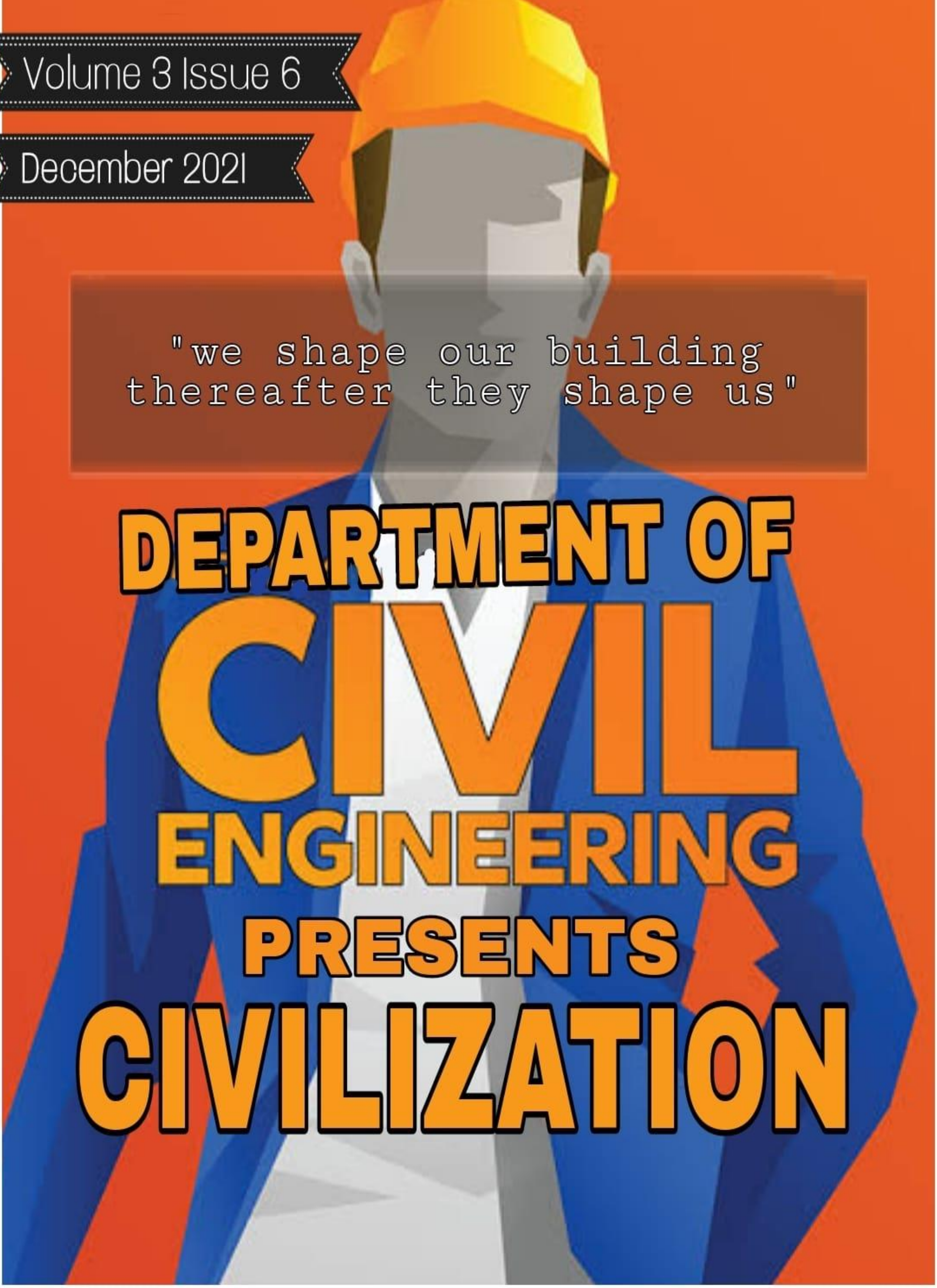
Volume 3 Issue 6

December 2021



"we shape our building thereafter they shape us"

DEPARTMENT OF CIVIL ENGINEERING PRESENTS

CIVILIZATION

VISION

- *To be a Department imparting knowledge in Civil Engineering Education, Research, Entrepreneurship and Industry outreach services for creating sustainable infrastructure and enhancing the quality of Life with professional and ethical values.*

MISSION

- *To provide an effective learning environment enabling to be a competent Civil Engineer.*
- *To motivate Research and Entrepreneurial initiatives in the field of Civil Engineering.*
- *To inculcate ethical values to serve the society with high order Professionalism.*

BUILDING INFORMATION MODELLING

Building Information Modelling (BIM) is an intelligent, 3D model-based process that is the foundation of digital transformation. Civil engineers can create and manage all the information surrounding design assets ensuring improved collaboration, shared data, and project delivery that is on time and on budget.

Building Information Modelling (BIM) is so much more than a technology—it's a complex design and construction process that helps architects create innovative buildings of the future. There are five significant benefits of BIM in the design and construction process:

1. Cost and resource savings
2. Greater efficiency and shorter project lifecycles
3. Improved communications and coordination
4. More opportunities for prefabrication and modular construction
5. Higher quality results

When you work with an architecture firm that uses BIM during the construction process, your resources may go further. If you want to build a dynamic structure as efficiently as possible, take a closer look at what BIM construction can do.

How BIM is used during Design and Construction?

BIM is a process that architects use to design and construct modern buildings. The process encompasses several different design tools and methods with the end goal of making every phase of construction and design as efficient, safe, and cost-effective as possible. Here's how the process works:

STEP 1: MODELLING	Architects use BIM authoring tools to make detailed 3D models of the structure. At this stage, they can experiment with the design and identity potential issues before committing their ideas to the construction process.
STEP 2: WORKFLOW	All information and ideas related to the project are stored in a shared location that clients, architects, contractors and other collaborators have access to. This is usually a cloud-based software, meaning that anyone with secure permissions can access it from any location by connecting to the server. What type of information is stored in the BIM system? Architects can use BIM software to make design choices and calculations like: Energy and light analyses, spatial planning, parametric modelling, material choices, cost estimates and construction time estimations. Using these models and estimates, architects can layout the most efficient construction workflow for the project.
STEP 3: CONSTRUCTION	With the established workflow in mind, contractors construct the building. They can revisit the BIM model or workflow during the process anytime and make adjustments to it as needed. One of the benefits of BIM is that it keeps everyone on the same page during construction, even when the workflow changes.
STEP 4: HANDOVER	After the structure is complete, architects can turn over the BIM model to the client or the facility management (FM) company. Having a detailed model of the design is useful for locating HVAC systems or making future renovations.

Benefits of BIM

To understand how the advantages of building information modelling can improve your project, take a closer look at the five most essential benefits of BIM below.

1. Cost and Resource Savings

One significant benefit of BIM is that it provides reliable construction cost estimates long before the construction phase begins. Architects can use tools like BIM 360 Docs to estimate costs related to:

- Materials
- Material shipping
- Shipping prefabricated or modular pieces
- Labour, including payrolls-based construction timelines

Not only does this give architects a better idea of how much the project will cost, but it also helps them discover ways to reduce costs. For example, they can:

- Choose more cost-effective materials
- Find the ideal time to buy materials at their lowest market price
- Decide whether it's cheaper to prefabricate or build on-site
- Streamline the construction workflow so the client pays for fewer total billable hours
- Reduce human errors that lead to project delays or costly repairs

2. Greater Efficiency and Shorter Project Lifecycles

Generally, the faster you can complete a structure's construction, the less money you will spend on the project overall. Also, finishing a project on time or early speeds up your eventual return on investment, as occupants can start using the space as soon as possible. With BIM, architects can design buildings faster and start construction earlier. Improved workflow and other efficiencies also speed up the project. For example, the architect may decide to have certain pieces prefabricated in bulk using robotics. This could save time during construction, as contractors simply have to secure the pieces in place when they arrive on-site.

3. Improved Communications

BIM improves communication among architects, clients, contractors, and other relevant parties involved in the project. That's because BIM relies on a "single source of truth" system; this means that all of the relevant information—including models, estimates, and design notes—are shared and stored from one place. Everyone involved in the project can see the information and even offer suggestions of their own. It's a true collaboration that eliminates information silos and helps architects find the best solutions based on data analytics.

Another benefit of BIM is its use on-site. Contractors have access to BIM software on-the-go, so they're able to construct the building based on the most up-to-date plans and workflow. This also reduces clashes. It's easier to visualize problems before construction begins, so contractors don't have to waste time finding solutions on-site.

Finally, BIM uses communication systems to make construction safer. BIM allows architects to predict potential construction hazards and prevent them by adjusting the design. Contractors can also lead their teams safely through every step in the workflow and document the process to meet safety regulations and pass on-site evaluations.

4. More opportunities for Prefabrication and Modular Construction

BIM software is ideal for making detailed production models that can later be prefabricated off-site. Architects also have more opportunities to design modular pieces of architecture that fit perfectly together and include complex tolerance calculations. This, in turn, can save time and money, as contractors spend less time constructing pieces on-site from scratch.

5. Higher Quality Results

While the benefits of BIM are most evident in the design and construction process, clients may also notice an improvement in build quality. Using BIM makes calculations and models more detailed and accurate, and this results in a higher quality structure.

And, because the BIM process includes multiple visualization tools, the structure may also be more aesthetically pleasing. Architects can see what the building will look like in its final form and can even see how natural and artificial light will behave in the structure. In fact, there are five types of visualizations, called dimensions, that architects can view and customize using BIM:

3D: Height, width, length, depth

4D: The time it takes to complete each design element

5D: How much it will cost to construct each element

6D: The structure's environmental impact over time

7D: Estimated facility management costs throughout the structure's lifecycle

Considering all of these factors, not just 3D aesthetics, gives architects the ability to design high-quality buildings that last.

Why you should work with BIM Construction Experts?

Architecture firms and contractors that understand the value of BIM may be able to offer you more in terms of project efficiency and build quality. For example, one of the most significant challenges that clients face when they embark on a project is predicting the time and resources a project will require. While it's impossible to forecast precisely how much a project will cost or how long it will take to complete, BIM can take some of the mystery out of a project's total cost and construction timeline.

BIM can accomplish this by helping architects make better design choices from the start and keep projects under budget by optimizing labour, materials, and other resources. Even if your budget is limited, a firm like HMC Architects with experience using BIM can find ways to achieve your desired design outcome using detailed 3D models and more efficient workflows. With so many benefits, BIM is an essential part of the design and construction process and will continue to play a vital role in our industry.

By Mr. M. Manoharan,

Assistant Professor

Department of Civil Engineering

KINETIC FOOTFALL

The electrical energy or electricity plays a very important role in almost all industries. Especially in the housing sector, it is a necessary element in construction and maintenance of a building. Energy Crisis is one of the main issues faced by the world these days.

There are many sources available to generate electricity such as Nuclear power, Hydropower, Solar energy, Fossil fuels, etc. Some of these are expensive to extract electricity. And also, they largely contribute pollutants leading to environmental 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.

This is all about generating electricity when people walk on the Floor. Think about the force we exert which is wasted when a person walks on the floor. The idea is to convert this force into electrical energy. The Power Generating floor intends to convert kinetic energy into electrical power.

Laurence Kemball-Cook, the director of Pavegen Systems imagined a new idea to generate electricity from pavement slabs. This idea was later named as Pavegen

Technology. It is also known as kinetic footfall. Most of the countries are trying to innovate alternative electricity power for their usage. In civil construction field, they introduced an energy conserving technology as a replacement for tiles. The first-generation tile was made from recycled material, with the top surface made from recycled truck tires. Power is generated when a footfall compresses the slab by about 5 mm (0.2 in). The exact technology is a secret, but Pavegen officials have said it involves electromagnetic induction by copper coils and magnets. Pavegen says each pedestrian generates enough to run an LED street lamp for 30 seconds. Today it is easy to produce electricity using our foot-steps. As such it is expected that such devices will only be installed where large numbers of people transit, thus having a negligible effect on an individual whilst still providing considerable potential. Since human activity is spread throughout the urban environment it can be considered as diffused source of energy.

This idea can be implemented in the floors of crowded places such as footpaths, railway platforms etc. Stairs can also be used for production of energy by walking. This technology can be used for security purposes and in various alarm systems, for street lights, in bus station, airports, playground etc.

Development in the areas of storage and transmission of energy may eliminate all the drawbacks and make this an effective technology for power harvesting.

By T. V. Eniya / Student

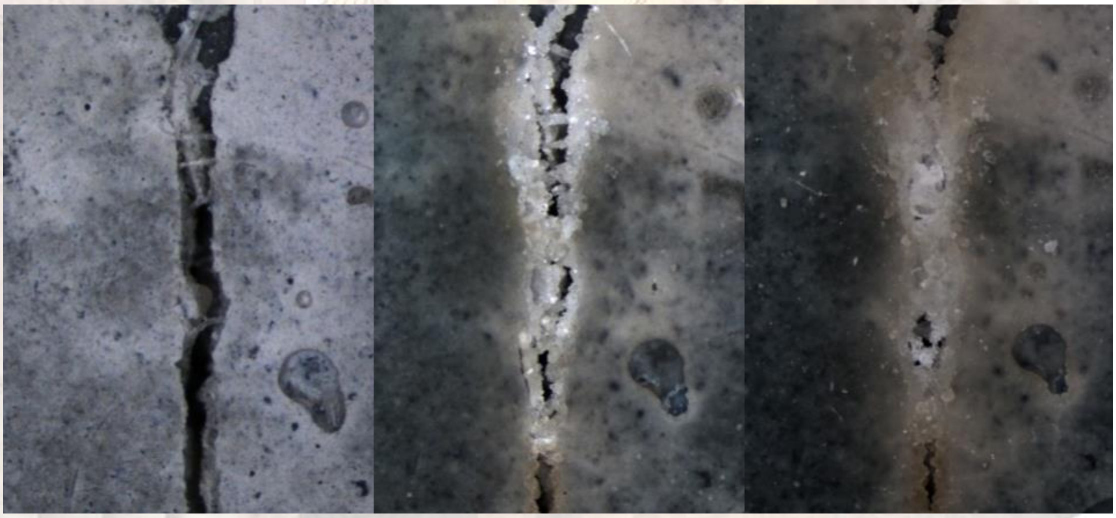
II Year Civil Engineering

SMART SELF HEALING CONCRETE

Self-healing concrete is a new type of concrete. It imitates the automatic healing of body wounds by the secretion of some kind of material. To create self-healing concrete, some special materials (such as fibres or capsules), which contain some adhesive liquids, are dispensed into the concrete mix. When cracks happen, the fibres or capsules will break and the liquid contained in them will then heal the crack at once. Lot of research work is being carried out related to self-healing concrete and its application within the construction industry.

Self-healing concrete is mostly defined as the ability of concrete to repair its cracks autogenously or autonomously. It is also called self-repairing concrete. Cracks in concrete are a common phenomenon due to its relatively low tensile strength. Durability of concrete is impaired by these cracks since they provide an easy path for the transportation of liquids and gases that potentially contain harmful substances. If micro cracks grow and reach the reinforcement, not only the concrete itself may be attacked, but also the reinforcement steel bars will be corroded. Therefore, it is important to control the crack width and to heal the cracks as soon as possible. Self-healing of cracks in concrete would contribute to a longer service life of concrete structures and would make the material not only more durable but also more sustainable.

Self-healing is actually an old and well-known phenomenon for concrete as it possesses some natural autogenous healing properties. Due to ongoing hydration of clinker minerals or carbonation of calcium hydroxide ($Ca(OH)_2$), cracks may heal after some time. However, autogenous healing is limited to small cracks and is only effective when water is available, thus making it difficult to control. Nonetheless, concrete may be modified to build in autonomous crack healing. Dry started to work on the autonomous self-healing concrete in 1994. In the following years, several researchers started to investigate this topic. Many self-healing approaches are proposed. They mainly include autogenous self-healing method, capsule-based self-healing method, vascular self-healing method, electrodeposition self-healing method, microbial self-healing method and self-healing method through embedding shape memory alloys (SMAs). For example, Edvardsen found that the greatest potential for autogenous healing exists in early age concrete. Mihashi et al. used urea-formaldehyde microcapsules (diameter 20–70 μm) filled with epoxy resin and gelatine microcapsules (diameter 125–297 μm) filled with acrylic resin to achieve self-healing of concrete under compression and splitting. Joseph et al. made use of an air-curing healing agent, provided by glass tubes. One end of the tube was open to the atmosphere and curved to supply healing agent. When the tubes become depleted after concrete cracking occurred, additional agent could be added via the open end to allow healing of wider cracks. Otsuki et al. proposed the electrodeposition method as a means of repair for cracked concrete structures and investigate the effects of this method on various concrete properties. Jonkers et al. investigated the potential of bacteria to act as self-healing agent in concrete, i.e., their ability to repair cracks. They proved that application of bacterial spores as self-healing agent appears promising. Kuang and Ou, and Li et al., found that the SMA wire as reinforcing bar can make cracks close and perform the task of emergency damage repair in concrete structures. The cracks are closed due to the super elastic behaviour of embedded SMAs.



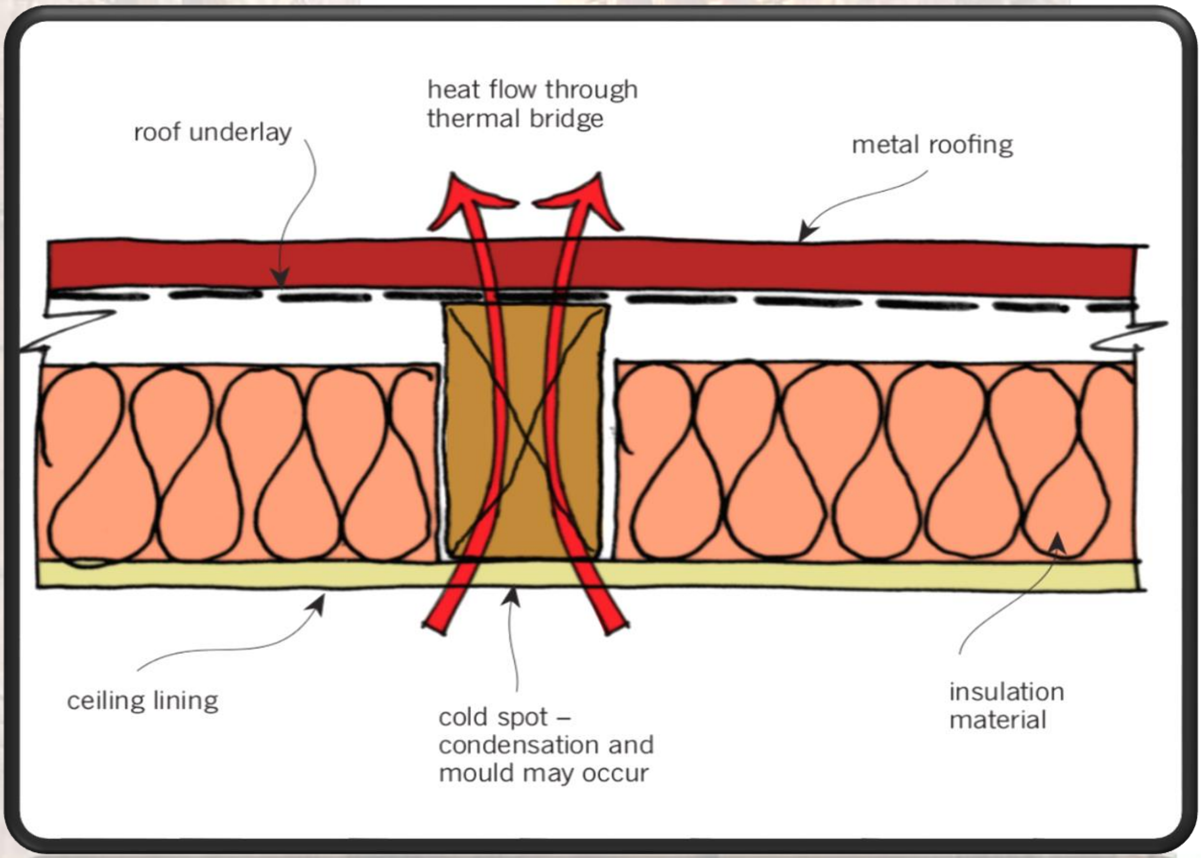
Self-Healing Concrete can repair itself

By A. Naveen Rajasekar / Student

III Year Civil Engineering

THERMAL BRIDGING

Heat transfer occurs through three mechanisms: convection, radiation, and conduction. A thermal bridge is an example of heat transfer through conduction. The rate of heat transfer depends on the thermal conductivity of the material and the temperature difference experienced on either side of the thermal bridge. When a temperature difference is present, heat flow will follow the path of least resistance through the material with the highest thermal conductivity and lowest thermal resistance; this path is a thermal bridge. Thermal bridging describes a situation in a building where there is a direct connection between the outside and inside through one or more elements that possess a higher thermal conductivity than the rest of the envelope of the building.



Thermal Bridging in Construction

Frequently, thermal bridging is used in reference to a building's thermal envelope, which is a layer of the building enclosure system that resists heat flow between the interior conditioned environment and the exterior unconditioned environment. Heat will transfer through a building's thermal envelope at different rates depending on the materials present throughout the envelope. Heat transfer will be greater at thermal bridge locations than where insulation exists because there is less thermal resistance. In the winter, when exterior temperature is typically lower than interior temperature, heat flows outward and will flow at greater rates through thermal bridges. At a thermal bridge location, the surface temperature on the inside of the building envelope will be lower than the surrounding area. In the summer, when the exterior temperature is typically higher than the interior temperature, heat flows inward, and at greater rates through thermal bridges. This causes winter heat losses and summer heat gains for conditioned spaces in buildings.

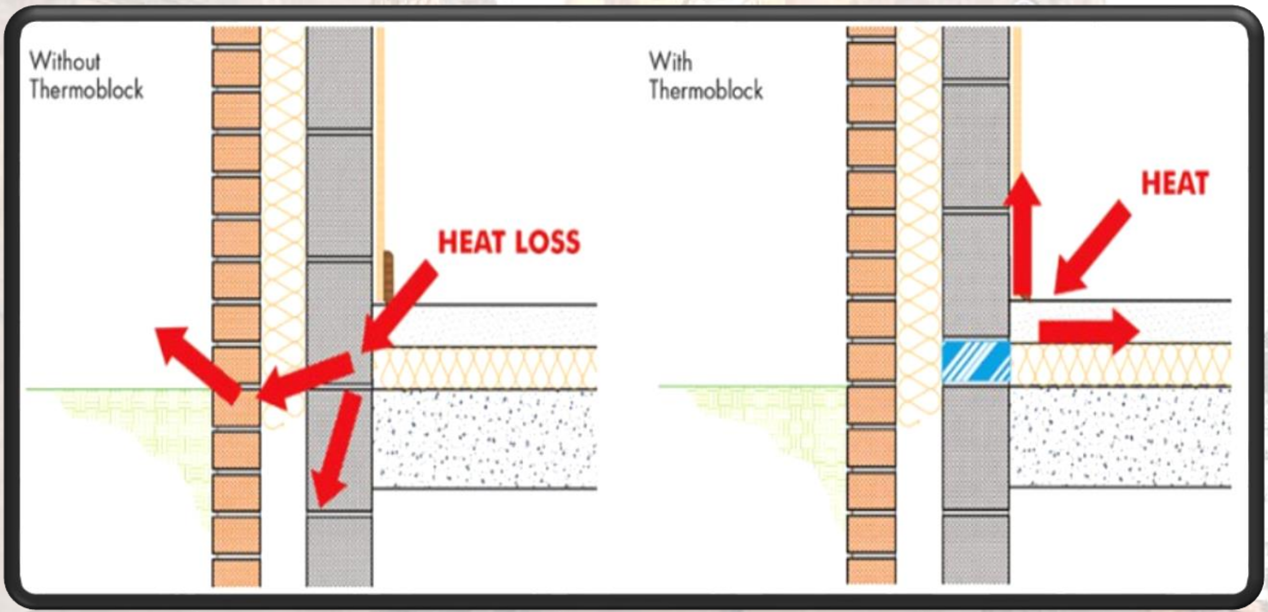
Despite insulation requirements specified by various national regulations, thermal bridging in a building's envelope remain a weak spot in the construction industry. Moreover, in many countries building design practices implement partial insulation measurements foreseen by regulations. As a result, thermal losses are greater in practice that is anticipated during the design stage.

An assembly such as an exterior wall or insulated ceiling is generally classified by a U-factor, in $W/m^2 \cdot K$, that reflects the overall rate of heat transfer per unit area for all the materials within an assembly, not just the insulation layer. Heat transfer via thermal bridges reduces the overall thermal resistance of an assembly, resulting in an increased U-factor.

Thermal bridges can occur at several locations within a building envelope; most commonly, they occur at junctions between two or more building elements. Common locations include:

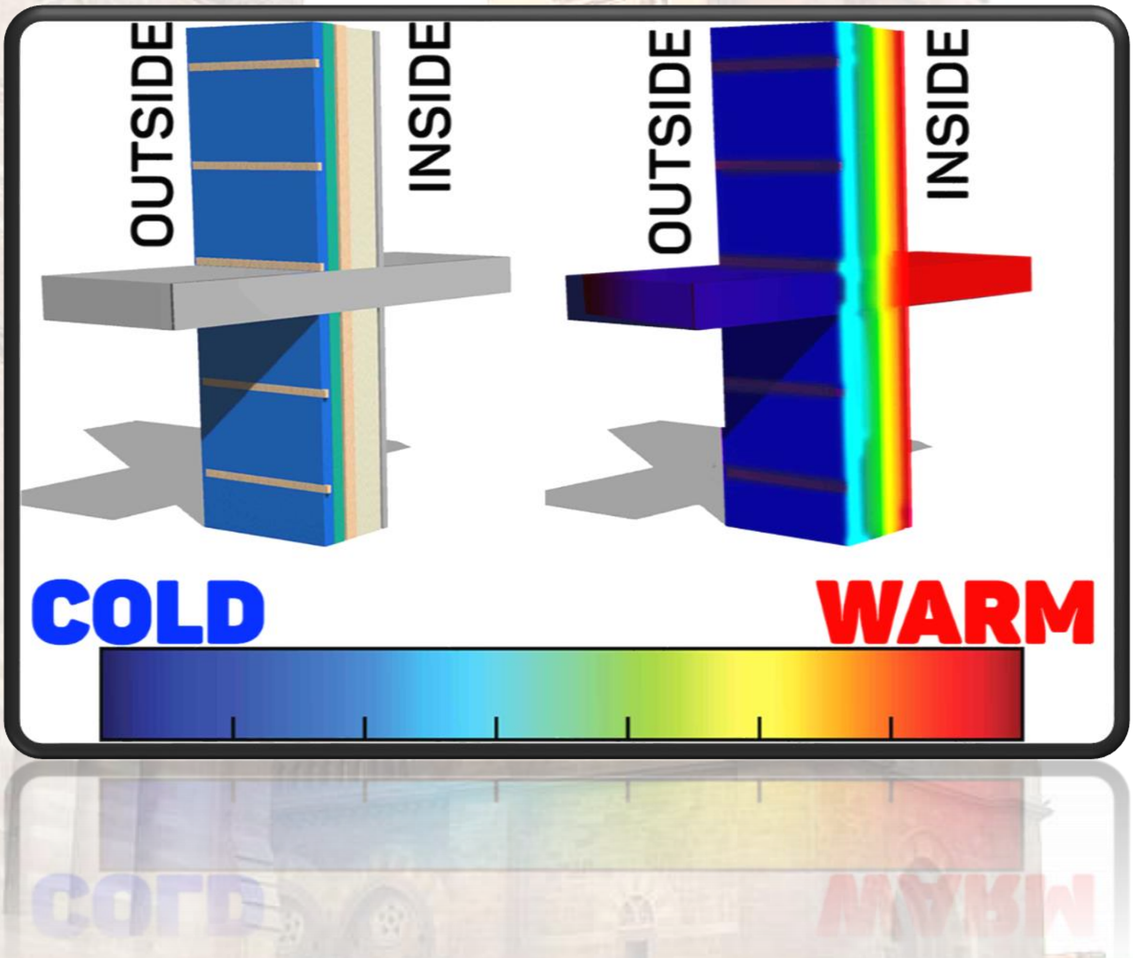
- Floor-to-wall or balcony-to-wall junctions, including slab-on-grade and concrete balconies or outdoor patios that extend the floor slab through the building envelope
- Roof/Ceiling-to-wall junctions, especially where full ceiling insulation depths may not be achieved
- Window-to-wall junctions
- Door-to-wall junctions
- Wall-to-wall junctions
- Wood, steel or concrete members, such as studs and joists, incorporated in exterior wall, ceiling, or roof construction
- Recessed luminaries that penetrate insulated ceilings
- Windows and doors, especially frames components
- Areas with gaps in or poorly installed insulation
- Metal ties in masonry cavity walls

Structural elements remain a weak point in construction, commonly leading to thermal bridges that result in high heat loss and low surface temperatures in a room.



Impacts of Thermal Bridging

Thermal bridging can result in increased energy required to heat or cool a conditioned space due to winter heat loss and summer heat gain. At interior locations near thermal bridges, occupants may experience thermal discomfort due to the difference in temperature. Additionally, when the temperature difference between indoor and outdoor space is large and there is warm and humid air indoors, such as the conditions experienced in the winter, there is a risk of condensation in the building envelope due to the cooler temperature on the interior surface at thermal bridge locations. Condensation can ultimately result in mold growth with consequent poor indoor air quality and insulation degradation, reducing the insulation performance and causing insulation to perform inconsistently throughout the thermal envelope.



Analysis Methods and Challenges

Due to their significant impacts on heat transfer, correctly modeling the impacts of thermal bridges is important to estimate overall energy use. Thermal bridges are characterized by multi-dimensional heat transfer, and therefore they cannot be adequately approximated by steady-state one-dimensional (1D) models of calculation typically used to estimate the thermal performance of buildings in most building energy simulation tools. Steady state heat transfer models are based on simple heat flow where heat is driven by a temperature difference that does not fluctuate over time so that heat flow is always in one direction. This type of 1D model can substantially underestimate heat transfer through the envelope when thermal bridges are present, resulting in lower predicted building energy use.

The currently available solutions are to enable two-dimensional (2D) and three-dimensional (3D) heat transfer capabilities in modeling software or, more commonly, to use a method that translates multi-dimensional heat transfer into an equivalent 1D component to use in building simulation software. This latter method can be accomplished through the equivalent wall method in which a complex dynamic assembly, such as a wall with a thermal bridge, is represented by a 1D multi-layered assembly that has equivalent thermal characteristics.

By Joyce Anto Thomas / Student

III Year Civil Engineering

DEPARTMENTAL ACTIVITIES

STUDENT ACHIEVEMENTS

NPTEL COURSES COMPLETED BY STUDENTS

S. No	Student Name	Year	Course Name	Course Duration	NPTEL Score	Certificate Type
1	RESHMI M.	III	Integrated Waste Management for a Smart City	Jul - Oct 2021 (12 Weeks)	52	Successfully completed
2	AMITESH MAADHAV K. S.	III	Integrated Waste Management for a Smart City	Jul - Oct 2021 (12 Weeks)	52	Successfully completed
3	RITHIGA J. S.	III	Integrated Waste Management for a Smart City	Jul - Oct 2021 (12 Weeks)	54	Successfully completed
4	SUDHARSAN E.	III	Integrated Waste Management for a Smart City	Jul - Oct 2021 (12 Weeks)	52	Successfully completed

GUEST LECTURES ARRANGED

S. No.	Topic	Name of the Resource Person / Designation	Company / Organization	No. of Participants	Date of Guest Lecture
1.	Recent trends and advancements in Structural Design and Construction.	Mr. V. Pradeep Senior Engineer Manager & Section Head-Civil	L&T Construction, Chennai	80	20.10.2021
2.	Advancements in Steel Structural Design in Civil Engineering	Mr. Naufal Rizwan Assistant Engineering Manager –Civil	L&T Construction, Chennai	80	20.10.2021

3.	Recent Advancements and Career Opportunities in Construction, Real Estate, Infrastructure and Engineering Projects Management	Dr. R. Sathish Kumar, Ph.D. (IIT M)/ Professor & Dr. R. Venkatesan, Ph.D. (IIT M)/ Professor	National Institute of Construction Management and Research (NICMAR) Hyderabad, Telangana	85	16.12.2021
4.	Structural Design of Residential Buildings and Role of Engineers in Engineering Consultancy Firms	Mr. Prakash Ravindran / Structural Engineer	VRP Consultants, Chennai	105	27.12.2021
5.	Foundation Design Concepts	R. Prashanthi / Design Engineer	VRP Consultants, Chennai	105	27.12.2021
6.	Impact of precipitation disparity on groundwater fluctuation using geospatial techniques	Dr. G. Venkatesan/ Associate Professor	,Department of Civil Engineering, Saveetha Engineering College, Chennai	59	28.12.2021
7.	Identification of Ground Water Pollution using Geospatial Techniques - a case study	Dr. G. Venkatesan/ Associate Professor	,Department of Civil Engineering, Saveetha Engineering College, Chennai	61	28.12.2021

Mr. V. Pradeep, Senior Engineer Manager & Section Head - Civil/ L&T Construction, Chennai

Mr. Naufal Rizwan, Assistant Engineering Manager – Civil/ L&T Construction, Chennai

Dr. R. Sathish Kumar, Ph.D. (IIT M), Professor &
Dr. R. Venkatesan, Ph.D. (IIT M), Professor/ NICMAR, Hyderabad, Telangana

FACULTY ACCOMPLISHMENTS

PATENT GRANTED

- Patent has been granted for the Invention titled "**Grinding Waste from Automobile Industry as a potential Construction Material**".

  Innovators: Dr. S. Geetha, M.E., Ph.D. & Post Doc (IITM) / Professor &

  Dr. M. Selvakumar, M.E., Ph.D. / Professor & Dean

  Patent No. 383096

  Date of Filing: 24th September 2018

RESEARCH PROPOSALS SUBMITTED

- A Research Proposal titled **"Alkali Activated Porous Material with Graphene Oxide for wastewater Treatment"** was submitted to DST – SERB on 23rd Nov'21 for a funding of **Rs.29,78,971/-.**

  PI: Dr. M. Selvakumar, Co-PI: Dr. S. Geetha & Mrs. S. Muthu Lakshmi

- A Research Proposal on "**Developing an Embedded Smart Sensors Network System for Diagnosing Structural Damage**" was submitted to DST – CRG on 14th Dec'21 for a funding of **Rs.57,74,180/–.**

  PI: Dr. S. Geetha, Co-PI: Dr. M. Selvakumar & Mrs. S. Muthu Lakshmi

GUEST LECTURE DELIVERED

- **Dr. M. Selvakumar, Professor & Dean** delivered a Guest Lecture as a Resource Person in SRM, Valliammai Engineering College on 27th Oct'21 on the topic **"Environment and its Impact"** for UHV - AICTE Student Induction Programme.

JOURNAL PUBLICATION

- **Dr. S. Geetha, Dr. M. Selvakumar and Mrs. S. Muthu Lakshmi** published a journal paper titled "**Investigation on Properties of Reactive Powder Concrete with Automobile Grinding Steel Waste as Fine Aggregate**" in E3S Web of Conferences 309, 01216 (2021), pp. 1 to 4. (To be Scopus Indexed: Cite Score - 0.6, SNIP - 0.68).

BOOK CHAPTERS PUBLISHED

- **Dr. M. Selvakumar & Dr. S. Geetha**, along with Students **B. V. Agaliya, S. Shine, R. U. Rupasudharshnee** authored a book chapter titled "**Study on Properties of Polymer Mortar with Foundry Sand**" in Sustainable Practices and Innovations in Civil Engineering, Select Proceedings of SPICE 2021, Part of the Lecture Notes in Civil Engineering book series (LNCE, Volume 179), Springer Publication, pp. 209 – 218, Scopus Indexed (available online from 21st November 2021)).

- **Dr. M. Selvakumar & Dr. S. Geetha**, along with Students **Christina Joby Maria, S. Pavithra, S. Rakesh, K. Udhaya** authored a book chapter titled **"Use of RMC Wastewater in Concrete with Admixtures, for Strength Enhancement"** in Sustainable Practices and Innovations in Civil Engineering, Select Proceedings of SPICE 2021, Part of the Lecture Notes in Civil Engineering book series (LNCE, Volume 179), Springer Publication, pp. 201 – 207, Scopus Indexed (available online from 21st November 2021).

- **Mrs. V. J. Vedhanayaghi, Mr. S. Arun Bharathi, Mrs. S. Muthu Lakshmi & Mrs. K. Divya Susanna** authored a book chapter titled **"Experimental Study on Alternative Material for Conventional Fine and Coarse Aggregate in Concrete"** in Sustainable Practices and Innovations in Civil Engineering, Select Proceedings of SPICE 2021, Part of the Lecture Notes in Civil Engineering book series (LNCE, Volume 179), Springer Publication, pp. 43 – 55, Scopus Indexed (available online from 21st November 2021).

- **Dr. M. Selvakumar, Dr. S. Geetha & Mrs. S. Muthu Lakshmi** authored a book chapter titled **“Prediction of Air Pollution due to Mobile Sources using Line Source Models”** in Advances in Construction Materials and Sustainable Environment, Select Proceeding of ICCME 2020, Part of the Lecture Notes in Civil Engineering book series (LNCE, Volume 196), Springer Publication, pp. 573 - 583, Scopus Indexed (available online from 15th Dec’21).

- **Mrs. S. Muthu Lakshmi, Dr. S. Geetha, Dr. M. Selvakumar,** along with Students **S. Revathy & K. M. Shri Varshini** authored a book chapter titled **“Application of Industrial Wastes for Soil Strength Improvement”** in Advances in Construction Materials and Sustainable Environment, Select Proceeding of ICCME 2020, Part of the Lecture Notes in Civil Engineering book series (LNCE, Volume 196), Springer Publication, pp 551 - 560, Scopus Indexed (available online from 15th Dec’21).

- **Dr. A. Rose Enid Teresa , Mrs. S. Stella , Mrs. M. Goutham Priya , Mrs. P. Gajalakshmi & Mrs. J. Revathy** authored a book chapter titled **“Road Bridges across Cooum and Adyar Rivers in Chennai City - Need for Structural Health Monitoring”** in Advances in Construction Materials and Sustainable Environment, Select Proceeding of ICCME 2021, Part of the Lecture Notes in Civil Engineering book series (LNCE, Volume 196), Springer Publication, pp 281 - 294, Scopus Indexed (available online from 15th Dec’21).

- **Mrs. M. Goutham Priya & Dr. S. Jayalakshmi** authored a book chapter titled **“Trend Modelling for Air Quality - An Approach”** in Advances in Construction Materials and Sustainable Environment, Select Proceeding of ICCME 2021, Part of the Lecture Notes in Civil Engineering book series (LNCE, Volume 196), Springer Publication, pp 467 - 480, Scopus Indexed (available online from 15th Dec’21).

CONFERENCE PAPERS PUBLISHED

- **Dr. S. Geetha, Dr. M. Selvakumar & Mrs. S. Muthu Lakshmi** presented a conference paper titled "**Investigation on Properties of Reactive Powder Concrete with Automobile Grinding Steel Waste as Fine Aggregate"** in the 12th International Conference on Materials Processing and Characterization – ICMPC 2021 conducted at NITTTR Chandigarh from 6th to 9th Oct'21.

- **Dr. S. Geetha, Dr. M. Selvakumar & Mrs. S. Muthu Lakshmi** presented a conference paper titled **"Behaviour of Alkali Activated Composite Wall Panel"** in the 1st International Conference on Structures, Material and Construction– ICSMC 2021 conducted by Jaypee University of Information Technology, Waknaghat, Solan, Himachal Pradesh on 12th & 13th Nov'21.

- **Mrs. S. Muthu Lakshmi, Dr. S. Geetha, Dr. M. Selvakumar, Mrs. V. J. Vedhanayaghi,** along with Students **R. Mithun & V. Karthickraja** presented a conference paper titled **"Addition of Sea Shell Waste to Silty Sand Subgrade for Economical Design of Flexible Pavement"** in the 1st International Conference on Structures, Material and Construction – ICSMC 2021 conducted by Jaypee University of Information Technology, Waknaghat, Solan, Himachal Pradesh on 12th & 13th Nov'21.

- **Dr. M. Selvakumar, Dr. S. Geetha & Mrs. S. Muthu Lakshmi** presented a conference paper titled **"Optimization of Pervious Concrete with Polymer for Efficient Storm Water Run-off"** in the International Conference on Recent Tends in Construction Materials and Structures - ICON2021 conducted by VIT Vellore on 25th & 26th Nov'21. The paper was bestowed with **Best Paper Award** in the Conference.

- **Dr. M. Selvakumar, Dr. S. Geetha & Mrs. S. Muthu Lakshmi** presented a conference paper titled **"Properties of Aerated Concrete with Foundry Sand"** in the International Conference on Advances in Construction Materials and Structures – ICCMS 2021 conducted by St. Thomas Institute for Science and Technology, Trivandrum on 18th & 19th Dec'21.

- **Mrs. S. Muthu Lakshmi, Dr. S. Geetha, Dr. M. Selvakumar,** along with Students **S. Mahalakshmi & A. Pavithra** presented a conference paper titled **"Effective Usage of Seashell Waste to Improve the Strength Characteristics of SM Soil"** in the International Conference on Advances in Construction Materials and Structures – ICCMS 2021 conducted by St. Thomas Institute for Science and Technology, Trivandrum on 18th & 19th Dec'21.

- **Mr. M. Ammaiappan, Dr. M. Uma Maguesvari, Mr. P. Muthaiyan & Mrs. S. Yugasini** presented a conference paper titled **"Geotechnical behavior of Low and High Compressibility of Clayey Soil Stabilized with Steel Slag"** in the 6th International Conference on Civil Engineering and Materials Science - ICCEMS'21 - Virtual Conference organized by Akshaya College of Engineering & Technology, Coimbatore & Diligentic Solutions Coimbatore on 24th Dec'21.

NPTEL ACHIEVEMENTS

- **Professor Dr. S. Geetha** has been recognized as **DISCIPLINE STAR by NPTEL** for completing more than 50 weeks of NPTEL courses.
- **Professor Dr. S.Geetha** has scored **90%** and secured **GOLD Certification** in the NPTEL exam on the course **"Reinforced Concrete Bridges"** conducted in October 2021 and also an FDP certification for completing the course.

CONSULTANCY WORK

- **Dr. S. Geetha & Dr. M. Selvakumar** completed a Consultancy Project on **"Research on Potential Utility of Foundry Sand Waste as Sustainable Construction Material"** carried for **Sakthi Auto Component Limited, Tirupur** for a proposed funding of **Rs. 1,43,000/-** and generated a sum of Rs. 1,30,881/- after deduction of TDS.

- **Dr. M. Selvakumar & Dr. S. Geetha** commenced the Phase II of Consultancy Work on **"Research on Potential Utility of Foundry Sand Waste as Sustainable Construction Material"** for **Sakthi Auto Component Limited, Tirupur** for deploying the technology and product in their site.

STUDY TOUR – AICTE YUVAK SCHEME

Study Tour of Atal Tunnel, Rohtang, Himachal Pradesh under the **AICTE Youth Undertaking Visit for Acquiring Knowledge (YUVAK) Scheme** was undertaken from 17th to 19th November 2021. ATAL Tunnel study tour sponsored by **AICTE for a funding of Rs. 2,00,000/-** was undertaken by **5 students from the Department of Civil Engineering** and **5 students from the Department of Mechanical Engineering** along with the **Team Leader Dr. A Rose Enid Teresa, Professor & Head, Department of Civil Engineering**. ATAL Tunnel is a highway tunnel built under the Rohtang Pass in the eastern Pir Panjal Range of the Himalayas on the Leh-Manali Highway in Himachal Pradesh, India. The team visited the ATAL Tunnel on November 18 2021, by 1.30 pm. Briefing regarding the tunnel construction was done by the Engineers and the queries raised by the students were answered. The Team travelled along the Tunnel and important features of the Tunnel structure such as a semi-transverse ventilation system, fire hydrants, main carriageway for evacuation during emergencies, public announcement system, avalanche control structures, CCTV cameras etc. were briefed. Team members along with the Team Leader were benefitted from the visit.

TEAM MEMBER DETAILS

S. No.	Roll No.	Name of the Student	Branch
1.	180601081	Vasanth D.	Civil Engineering
2.	180601067	Sreevarrun D.	Civil Engineering
3.	180601072	Subhash S.	Civil Engineering
4.	190601002	Akash M.	Civil Engineering
5.	190601026	Naveen Rajasekar A.	Civil Engineering
6.	181101030	Balaji G.	Mechanical Engineering
7.	181101057	Hariharan R. L.	Mechanical Engineering
8.	181101177	Srinivasan B.	Mechanical Engineering
9.	191101058	Hemanth Kumar S.	Mechanical Engineering
10.	191101029	Chandrasekar K.	Mechanical Engineering

FACULTY PARTICIPATION IN WEBINAR / WORKSHOP / FDP

Sl. No	Name of the Faculty Member	Course Title	Organized by	Event	Date
OCTOBER 2021					
1.	Dr. M. Selvakumar	Performance as the Criteria in the Concrete Mix Proportioning	Qcrete	Webinar	23-10-2021
2.	Mrs. V. J. Vedhanayaghi	Faculty Upskill GSheets and Excel	REC	FDTP	11-10-2021 to 21-10-2021
NOVEMBER 2021					
1.	Dr. M. Uma Maguesvari	Artificial Intelligence Applications for Civil Engineering	SERC	Webinar	10.11.2021
2.	Mr. P. Muthaiyan	Artificial Intelligence Applications for Civil Engineering	SERC	Webinar	10.11.2021
3.	Mr. M. Ammaiappan	Creative Thinking	ICT Academy	FDP	16.11.2021 to 20.11.2021
DECEMBER 2021					
1.	Dr. M. Uma Maguesvari	Transportation Geotechnics and Materials for Sustainable Infrastructure (TGMSI – 2021)	Swami Keshvan and Institute of Technology, Management & Gramothan, Jaipur	FDP	13.12.2021 to 17.12.2021
2.	Mrs. S. Muthu Lakshmi	Transportation Geotechnics and Materials for Sustainable Infrastructure (TGMSI – 2021)	Swami Keshvan and Institute of Technology, Management & Gramothan, Jaipur	FDP	13.12.2021 to 17.12.2021

3.	Mr. M. Ammaiappan	Transportation Geotechnics and Materials for Sustainable Infrastructure (TGMSI – 2021)	Swami Keshvan and Institute of Technology, Management & Gramothan, Jaipur	FDP	13.12.2021 to 17.12.2021
4.	Mr. P. Muthaiyan	Transportation Geotechnics and Materials for Sustainable Infrastructure (TGMSI – 2021)	Swami Keshvan and Institute of Technology, Management & Gramothan, Jaipur	FDP	13.12.2021 to 17.12.2021
5.	Mrs. S. Yugasini	Transportation Geotechnics and Materials for Sustainable Infrastructure (TGMSI – 2021)	Swami Keshvan and Institute of Technology, Management & Gramothan, Jaipur	FDP	13.12.2021 to 17.12.2021
6.	Mrs. S. Yugasini	Teaching Learning	PALS – IITM	FDP	22.12.2021 to 24.12.2021
7.	Mrs. V. J. Vedhanayaghi	Advances in Strength of Materials and Manufacturing Engineering	AMET University	FDTP	06.12.2021 to 11.12.2021