

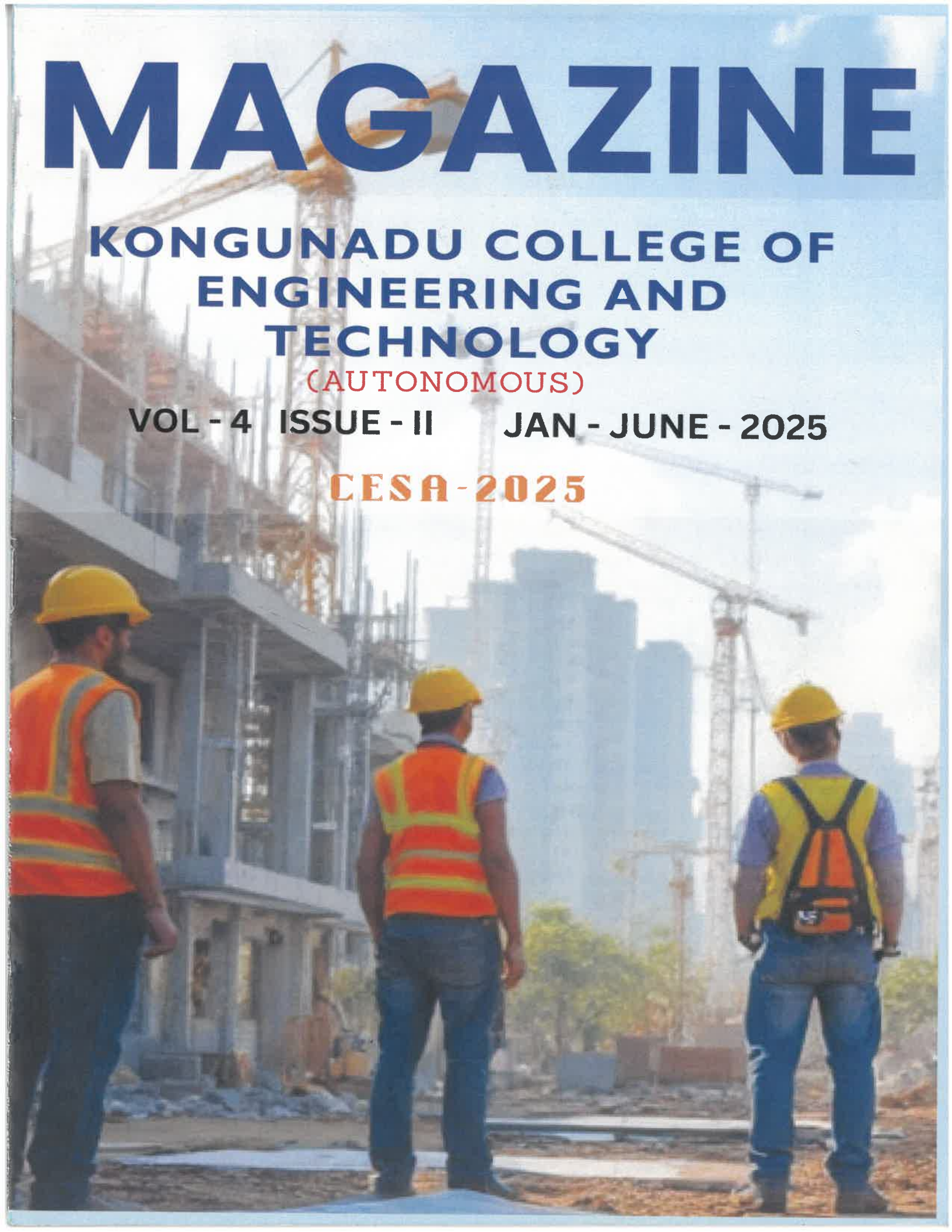
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KONGUNADU COLLEGE OF ENGINEERING AND TECHNOLOGY

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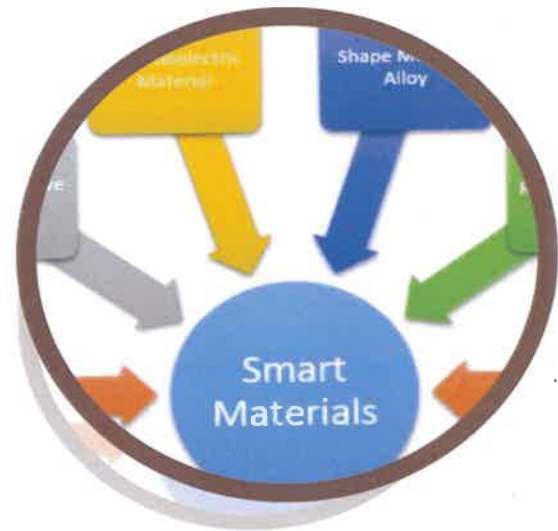
CESA-2025



SMART MATERIALS IN CIVIL ENGINEERING

Smart materials in civil engineering refer to materials that can adapt their properties in response to external stimuli like temperature, pressure, or light. This adaptability makes them valuable for various applications, including structural health monitoring, vibration control, and enhanced building performance. They can be used in smart buildings, bridges, and other infrastructure to improve efficiency, safety, and durability.

Smart materials are materials that are manipulated to respond in a controllable and reversible way, modifying some of their properties as a result of external stimuli such as certain mechanical stress or a certain temperature, among others.



G .K.VISWASREE
II YEAR CIVIL
621323103056



PIEZOELECTRIC MATERIALS

Piezoelectric material is a dielectric material that enables a direct conversion between electrical and elastic energy. When subjected to an electric field, a piezoelectric material changes its dimension, and, conversely, generates a dielectric displacement in response to mechanical stress. The discovery of piezoelectricity dates back to 1880, when Curie brothers realized that an electrical charge was induced in a quartz crystal when pressure was applied. As demonstrated by Voigt in 1910 [50], this unique feature originates merely from a crystallographic consideration. This means that any crystal should exhibit piezoelectricity as long as it belongs to one of the 20 point groups lacking inversion symmetry. However, the effect was so weak in most known crystals that not many practical applications utilizing the piezoelectricity had been introduced.



**P ILAMADHI
II YEAR CIVIL
6213223103013**

BIOMIMICRY IN CIVIL ENGINEERING

Biomimicry is a novel approach of developing designs and products or to solve human problems by taking inspiration from nature. It could offer sustainable alternative solutions to conventional and complex design practices. Biomimicry includes mimic of shape, properties, method, principle and processes of the nature.

This paper reviews the existing biomimetic inspired civil engineering system and architecture. Bridge design is one of the vital aspects on structures of biomimetics which is derived from the load carrying process of a tree. By mimicking a termite mound, a passive cooling system could be developed. Just like the regeneration process in lizard, a self repairing concrete nullifies the need of repairing process.



M.KEERTHIVASAN
II YEAR CIVIL
621323103305



CONSTRUCTION ROBOTICS

In civil engineering, the integration of technology has significantly transformed the construction landscape. One such revolutionary advancement is the incorporation of robotics in the building process. Robotic construction represents a paradigm shift in the way structures are designed, planned, and executed. This blog post delves into the world of robotic construction, exploring its applications, benefits, challenges, and the transformative impact it has on the traditional building process. Using robots in construction is not entirely new, but recent advancements in robotics, artificial intelligence (AI), and automation have elevated their capabilities. Robotic construction encompasses a wide array of applications, ranging from bricklaying and concrete pouring to complex assembly tasks. The primary objective is to increase efficiency, reduce construction time, and enhance overall safety on construction sites.



S.VARUN RITVIK
II YEAR CIVIL
621323103050

BIOMIMICRY IN CIVIL ENGINEERING

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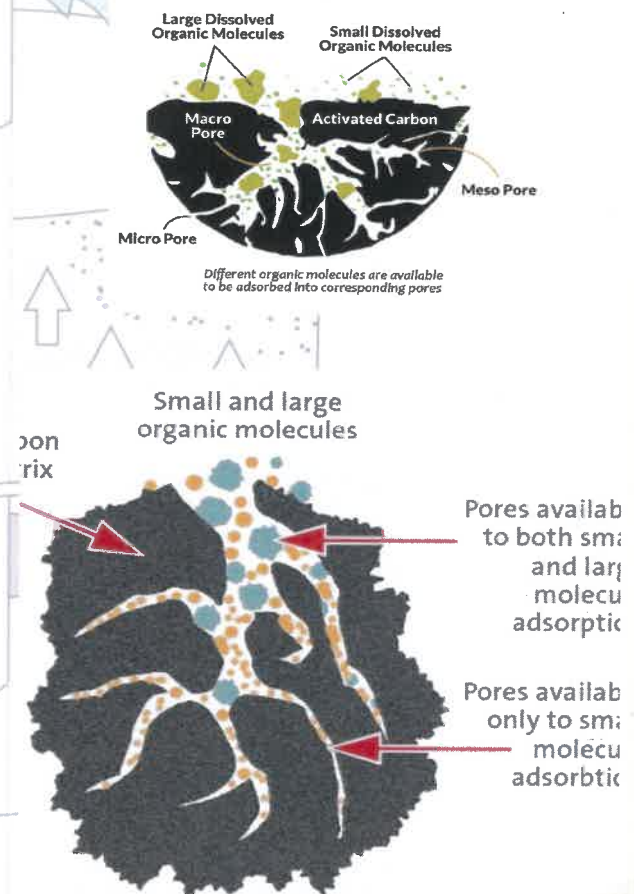


M.KEERTHIVASAN
II YEAR CIVIL
621323103305



ACTIVATED CARBON ADSORPTION

Grape processing wastes have been identified as a potentially low-cost precursor for the production of activated carbon adsorbents. The resulting activated carbon has the potential to be used for cationic and anionic dye adsorption (Sayili et al., 2015). According to the findings, activated carbon adsorbent derived from grape processing wastes has a higher adsorption capacity than commercially available adsorbents and agro waste-derived carbonaceous materials. Many other organic wastes, such as coconut shells, fruit wastes, rice husk, sawdust, and so on, are used as raw materials in the production of various types of adsorbents. The two most common types of activated carbons are granular activated carbon and powdered activated carbon. Carbon constitutes 95% of activated carbon adsorbents, with the remaining constituents including heteroatoms such as hydrogen, nitrogen, sulfur, and oxygen.

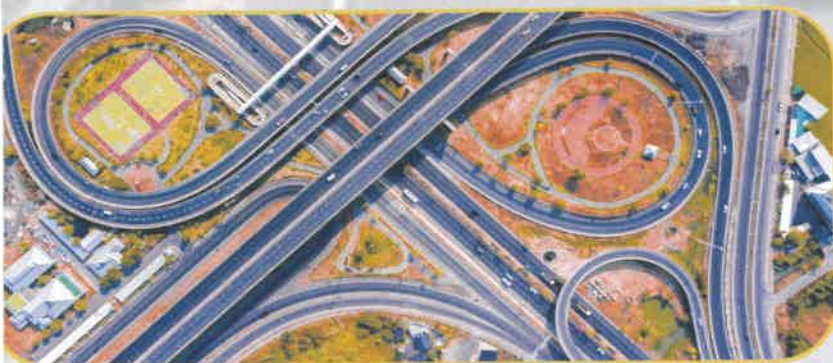


A.JERIYAFRANKLINE
III YEAR CIVIL
621322103020



HIGHWAY NETWORK SYSTEM

India has a road net over 33,00,000Km, available of this state road quantity about 70,934km. Department of road transport and art created many state free ways to state road fit of India (NHAI) for their progress. NHAI has particular Kalyan to Andhra Pradesh edge unit of NH-222 (km 0 to 232& km 284 to 337) for restoration and up gradation to 2 lane with raised carries shape under NHDP Phase IV.NH222 incomes off after NH3 near kalyan, permits done Maharastra & Andhra Pradesh & lastly ends a junction with NH 7 near Nirmal in AP. The project road is stretches of NH222 forming part of project road pass through four districts of Maharastra Viz Thane,Pune, Ahmadnagar & Beed. The total length of NH222 is 285Km an index map showing the project road attached.



A.VINOTHKUMAR
III YEAR CIVIL
621322103055

DESIGN OF SUSTAINABLE BUILDINGS

Sustainable building design focuses on minimizing the environmental impact of buildings throughout their entire lifecycle, from design and construction to operation and eventual demolition. This involves using materials efficiently, reducing energy and water consumption, and incorporating renewable resources. It also considers the surrounding environment, aiming for a net-positive impact by preserving ecosystems and promoting biodiversity.

Sustainability considerations are multifaceted and include the efficient use of energy, water and materials, the promotion of human health and wellbeing, the protection of habitats and biodiversity. The need to futureproof our buildings and maximise their useful lifespan while also meeting commercial objectives further adds to the complexity of the challenge



T. ABINAYA
III YEAR CIVIL
621322103003

SOLAR BUILDING

A "solar building" refers to a building designed to maximize the use of solar energy for heating, cooling, and electricity generation. This can be achieved through both passive and active solar design strategies. Passive solar design utilizes building materials and orientation to naturally capture, store, and distribute solar energy. Active solar design employs mechanical systems like solar panels and collectors to convert sunlight into usable energy, such as electricity or heat



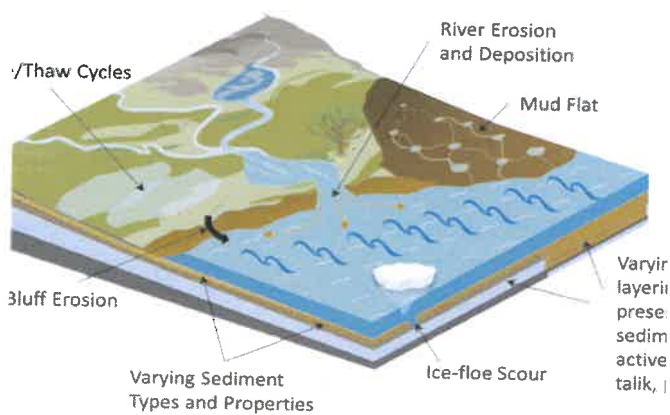
This chapter describes fundamentals of solar architecture. As all energies accessible on earth directly or indirectly originate from the sun, and buildings are rooted to specific geographical locations, it follows that the only successful application of solar energy in buildings will be the most desirable, economic blend of energies readily available to the building's site and function.

R.VINOTHINI
III YEAR CIVIL
621322103053



GEOTECHNICAL SITE ANALYSIS FOR LARGE PROJECTS

Geotechnical site analysis for large projects involves a thorough investigation of subsurface conditions to ensure the stability, safety, and performance of structures. This analysis helps engineers understand soil and rock properties, groundwater levels, and potential risks like settlement, liquefaction, or slope instability. The findings inform foundation design, construction methods, and risk mitigation strategies, ultimately contributing to the success and longevity of the project.



This analysis also addresses site-specific challenges, offers mitigation strategies, and supports informed decision-making in the design phase.

This analysis involves a detailed investigation of the subsurface conditions at a proposed construction site, including the composition, strength, and behavior of soils, rocks, and groundwater.



K GURUMOORTHY
B.E CIVIL (IV YEAR)
621321103011

SEISMIC RETROFIT OF BUILDINGS

Seismic retrofitting is the process of strengthening existing buildings to improve their resistance to earthquakes and other seismic events. It involves modifying or adding structural elements to enhance a building's ability to withstand ground shaking and minimize potential damage.

Methods and techniques:

Strengthening existing elements:

This can involve reinforcing concrete structures with steel rods or adding steel bracing to frame structures.

Adding new structural elements:

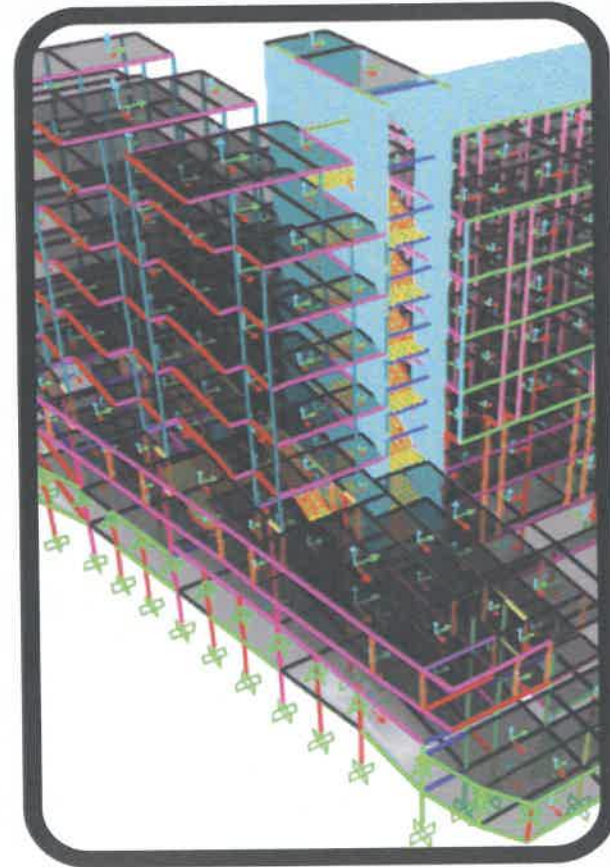
This may include adding shear walls, bracing systems, or other elements to improve the building's lateral resistance.

Seismic isolation:

This involves separating the building from the ground using isolation devices, which can significantly reduce the forces transmitted to the structure during an earthquake.

Jacketing:

This technique involves wrapping concrete columns or beams with a new layer of concrete or steel to enhance their strength and ductility.



M.SUSIRAJAMUGAN
B.E CIVIL (IV YEAR)
(621321103027)

HYDROLOGICAL MODELING FOR FLOOD CONTROL

Hydrological modeling is crucial for flood control as it simulates water movement through a watershed to predict flood events, enabling proactive measures like floodplain mapping and early warning systems. These models help identify vulnerable areas, assess potential flood impacts, and inform the design of flood management strategies.

Weather Modeling

Baron is your trusted partner for high-resolution forecast modeling. We offer standard Numerical Weather Prediction (NWP) models, hydrological models, tropical models, air quality models, land surface modeling, road weather modeling, and the first-ever coupled NWP and ocean models.

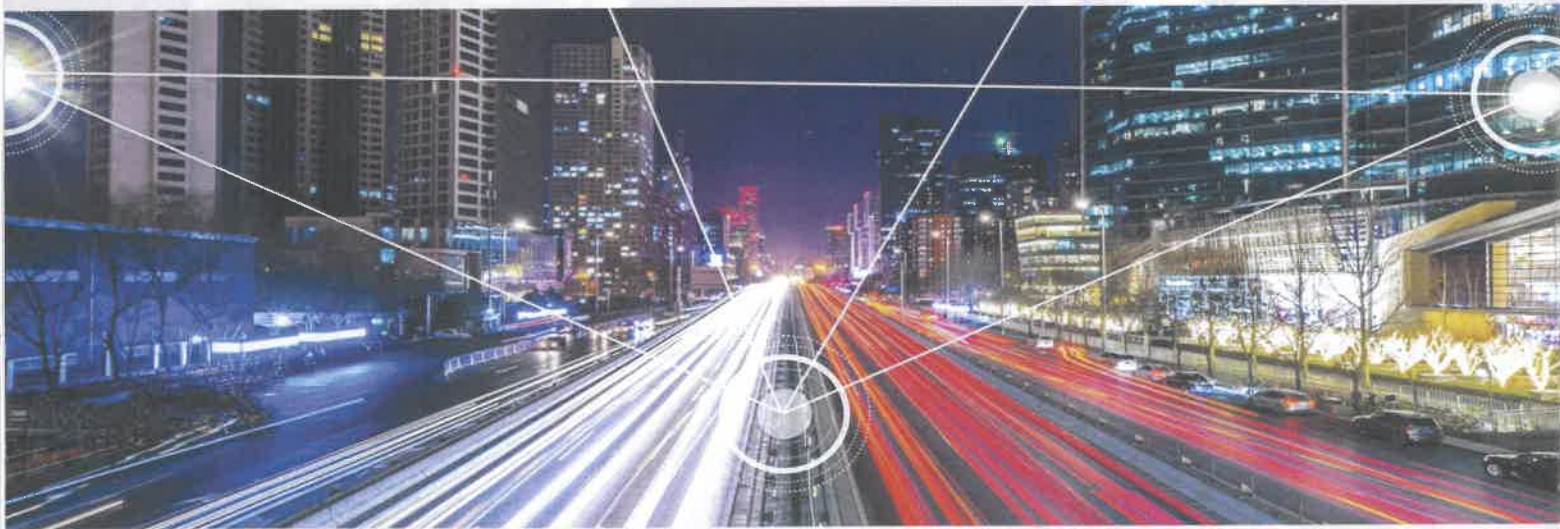
Baron offers a high-resolution Baron-exclusive atmospheric model tailored to your operations, based on the WRF model but enhanced by our in-house team for improved capabilities in severe weather and tropical storms.



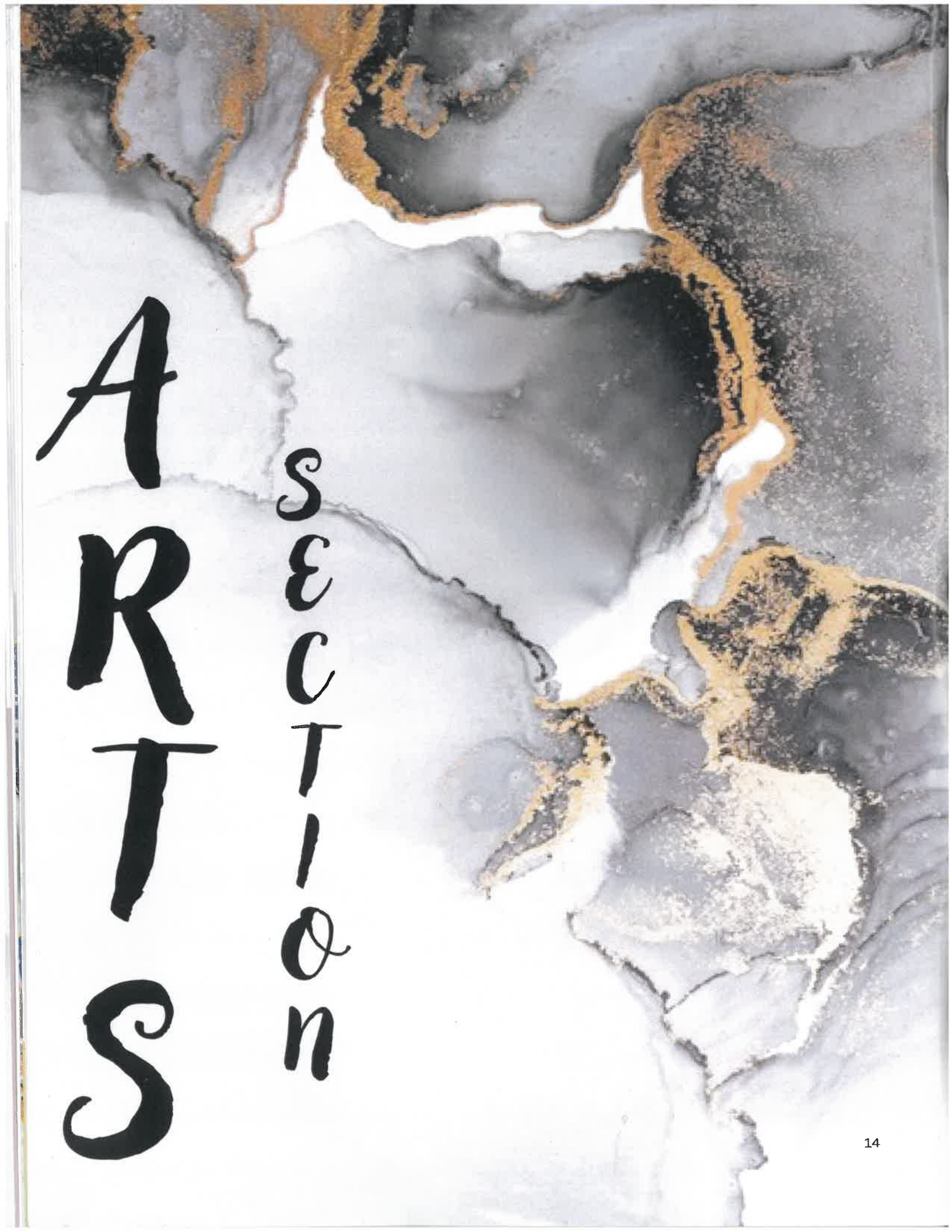
S.SWATHI B.E
CIVIL (IV YEAR)
621321103028

SMART TRAFFIC MANAGEMENT SYSTEMS

Smart traffic management systems leverage technology to optimize traffic flow and safety in cities by using real-time data, algorithms, and communication networks. These systems utilize sensors, cameras, and other devices to monitor traffic conditions and adapt infrastructure like traffic lights and signage in real-time. The goal is to reduce congestion, improve efficiency, and enhance overall transportation safety.



R DHIVAKAR
IV YEAR CIVIL
621321103006

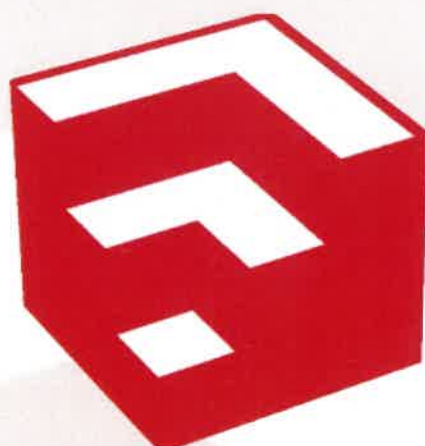
The background of the page is an abstract, textured composition. It features a mix of light grey, white, and dark grey areas, with irregular, vein-like patterns of orange and black. The overall effect is reminiscent of a marbled paper or a close-up of a mineral surface.

ART SECTION

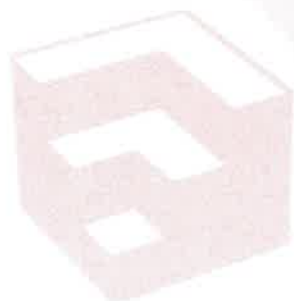


C R E A T I V E
YOUR LOGO DESIGN

LOGO DESIGN



SKETCH UP





V.DIVAKARAN
III YEAR CIVIL
621322103013

make frien



AUTOCAD



K.BHARANI
III YEAR CIVIL
621322103009





P.GOWTHAM
III YEAR CIVIL
621322103017



நட்பையும் மகிழ்ச்சியையும்
இரட்டிப்பாக்க -
அருகிலிருப்பவர்களுக்கு
கொடுத்து விடுங்கள் -



V.P AARTHI
III YEAR CIVIL
621322103002



D.SWETHASRI
III YEAR CIVIL
621322103049

The Experienced





SURENTHIRAN.M
III-YEAR
621323103049



EFFECTS

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"To become an internationally renowned educational research and development by transforming the students into competent professionals with leadership skills and ethical values".

MISSION

Providing the best Resource and Infrastructure Creating Learner - Centric Environment and continuous Learning Providing effective link with Intellectuals and Industries Enriching Employability and Entrepreneurial skills Adapting to changes for sustainable Development

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To be recognized globally pre - eminence in Civil Engineering education, research and Societal service.

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To produce well reformed graduates with engineering skills for professional practice, advanced study and research through state of art infrastructure facilities and adopting innovative teaching methods

To inculcate professional and ethical responsibilities related to industry, society and environment.

To interact with industries and address issues related to infrastructure, public health and environmental protection for sustainable development.