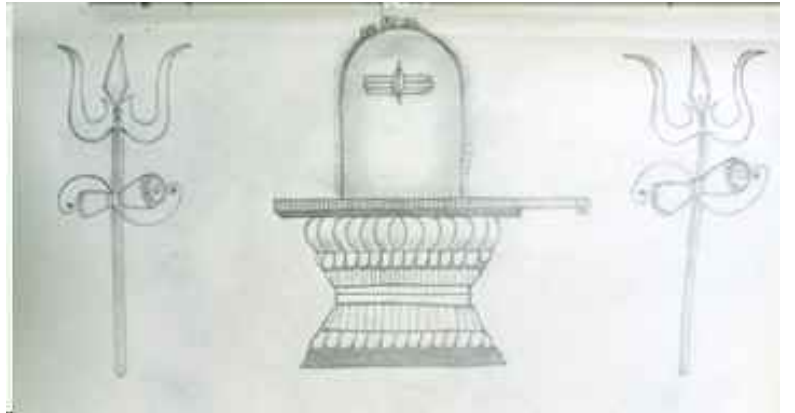
Assistant Engineer
TN Highways Department
(Batch 2012 - 2016)



Mr. K. Manoj Kumar

Products Specialist
Leap Thought, Singapore
(Batch 2003 - 2007)





SAPNA V IInd year - A

