



DEPARTMENT OF

VOLUME - 1

ISSUE - 1

CIVIL
ENGINEERING

M@G@ZINE

JULY - DEC 2021

CESA - 2021

**KONGUNADU COLLEGE OF ENGINEERING
AND TECHNOLOGY**

(AUTONOMOUS)

TECHNICAL PAPERS

CONSTRUCTION ROBOTICS

HOW TO - CONSTRUCTION ROBOTICS

Construction robotics is revolutionizing the construction industry by automating labor-intensive tasks, improving efficiency, and enhancing safety on job sites. These robots are designed to address common challenges like labor shortages, cost overruns, and hazardous working conditions, while also increasing precision and productivity. Construction robots are used in various applications, including bricklaying, 3D printing of buildings, concrete pouring, and demolition. For instance, bricklaying robots like SAM100 (Semi-Automated Mason) can lay thousands of bricks per day with greater accuracy, while large-scale 3D printers construct walls and structures with innovative designs and reduced material waste. Demolition robots, such as those by Brokk, offer safer and more controlled dismantling of buildings. Autonomous equipment, like self-driving excavators and bulldozers, streamline earthmoving operations, and robotic arms assist in assembling complex structural components, including rebar tying. Beyond physical construction, robotics plays a significant role in inspections and site surveillance, with drones and robots equipped with cameras and sensors providing real-time data to enhance decision-making. Additionally, wearable robotics like exoskeletons are improving worker ergonomics by reducing fatigue and minimizing the risk of injuries. Despite its transformative potential, the adoption of construction robotics faces challenges such as high initial costs, the need for technical expertise, and resistance to change within traditional industries. However, as technology advances, integrating artificial intelligence, machine learning, and collaborative systems (cobots) is paving the way for smarter, more adaptable construction solutions. Construction robotics not only improves project timelines and quality but also aligns with sustainable practices by reducing material waste and promoting energy-efficient construction, making it a cornerstone of the industry's future.



Dhivakar R
B.E Civil (IV YEAR)
621321103006

AERATED AUTOCLAVED CONCRETE



AERATED AUTOCLAVED CONCRETE Technology

Autoclaved aerated concrete (AAC) is concrete that has been manufactured to contain closed air pockets. It comes in the form of panels or blocks. Lightweight and fairly energy-efficient, it is produced by adding a foaming agent to concrete in a mould, then wire-cutting blocks or panels from the resulting 'cake' and 'cooking' them with steam (autoclaving). The gas used to 'foam' the concrete during manufacture is hydrogen formed from the reaction of aluminium paste with alkaline elements in the cement. AAC is durable and light, does not burn, is an excellent fire barrier and a good insulator, and is able to support quite large loads. The popularity of AAC in Australia has grown since the first production of AAC here in 1990, although the market remains dominated by one manufacturer. In Europe, AAC has a long history of development, having been in use since the 1920s.

AAC is one-fifth the weight of concrete and comes in a variety of sizes. It is relatively easy to work with and can be cut and shaped with hand tools including woodworking tools. However, it requires careful and accurate placement – skilled trades and good supervision are essential. AAC panels are easy to work with and faster to construct than blockwork, but must be handled carefully to avoid damage. Competent bricklayers or carpenters can work successfully with AAC blocks. Dimensional tolerances are very small when blockwork is laid with thin-bed mortar. Thick-bed mortar is more forgiving but is uncommon and not the industry preferred option. Very large blocks may require 2-handed lifting and be awkward to handle but can result in fewer joints and more rapid construction.

The compressive strength of AAC is very good. Although it is one-fifth the density of normal concrete, it still has half the bearing strength, and loadbearing structures up to 3 storeys high can be safely erected with AAC blockwork. The Australian Standards AS 3700-2018 Masonry structures and AS 5146.2:2018 Reinforced autoclaved aerated concrete design include provisions for AAC block and panel design. External AAC wall panels – which are not blockwork but are precast units – can provide loadbearing support in houses up to 2 storeys high. AAC panels and lintels contain integral steel reinforcement to ensure structural adequacy during installation and design life. Increasingly, AAC is being used in Australia in its panel form as a cladding system rather than as a loadbearing wall. Entire building structures can be made in AAC from walls to floors and roofing with reinforced lintels, blocks and floor, wall and roofing panels available from the manufacturer. AAC floor panels can be used to make non-loadbearing concrete floors that can be installed by carpenters.

The thermal performance of AAC depends on the climate in which it is used. With its mixture of concrete and air pockets, AAC has a moderate overall level of thermal mass. It is most useful in warmer climates with high cooling needs. However, if used extensively (for example, for internal walls and flooring) AAC can be suitable for climates requiring higher levels of thermal mass. AAC has very good thermal insulation qualities relative to other masonry, but generally needs additional insulation to comply with National Construction Code (NCC) requirements.



S.Swathi
B.E Civil (IV YEAR)
621321103028

HOTEL EDITION

RIMBERIO



Explore the crème de la crème of luxury accommodations for 2024. Our curated list features destinations that offer exceptional service, stunning design, and world-class amenities:

Urban Elegance: The best luxury hotels in major cities, providing a sanctuary amidst the hustle and bustle.

LUXURY HOTEL

Welcome to the 2024 edition of Luxury Hotels Magazine. This year, we celebrate the pinnacle of luxury hospitality, exploring how top hotels blend opulence with personalized service to create unforgettable experiences. From iconic urban landmarks to serene beachfront resorts, discover what makes these hotels stand out in the world of luxury travel.

Luxury and sustainability can go hand in hand. This section highlights luxury hotels that prioritize eco-friendly practices without compromising on comfort and style



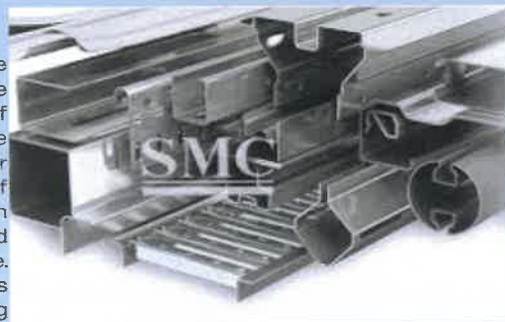
Gurumoorthi. K
B.E Civil (IV YEAR)
621321103011

Cold Formed Steel Sections



Cold Formed Steel

Cold-formed steel starts with the production of raw steel, combining iron ore and steel scrap with small amounts of carbon in a Basic Oxygen Furnace (BOF). The molten steel is then reduced into thinner strips of steel, and a protective coating of zinc is added through the galvanization process. The final product is called a 'coil' and is produced using a roll-forming machine. Using CFS in this end-to-end process makes a socially responsible building method that helps lower carbon emissions across the construction industry.



Cold Form Steel Process

Cold formed steel process is a design-led operation, meaning that less skill is required at the time of construction and more when designing it. The steel used to make frames and components is sourced from quality coil productions. They are shaped into coils with roll-forming machines before they are bolted together on-site to complete the building. The cold formed steel process is highly effective as it can run large quantities of steel at high speed with consistent quality and precision. The wide range of functions in a system like FRAMECAD allows increased productivity and versatile output to produce roof trusses, wall frames, and floor joists to exact measurements. This creates a scalable solution and a streamlined process while time and costly waste. Detailed design speeds up compliance and minimizes room for error. Using the cold forming process can offer a much more predictable construction schedule and less on-site cost than if you use traditional building methods. For example, the lighter material is easier to transport with on-site labor. It's also not necessary to operate heavy machinery. This means less construction time and a better-finished product for the client.



M.Ragul
B.E Civil (IV YEAR)
621321103020

Modern Library

A modern library is a dynamic space that combines traditional resources like books and journals with advanced technology to meet the evolving needs of its users. Unlike conventional libraries, modern libraries are equipped with digital resources such as e-books, online databases, and multimedia content, making information more accessible to a global audience. They often feature interactive learning zones, computer labs, and makerspaces that foster creativity and innovation. With high-speed internet and collaborative spaces, modern libraries support academic research, community engagement, and lifelong learning. Additionally, they focus on inclusivity by offering adaptive technologies for differently-abled users and hosting events, workshops, and cultural programs. By blending knowledge, technology, and community, modern libraries have transformed into vibrant hubs of learning and connection in the digital age.



Swetha.S
B.E Civil (III YEAR)
621322103040



Trends in Apartments 2024

Latest Designs and Amenities

Stay ahead of the curve with our comprehensive analysis of 2024's hottest apartment trends. From smart home technologies to eco-friendly materials and community-focused amenities, discover what's shaping the future of apartment living.

Solutions to Maximize Space

Small doesn't have to mean cramped. This section provides innovative solutions and design ideas to make the most of limited space. Learn how to optimize storage, choose multifunctional furniture, and create an illusion of more space with color and lighting techniques.



Kamalesh. T
B.E CIVIL (YEAR)
621322103022



Tower, any structure that is relatively tall in proportion to the dimensions of its base. It may be either freestanding or attached to a building or wall. Modifiers frequently denote a tower's function. Historically, there are several types of structures particularly implied by the name. Defensive towers served as platforms from which a defending force could rain missiles down upon an attacking force. The Romans, Byzantines, and medieval Europeans built such towers along their city walls and adjoining important gates. The Romans and other peoples also used offensive, or siege, towers, as raised platforms for attacking troops to overrun high city walls. Military towers often gave their name to an entire fortress; the Tower of London, for example, includes the entire complex of buildings contiguous with the White Tower of William I the Conqueror.

HISTORY OF TOWERS



Towers were an important feature of the churches and cathedrals built during the Romanesque and Gothic periods. Some Gothic church towers were designed to carry a spire, while others had flat roofs. Many church towers were used as belfries, though the most famous campanile, or bell tower, the Leaning Tower of Pisa (1174), is a freestanding structure. In civic architecture, towers were often used to hold clocks, as in many hotels de ville (town halls) in France and Germany. The use of towers declined somewhat during the Renaissance but reappeared in the more flamboyant Baroque architecture of the 17th and 18th centuries.



Jasvitha.R
B.E Civil (III YEAR)
621322103019

The Power of Reading for Mental Health

Mental health refers to a person's emotional, psychological, and social well-being, influencing how they think, feel, and interact with others. It plays a crucial role in shaping an individual's ability to cope with stress, build relationships, and make decisions. Mental health is not merely the absence of mental illness but a state of overall well-being where a person can realize their potential and contribute to their community. Factors such as genetics, life experiences, and environmental conditions significantly affect mental health.



Promoting mental health involves creating supportive environments, fostering positive relationships, and encouraging open discussions about emotional well-being.

Professional therapy, counseling, and practices like mindfulness, meditation, and regular physical activity can significantly improve mental health. However, societal stigma often discourages people from seeking help, highlighting the need for awareness campaigns and education. By normalizing conversations around mental health, providing access to affordable mental health care, and ensuring workplace and school support systems, societies can empower individuals to lead happier and healthier lives while breaking down barriers to mental well-being.

40



Nethra.V
B.E civil (III YEAR)
621322103028

DAILY NEWS



Nithya S
B.E Civil (II YEAR)
621323103047

Aggregates are inert granular materials such as sand, gravel, or crushed stone, used in construction. They are essential components of concrete, asphalt, and other construction materials, providing strength, durability, and stability.

The properties of the coarse aggregates determine the properties of the concrete mix. The water absorption of coarse aggregates in any climatic condition should not be more than 2%. As for the size of the coarse aggregates, the larger the particles, the smaller the total surface area to be wetted. And less paste is required for lubricating the surface to reduce internal friction. This reduces both cement and water requirements in a concrete mix.

Further, since there is less water requirement, less pore water is present in the void spaces. This results in less evaporation and, therefore, reduced drying shrinkage. The angularity and strength particles also affect the concrete in numerous ways.



PRE CAST CONSTR UCTION

Precast building construction is a process in which buildings are constructed using prefabricated concrete components. It is produced by casting concrete in a reusable mold or "form", which is then cured in a controlled environment. These components are produced in a factory setting and then transported to the construction site, where they are assembled into the final structure.



Subash.M
B.E Civil (II YEAR)
621223103047

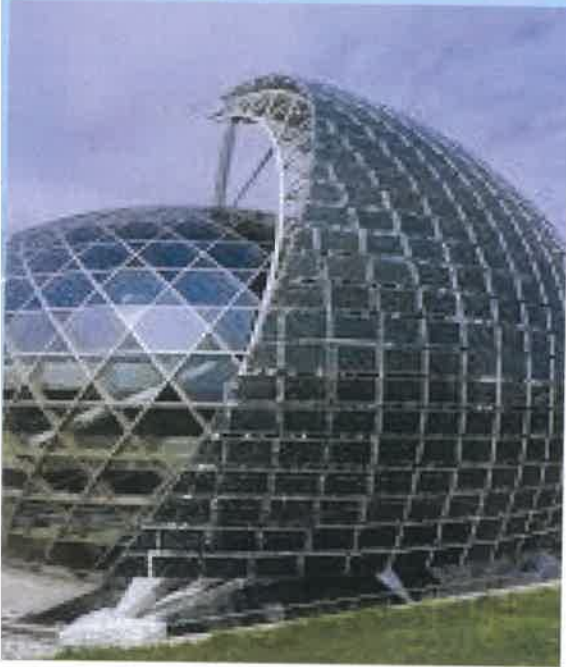


Prestressed Concrete Panels

Prestressed concrete panels are made by pouring concrete into a mold, and then applying high-strength steel cables to the wet concrete. The steel cables are then tensioned and anchored to create a strong bond between the concrete and the steel. Prestressed concrete panels are made by pouring concrete into a mold, and then applying high-strength steel cables to the wet concrete. The steel cables are then tensioned and anchored to create a strong bond between the concrete and the steel.

department of civil engineering

SOLAR BUILDING



A solar building is a structure designed to harness solar energy for various purposes, including heating, cooling, lighting, and electricity generation. These buildings integrate solar technologies with architectural designs to maximize energy efficiency and reduce reliance on non-renewable energy sources, making them environmentally sustainable.



Barath.P
B.E Civil (II YEAR)
621323103005



Advantages of Solar Buildings

Energy Savings: Significantly reduces electricity and heating costs.

Environmental Benefits: Lowers carbon footprint and pollution.

Increased Comfort: Maintains stable indoor temperatures.

Independence: Reduces dependency on the power grid.

Economic Incentives: Eligibility for government subsidies or tax rebates.



Brick

A brick is a type of construction material used to build walls, pavements and other elements in masonry construction. Properly, the term brick denotes a unit primarily composed of clay, but is now also used informally to denote units made of other materials or other chemically cured construction blocks. Bricks can be joined using mortar, adhesives or by interlocking. [1][2] Bricks are usually produced at brickworks in numerous classes, types, materials, and sizes which vary with region, and are produced in bulk quantities. [3] Block is a similar term referring to a rectangular building unit composed of clay or concrete, but is usually larger than a brick. Lightweight bricks (also called lightweight blocks) are made from expanded clay aggregate. Fired bricks are one of the longest-lasting and strongest building materials, sometimes referred to as artificial stone, and have been used since c. 4000 BC. Air-dried bricks, also known as mudbricks, have a history older than fired bricks, and have an additional ingredient of a mechanical binder such as straw. Bricks are laid in courses and numerous patterns known as bonds, collectively known as brickwork, and may be laid in various kinds of mortar to hold the bricks together to make a durable structure.



Sandhiya.N
B.E Civil (II YEAR)
621323103040

department of civil engineering

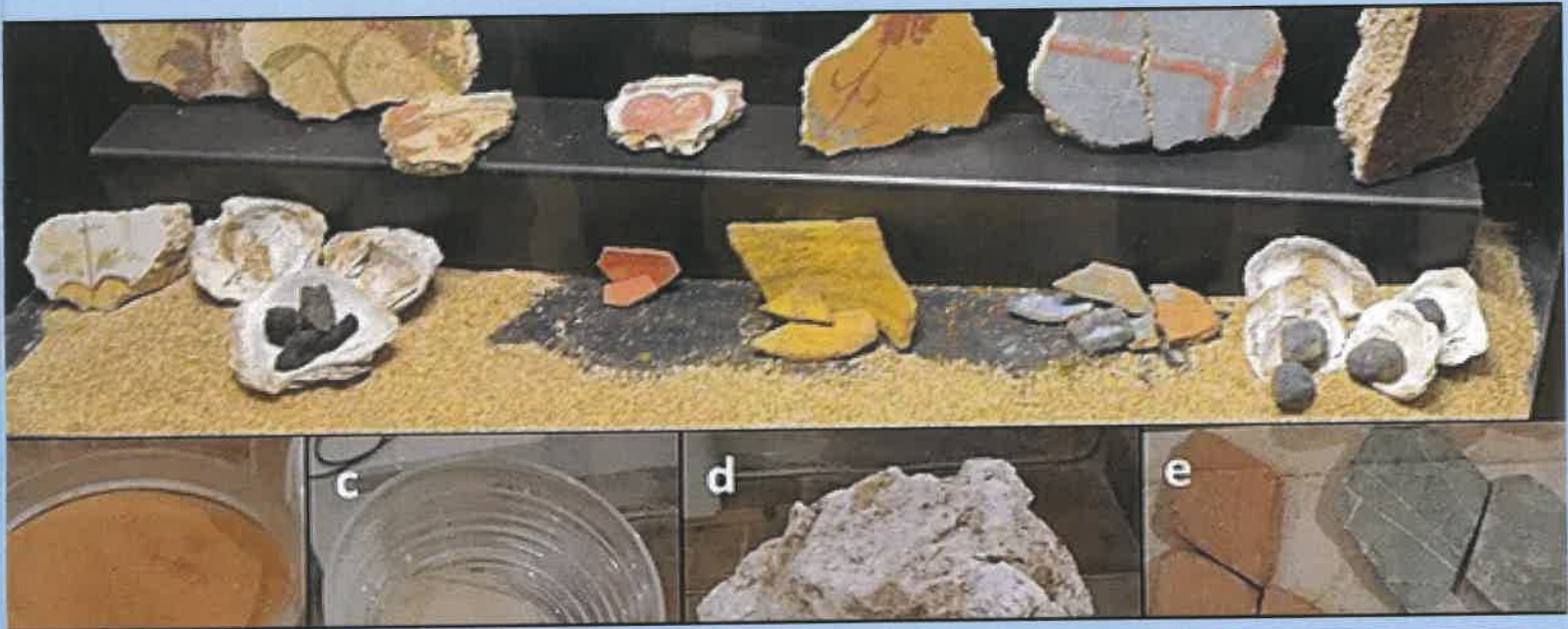
PHOTOGRAPHY

photo

shoots

NATURE

CIVIL WORK MATERIALS



MEANING AND SCOPE OF SUITS OF CIVIL NATURE

The CPC defines a suit as a civil proceeding initiated by the presentation of a plaint or a written statement before a court of law. A "suit of civil nature" refers to a legal action that falls within the realm of civil law and is governed by the CPC. Civil law encompasses a wide range of disputes, including those related to property, contracts, torts, family law, etc.



The scope of suits of civil nature under the CPC is extensive and covers various types of civil disputes. These may include suits for recovery of money, suits for specific performance of contracts, suits for declaration of rights, suits for injunctions, suits for partition of property, suits for damages, and many others. The CPC provides a procedural framework for conducting these suits, ensuring that civil disputes are resolved through a systematic and fair legal process.

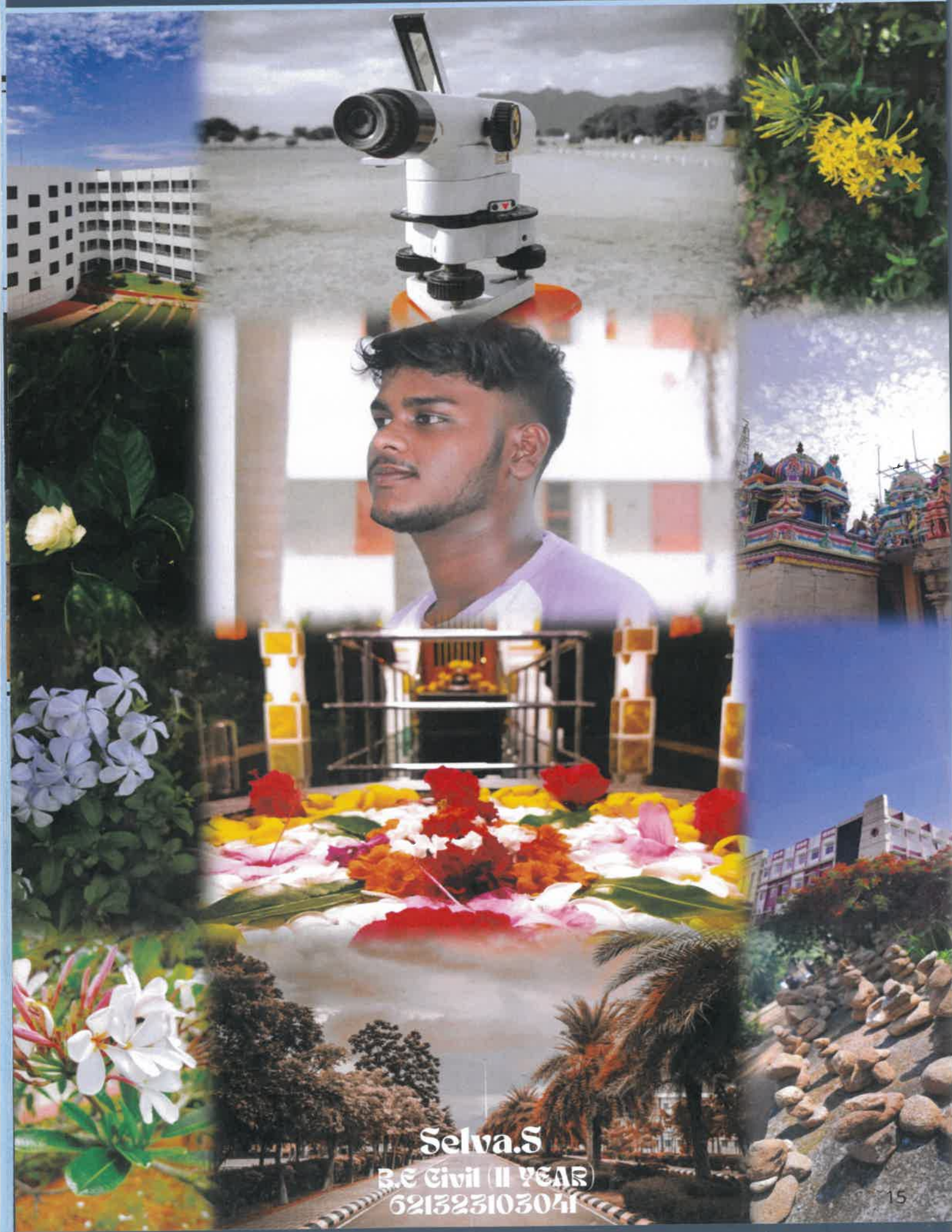


Sanjai Kumar.D
B.E Civil (II YEAR)
621323103039



Swetha sri.D
B.E Civil (III YEAR)
621322103049





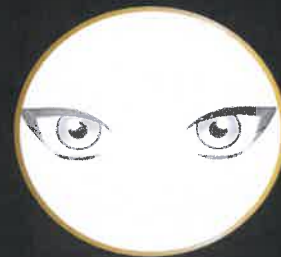
Selva.S
B.E Civil (II YEAR)
621323103041

தாய்மை
தாய் என்பாள் தேன்கிண்ணம்,
தன் உயிரை உறவாகும் செங்கின்றளம்.
மழலைச் சிரிப்பில் நனைகிறாள்,
தன் கண்ணீரை சிரிப்பால்
மறைக்கிறாள்.
விழியோரமாய் கனவுகள் வைத்து,
விழுதொன்றாய் வாழ்வதை மறந்து,
மகன் மகள் மேல் தன் நம்பிக்கையைச்
சுமந்து,
பிராணனாய் புன்னகை கொடுப்பாள்.
காற்றாய் குளிர்ச்சியைத் தருகிறாள்,
சுடராய் பாதையைச் சுடுகிறது.
கண்களில் இருந்து கடலாய் செல்கிறாள்,
மனதில் இருந்து மாலையாக மலர்கிறாள்.
தாய்மை என்பது சொற்களால் சொல்ல
முடியாதது,
அது ஒரு பொற்கோயில், பரிசுத்தமானது.
அவளை தேடி சென்றால் தெரியும்,
அவளின் மடியில் தான் சொர்க்கம்
இருக்கும்.



SIVA.C
B.E CIVIL(III YEAR)
621322103045

department of civil engineering



Subash.M
B.E Civil (II YEAR)
621323103047

COLLEGE VISION

"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

OUR TEAM

CHIEF PATRON

Dr.PSK.R.Periaswamy, Chairman
Kongunadu Educational Institutions

ADVISORS

Dr.R.Asokan, Ph.D., Principal / KNCET
Dr.S.Kavipriya, Ph.D., , HoD /Civil
Department

EXECUTIVE EDITORS

Mr.D Dhavashankaran, AP/ Civil
Mr.S.Southamirajan,AP/ Civil

EDITORS

K Kokila II year Civil
S Riyas III year Civil
A Ajay IV year Civil

DEPARTMENT VISION

To be recognized globally pre - eminence in Civil Engineering education, research and Social 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 health¹ and environmental protection for sustainable development..