DEPARTMENT of civil Engineering

M@GAZINE

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KONGUNADU COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS)

DESIGNING HIGH Rise Buildings

HIGH-RISE BUILDING

Integrates innovative architecture with complex engineering, focusing on structural integrity (steel/concrete frames, wind/seismic loads), efficient vertical transport (elevators), advanced safety systems (fire suppression, emergency exits), sustainable features (smart facades, energy efficiency), mixed-use functionality, and occupant well-being

STRUCTURAL SYSTEM;

The structural system of a high-rise building is an essential element. For a high-rise building to withstand natural disasters like earthquakes, wind, and fire, it must be structurally sound. The structural system must be designed to handle lateral pressures caused by earthquakes, seismic stresses, and vertical loads like the weight of the building and its contents.

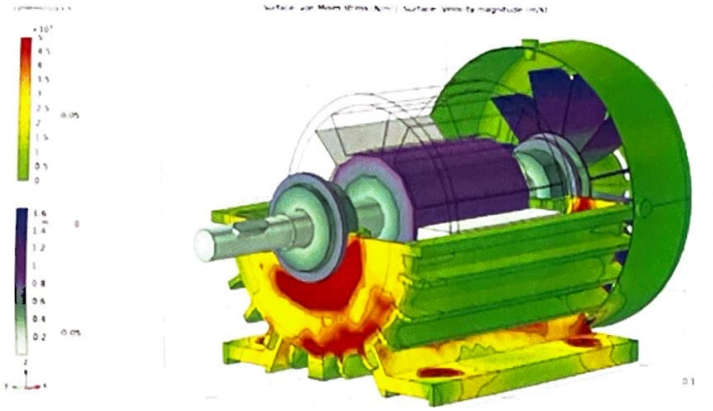
PRAVEEN KUMAR.U
621322103034
B.E CIVIL (IV) Year

DEPARTMENT OF civil Engineering

NANOTECHNOLOGY IN CIVIL ENGINEERING

Nanotechnology in civil engineering uses materials at the atomic level to create stronger, more durable, and "smarter" construction materials, revolutionizing concrete with nano-silica for strength, adding carbon nanotubes for extreme reinforcement, developing self-healing/cleaning surfaces (nano- TiO2), and creating nano- sensors for structural health monitoring, leading to resilient infrastructure, lower maintenance, and enhanced sustainability, despite initial high costs.

DHIVAKAR.P
621322103012
B.E CIVIL (IV) Year



How CFD Works

- Mathematical Modeling.
- Discretization (Meshing).
- Numerical Solution.
- Post-Processing.

Fluid Dynamics Computation. (CFD)

Computational Fluid Dynamics (CFD) uses numerical analysis and computer simulations to study and predict fluid (liquid/gas) behavior in complex systems, solving governing physics equations like Navier-Stokes to analyze flow, heat transfer, and forces in engineering, from aircraft aerodynamics to HVAC, offering virtual testing to reduce physical prototypes. It involves meshing a design into small cells, applying physical laws, and using computational power to find approximate solutions for properties like velocity, pressure, and temperature, aiding in design optimization across industries like automotive, aerospace, and energy.

Evolution and Development

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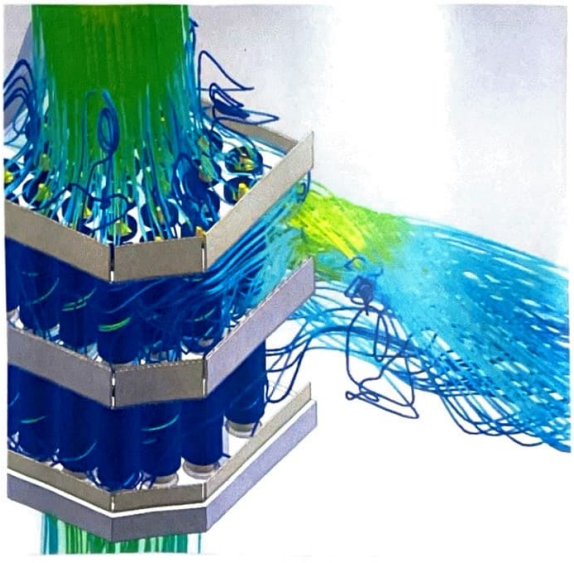


GOWTHAM.P
621322103017
B.E CIVIL (IV) Year

Soil Stabilization Techniques

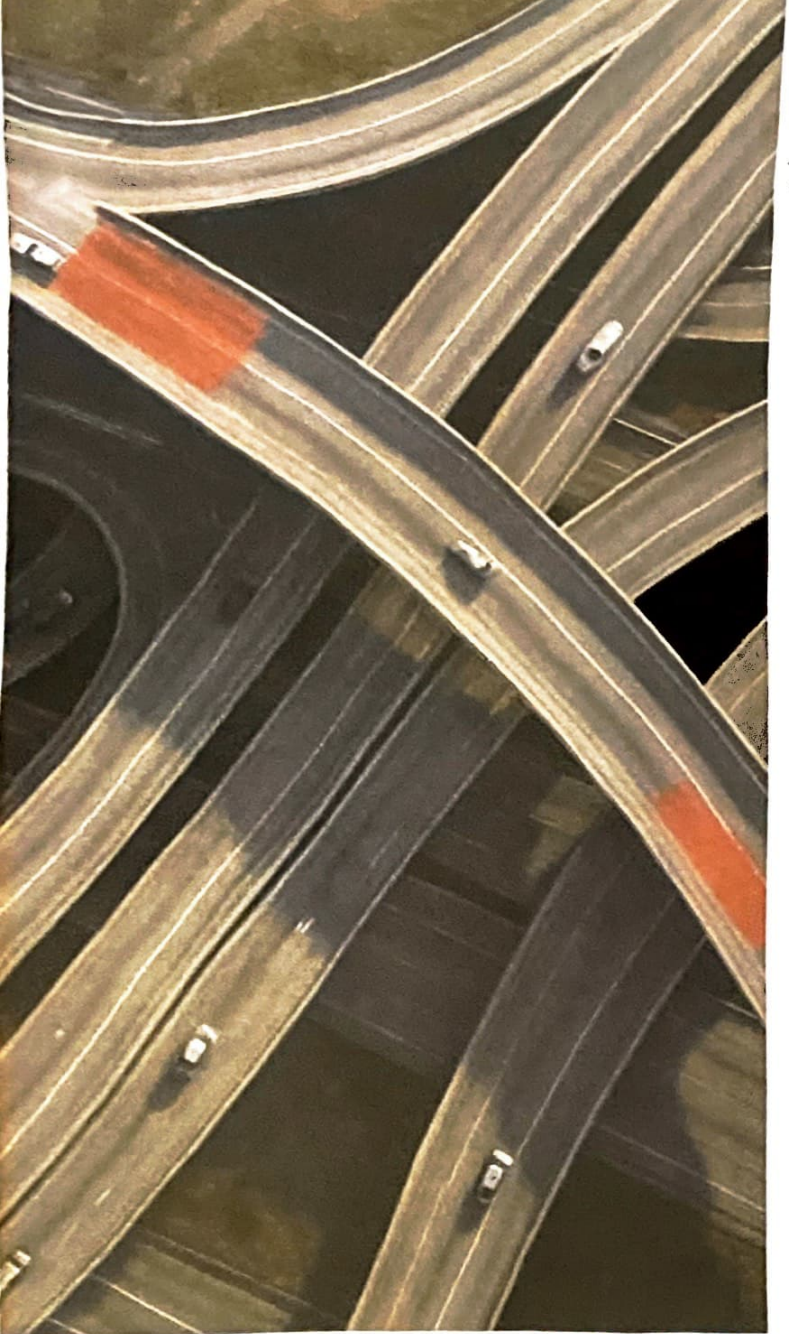
department of civil engineering

Soil stabilization techniques improve soil strength and load-bearing capacity using mechanical (compaction, reinforcement), chemical (lime, cement, polymers, fly ash), or biological (vegetation) methods

mechanical stabilization

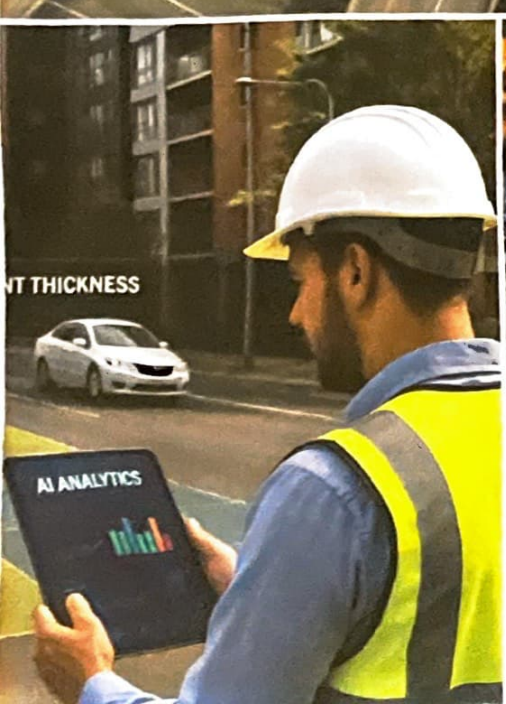
Compaction: Using rollers or vibratory plates to press soil particles closer, increasing density and strength.

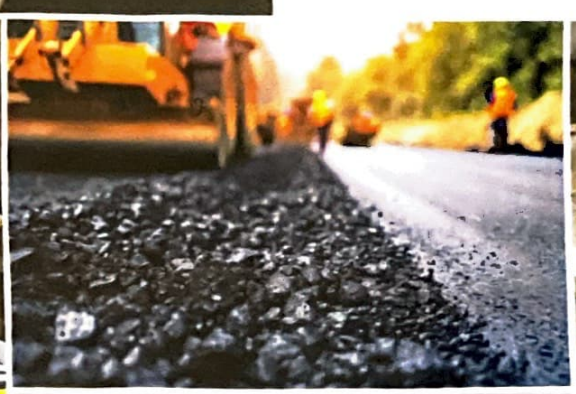
SUBASH.M
621323103047
B.E CIVIL(III)YEAR



Advanced PAVEMENT DESIGN

INCORPORATING INNOVATIVE MATERIALS (LIKE GEOSYNTHETICS, RECYCLED MATERIALS), PERFORMANCE-BASED STANDARDS (ACN-PCN FOR AIRPORTS), AND SOPHISTICATED MODELING (FINITE ELEMENT ANALYSIS) TO CREATE MORE DURABLE, COST-EFFECTIVE, AND SUSTAINABLE ROADS, FOCUSING ON LONG-TERM PERFORMANCE, REDUCED MAINTENANCE, AND BETTER LOAD DISTRIBUTION FOR HEAVY TRAFFIC AND UNIQUE ENVIRONMENTAL CONDITIONS, USING TECHNOLOGIES LIKE PERMEABLE PAVERS AND SOLAR-INTEGRATED SURFACES.





RAJESH.R
621323103038
B.E CIVIL (III) Year

Infrastructure Development and Sustainability

SANTHIYA.N
621323103040
B.E CIVIL (III)Year

Infrastructure development and sustainability means building essential systems (roads, energy, water) to meet present needs without compromising future generations, focusing on long-term environmental, social, and economic benefits by integrating green tech, resilience, and inclusivity, crucial for achieving global goals like the SDGs and Paris Agreement, despite funding gaps and technological hurdles.

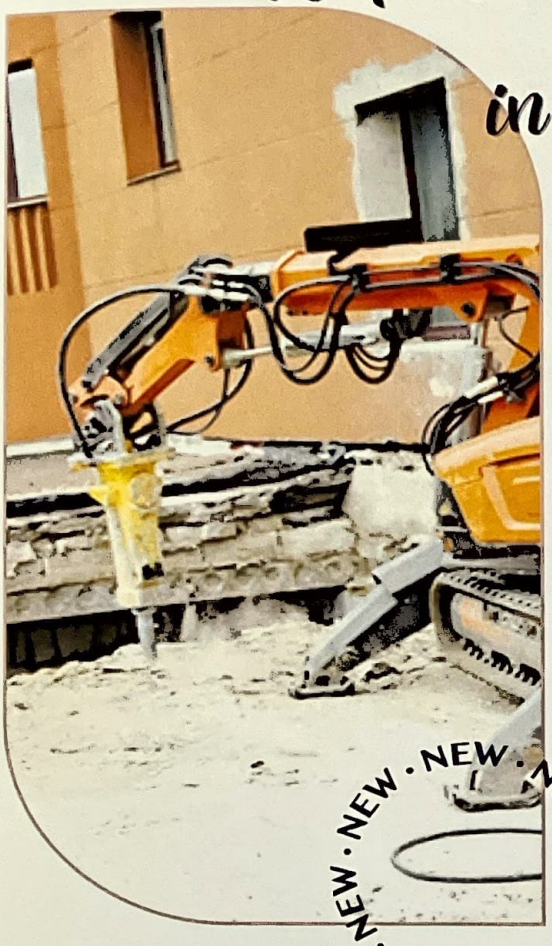
ENVIRONMENTAL EFFECTS ON THE BUILDING OF RAILROADS

Railway construction significantly impacts the environment through habitat destruction, deforestation, and land use changes, causing soil erosion and fragmenting ecosystems, while using vast resources for materials like steel and concrete, leading to high emissions from production.

The construction of railway infrastructure projects has a significant anthropogenic impact since it requires intensive use of energy and material resources, whose main negative effects on the environment include global warming, acidification, eutrophication, etc.

AMUTHA.S
621323103003
B.E CIVIL (III)Year

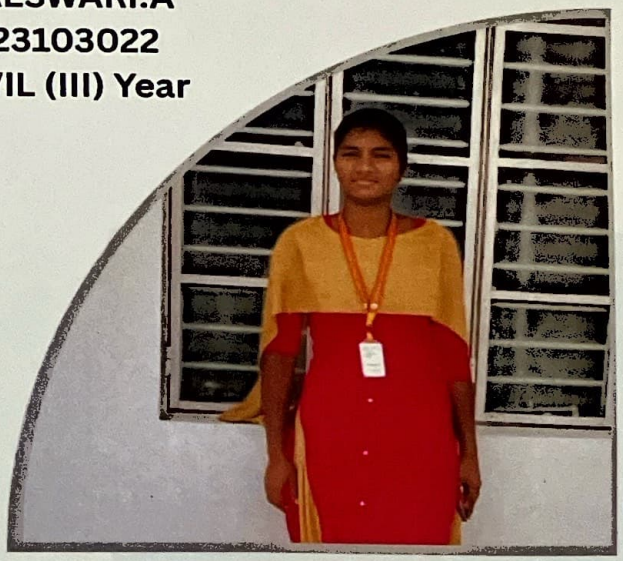
Robotics and Automation in Construction



Robotics in construction refers to the use of programmable machines that perform tasks traditionally carried out by human labor, especially those that are repetitive, hazardous, or physically demanding. Construction robotics encompasses automated machinery, such as robotic arms, drones, and AI-driven software systems, designed to undertake complex tasks on building sites. These systems assist in tasks such as bricklaying, welding, 3D printing, and inspections. the use of robotic engineering within the construction industry, often to automate tasks and reduce the amount of manual labor that human workers have to perform.

The 4 Ds of robotics are Dull, Dirty, Dangerous, and Dear, a framework for identifying tasks best suited for automation, freeing humans from monotonous, unclean, risky, or costly work, with "Dear" also sometimes meaning "difficult" or tasks requiring high speed/precision, leading to better safety, efficiency, and ROI. Robots excel at these tasks, improving worker safety and productivity by handling repetitive, unhygienic, hazardous, or expensive processes like heavy lifting, chemical handling, or precision assembl

LEELAESWARI.A
621323103022
B.E CIVIL (III) Year



DEMOLITION OF BUILDINGS

Demolition

Demolition (also known as razing and wrecking) is the science and engineering in safely and efficiently tearing down buildings and other artificial structures. Demolition contrasts with deconstruction, which involves taking a building apart while carefully preserving valuable elements for reuse purposes.

Building implosion

Large buildings, tall chimneys, smokestacks, bridges, and increasingly some smaller structures may be destroyed by building implosion using explosives. Imploding a structure is very fast—the collapse itself only takes seconds—and an expert can ensure that the structure falls into its own footprint, so as not to damage neighboring structures. This is essential for tall structures in dense urban areas.

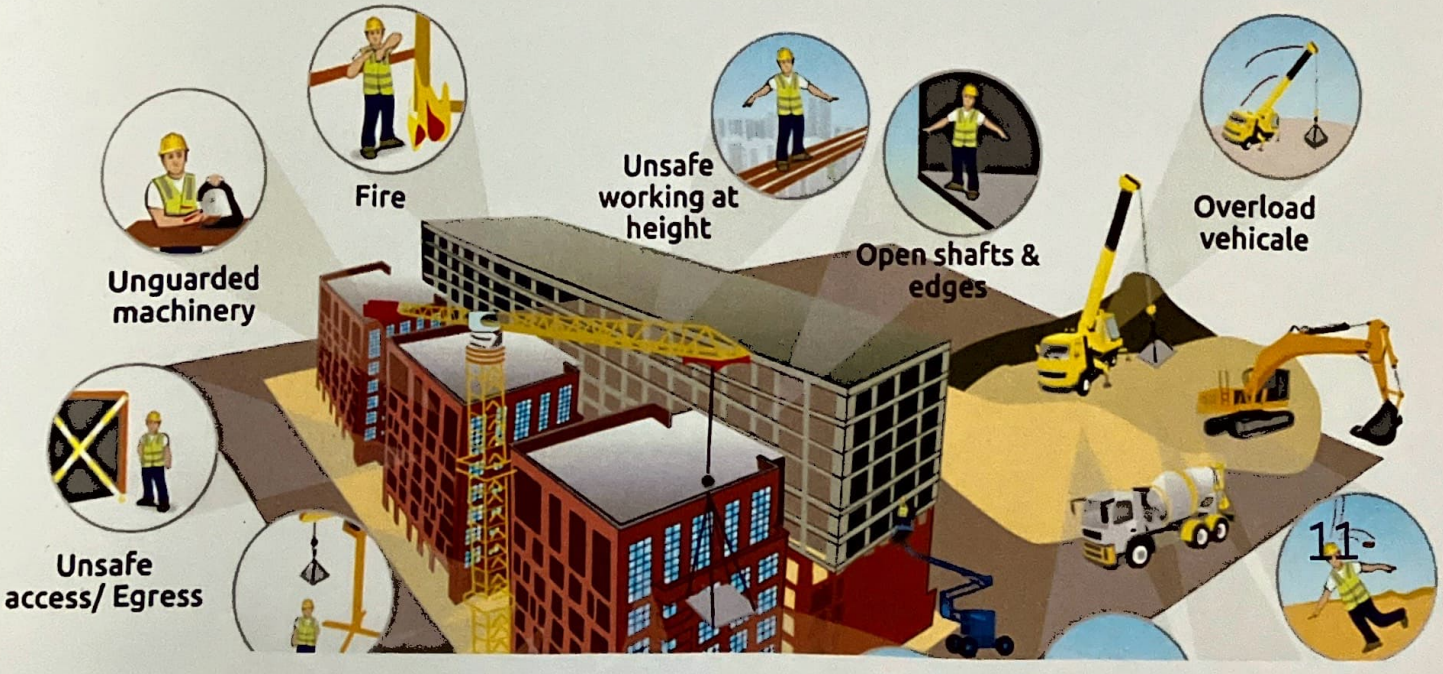
S. Inbatamilan
621323103303
B.E CIVIL (III) Year

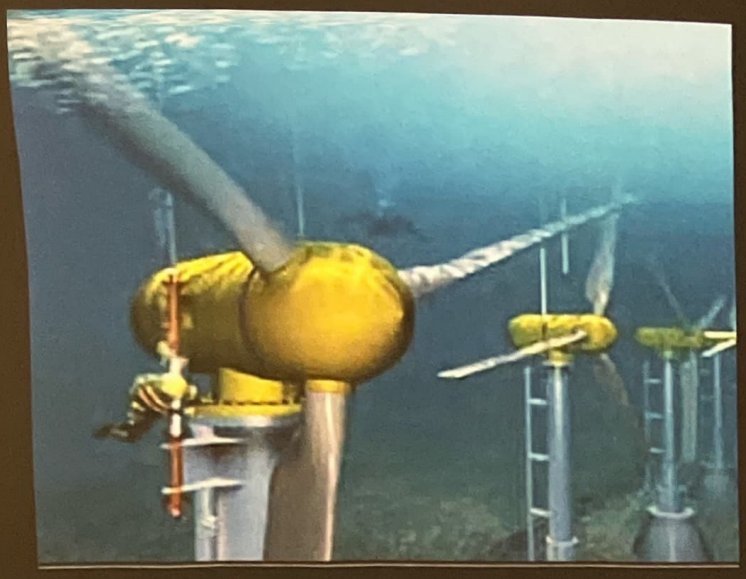
CHINMAYI.A.M
621324103007
B.E CIVIL (II) Year

- **Structural Health Monitoring (SHM):** Sensors embedded in bridges, buildings, and dams provide continuous data (stress, temperature, vibration) for early warnings of potential failures, enabling proactive repairs.

The Internet of Things (IoT) is revolutionizing civil engineering by enabling real-time monitoring, data-driven decisions, and automation, leading to safer, more efficient, and sustainable infrastructure through applications like structural health monitoring, smart buildings, predictive maintenance, and optimized construction management.

IMPACT OF IOT ON CIVIL ENGINEERING



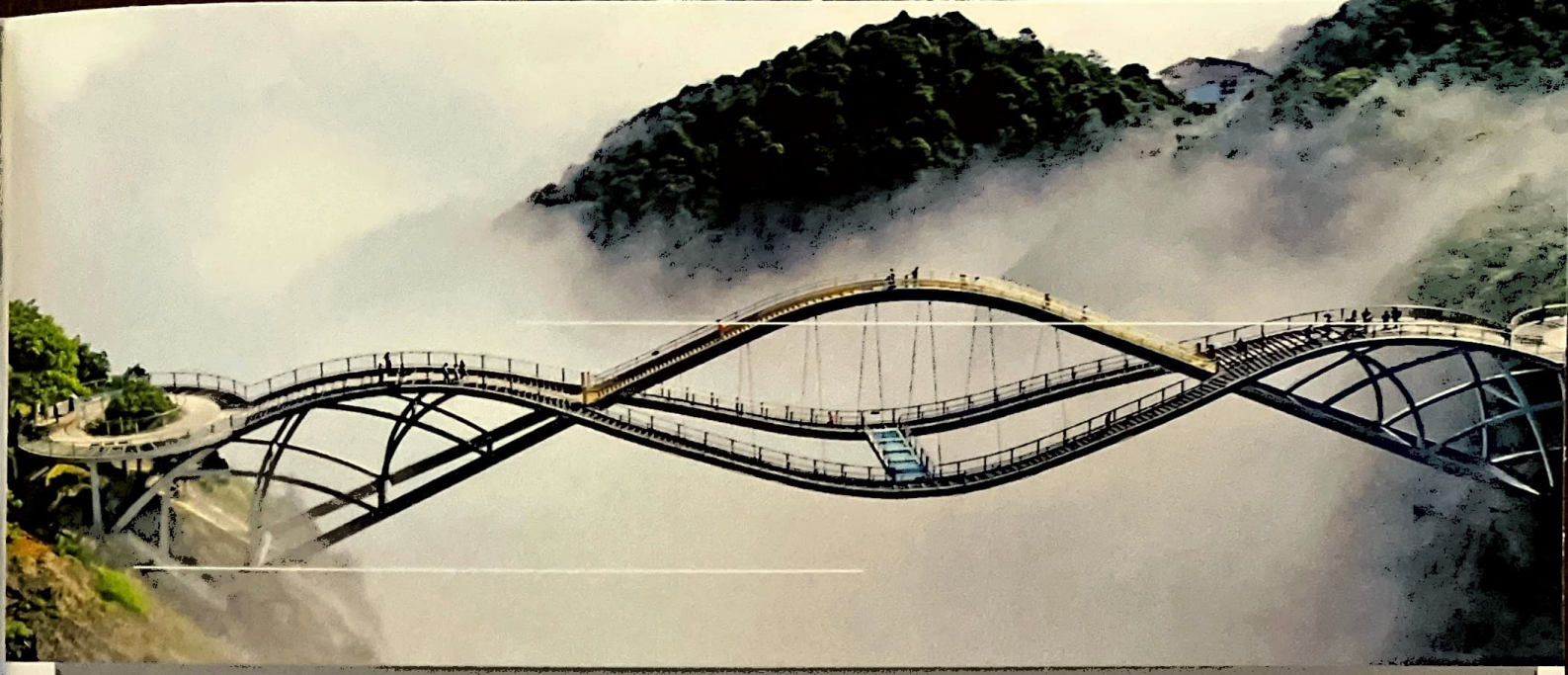


An underwater windmill, or tidal stream turbine, captures energy from moving ocean water (tides/currents) similar to how a wind turbine uses air, converting the water's kinetic energy into electricity via rotating blades connected to a generator, offering predictable, renewable power but facing challenges like high installation costs and marine impact.

- Current Drives Blades: Fast-flowing tidal currents or ocean currents spin the turbine's rotor blades.
- Mechanical to Electrical Energy: The spinning blades turn a gearbox, which powers a generator.
- Turbine: Rotor with blades designed to catch water flow.
- Generator: Converts mechanical rotation into electrical power.
- Gearbox: Increases rotational speed for the generator.

SUBMERGED WINDMILL

ABDUL HAQ.S
621324103001
B.E CIVIL (II) Year



BRIDGE DESIGN FOR A CHANGING ENVIRONMENT

DHARSHINI.C
621324103009
B.E CIVIL (II) Year

Bridge design for a changing environment

Bridge design for a changing environment prioritizes sustainability, resilience, and adaptability through high-performance, eco-friendly materials (recycled steel, low-carbon concrete) and advanced, climate-adaptive engineering. Key strategies include enhanced drainage, multi-hazard resistance, and structural health monitoring to withstand extreme weather, increased loads, and corrosion.

Resilient Materials

Utilization of materials that resist corrosion and require less maintenance, such as high-performance concrete, stainless steel, and fiber-reinforced polymers.

ABIMANA ADITYAN.R
621324103002
B.E CIVIL (II)Year

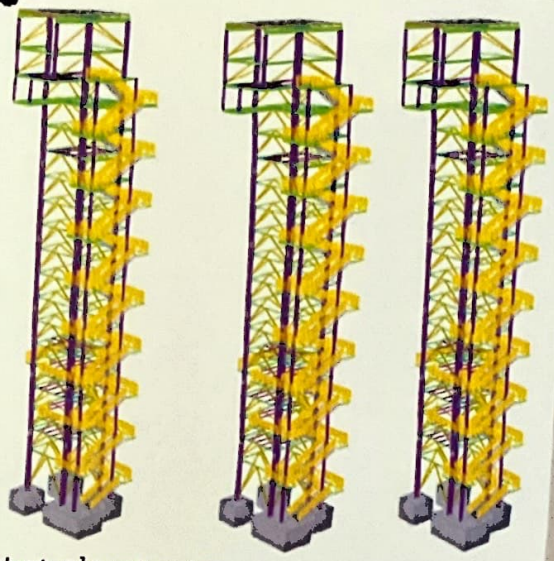
Bamboo is a strong, sustainable, and versatile building material used for everything from temporary scaffolding and traditional housing to modern, large-span structures, flooring, and even engineered bamboo products like laminated panels, prized for its high strength-to-weight ratio, flexibility

MAKING USE OF BAMBOO IN CONSTRUCTION

DESIGN OF CIVIL

Gowtham p
DESIGN WORKS

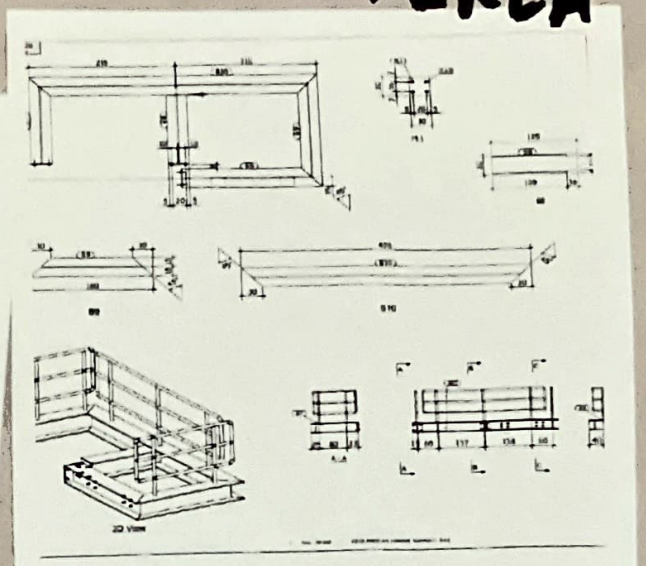
TEKLA



Bucket elevator tower
3D Model

61L

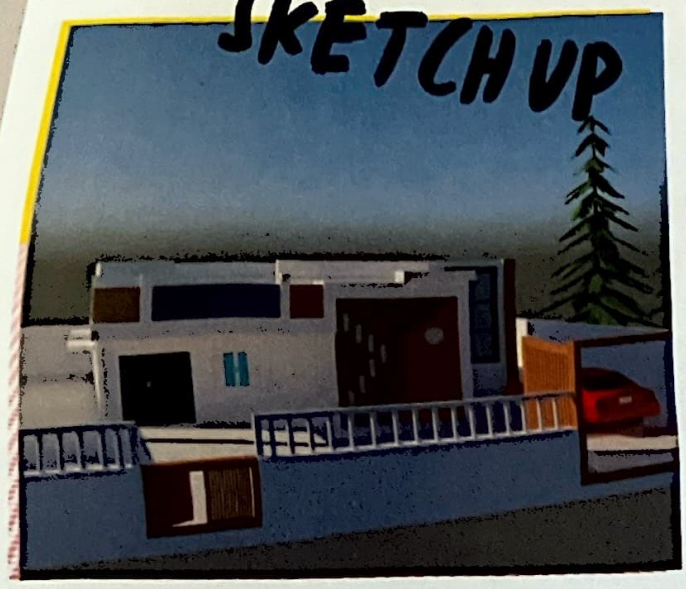
TEKLA



Bucket elevator tower in
Detailing

61L

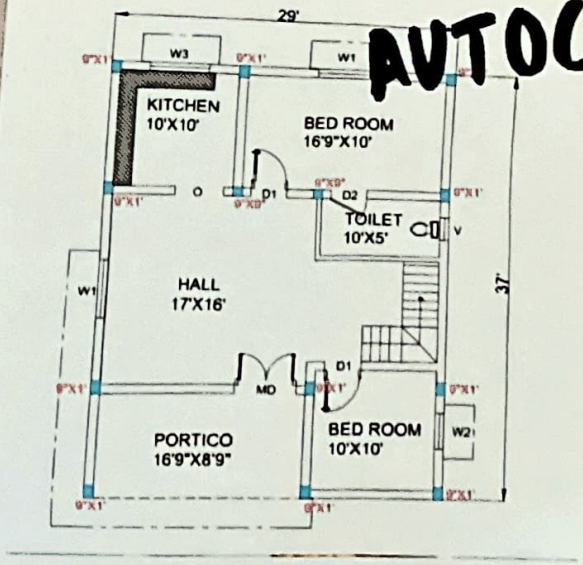
SKETCH UP



Elevation design

1.5L

AUTOCAD



1000 sq.ft 2D plan

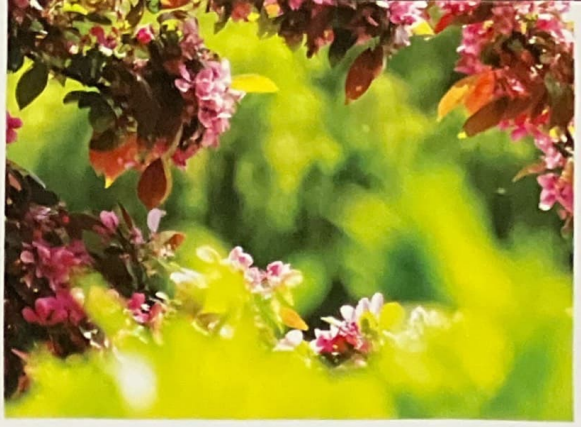
35k

Logo ICON

An icon logo (or brand icon) is the simplified, compact version of a full brand logo, designed for small spaces like app icons or social media profiles, focusing on instant recognition and functionality (e.g., Nike Swoosh, Apple's apple) rather than complex branding.

DIVAKARAN.V
621322103013
B.E CIVIL (IV)Year

Photography of Nature



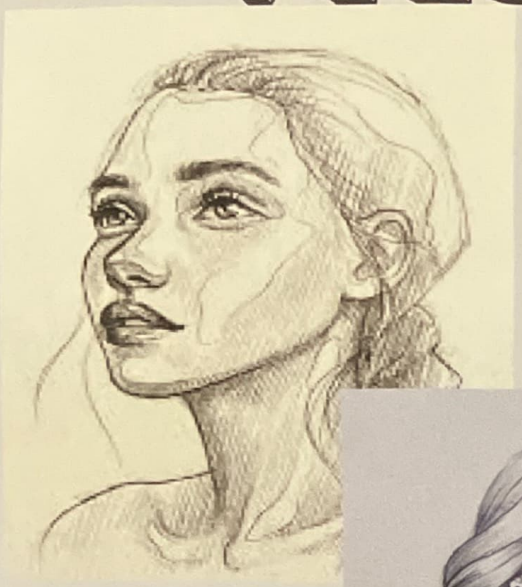
Abirami. N

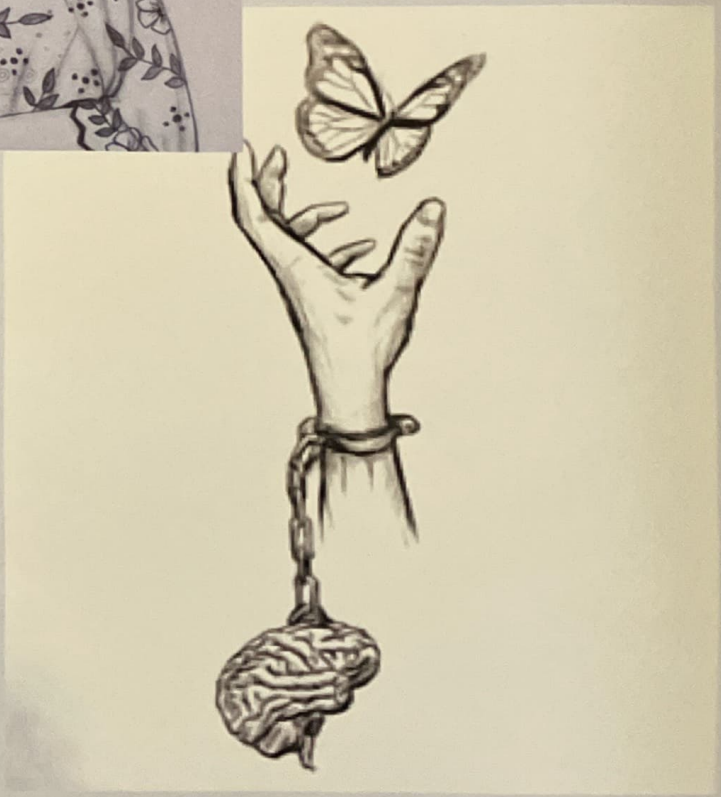
621323103002

B.E CIVIL (III) YEAR

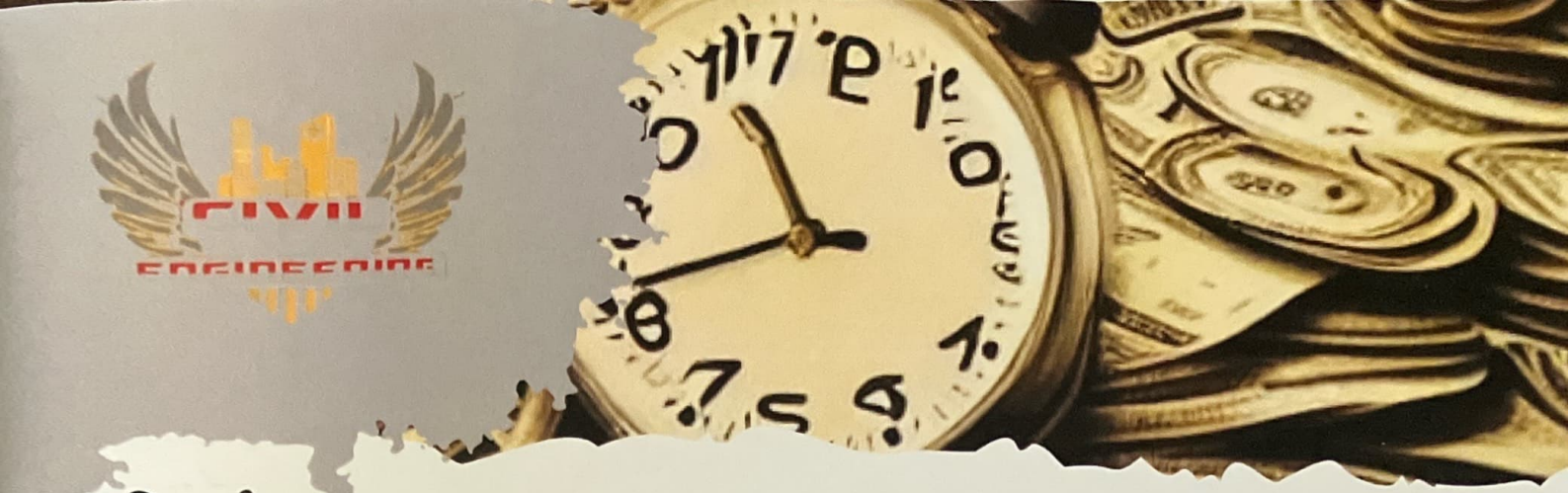
DRAWING ARTS

Nikitha K
ARTS WORKS





nikitha.k
621323103030
B.E CIVIL (III) Year



கவிதை

கடந்து போன நிமிடத்தை விலைக்கு வாங்கி
அனுபவிக்க முடிகிற அளவுக்கு இந்த உலகில்
யாரும் பணக்காரர்கள் கிடையாது!!

"தேவை என்பதற்காக தேன்கூடுகளை நாடுவதில்லை
பட்டாம்பூச்சிகள்"

*****

Subash.M

COLLEGE

VISION

"To become an Internationally Renowned Institution Education, 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 Links with Intellectuals and Industries.
- Enriching Employability and Entrepreneurial Skills.
- Adapting to Changes for Sustainable Development.

OUR TEAM

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EDITORS

Gowtham.P (IV) year
Subash .M (III) year
Rajesh.R (III) year
Dharshini.C (II) year

Department Vision & Mission

VISION

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

MISSION

- 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.