Issue 9 SEPTEMBER 2025

CIVIL CHRONICLE

NEWSLETTER BY DEPARTMENT OF CIVIL ENGINEERING
ADI SHANKARA INSTITUTE OF ENGINEERING AND TECHNOLOGY, KALADY
APPROVED BY AICTE, NEW DELHI. AFFLIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, KERALA

IN THIS ISSUE

DEPARTMENT VISION

- “TO EMERGE AS A CENTRE OF EXCELLENCE IN CIVIL ENGINEERING WITH GLOBAL PERSPECTIVES.”

DEPARTMENT MISSION

- TO IMPART QUALITY PROFESSIONAL EDUCATION SO THAT THE STUDENTS EMERGE AS A COMPETENT PROFESSIONAL IN THE AREA OF CIVIL ENGINEERING.
- TO PROMOTE INNOVATIVE THINKING AND LIFELONG LEARNING IN BUDDING ENGINEERS.
- TO PRODUCE CIVIL ENGINEERS WHO HAVE IMBIBED ETHICAL VALUES TO SERVE THE SOCIETY AND NATION.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

- GRADUATES WILL HAVE A POTENTIAL TO PURSUE HIGHER STUDIES AND RESEARCH IN THE FIELD OF CIVIL ENGINEERING.
- GRADUATES WILL BE ABLE TO PRODUCE SUSTAINABLE SOLUTIONS WITH PROFESSIONAL ETHICS FOR REAL TIME CIVIL ENGINEERING PROBLEMS.
- GRADUATES WILL HAVE MANAGERIAL SKILLS AND LEADERSHIP QUALITIES IN EXECUTION OF CIVIL ENGINEERING PROJECTS.
- GRADUATES WILL BE ABLE TO WORK WITH INTEGRITY AND ETHICAL VALUES.

PROGRAM SPECIFIC OUTCOMES (PSOs)

AFTER SUCCESSFUL COMPLETION OF B.TECH IN CIVIL ENGINEERING, THE STUDENTS WILL BE ABLE TO:

- CHECK THE FEASIBILITY AND SUSTAINABILITY OF CIVIL ENGINEERING PROJECTS BY CONDUCTING GEOTECHNICAL INVESTIGATION, CIVIL ENGINEERING SURVEY AND ENVIRONMENTAL IMPACT ASSESSMENT.
- ANALYSE AND DESIGN BUILDINGS, HYDRAULIC STRUCTURES AND WATER DISTRIBUTION, WASTE MANAGEMENT AND TRANSPORTATION SYSTEMS.
- EXECUTE CIVIL ENGINEERING PROJECTS WITH THEIR KNOWLEDGE IN ESTIMATION, PROJECT MANAGEMENT, CONSTRUCTION MATERIALS AND TECHNOLOGIES.

DEPARTMENT OF CIVIL ENGINEERING

YUVA JAGARAN CAMPAIGN

The NSS Unit of ASIET proudly hosted the Yuva Jagaran IEC Van Campaign, a joint initiative organized by the Kerala State NSS Cell in collaboration with the Kerala State AIDS Control Society. The event aimed to raise awareness about HIV/AIDS and promote health consciousness among students and the community. The program featured a series of engaging and informative activities, including an AIDS Awareness Puppet Drama presented by Sunil Pattimattom and his team, and an energetic Flash Mob performance by NSS volunteers.

The event was graced by insightful addresses from Ms. Reshmi Madhavan (Joint Director, Kerala State AIDS Control Society), Mr. Sajith S (Assistant Director, Kerala State AIDS Control Society), Dr. M. S. Murali (Principal, ASIET), and Mr. Sijo George (NSS Programme Officer).

The campaign successfully inspired students to contribute towards spreading awareness and promoting a socially responsible mindset within and beyond the campus.

AGORA : THE PEOPLE'S FORUM

The Women Empowerment Cell of ASIET organized AGORA: The People’s Forum on 23rd September 2025 to mark the International Day of Democracy. The debate on “Digital Democracy: Does social media empower women or expose them to more discrimination?” witnessed enthusiastic participation and lively discussions. The event also included the Anima Invicta – Unbreakable Spirit prize distribution, celebrating student excellence and empowerment.

SHIKARA

The ICI Civil Society of ASIET successfully hosted “SIKHARA 2025”, a vibrant welcome event for the freshers of the Civil Engineering Department. The celebration was filled with music, games, laughter, and unforgettable memories, marking a joyful beginning to the students’ journey at ASIET.

The event warmly embraced the new members into the Civil family and created a memorable start to their story here.

NACTET SCHOLARSHIP PROGRAM 2025

The National Council for Technology and Training (NACTET), in collaboration with Armstech Engineers Pvt. Ltd., Kerala, successfully conducted the NACTET Scholarship Program 2025 for the final year students on 19th September 2025. As part of the program, students competed for the prestigious MechPrize and CPrize scholarships, which have supported over 240 students with ₹7.23 crore in awards since 2013. The selection was based on online and offline exams, and the event was a great success in promoting technical excellence among students.

KTU S2 RESULTS

STUDENT ACHIEVEMENTS

ENHANCING SKILLS THROUGH HACKATHONS AND WORKSHOPS

Arjun M B, Nikhilkrishna, Pranav T A and Sivaprasad K Sukumaran of S5 CE has participated in the Hackathon “RESILIENTX 2025” organized by the Department of Civil Engineering, SCMS School of Engineering and Technology, Karukutty on 19th and 20th September 2025. It was a platform to tackle real-world challenges in Civil Engineering and showcase innovative solutions.

We are Happy to share that Abhishek Anilkumar and Krishnaveni E K of S7 Civil Engineering successfully attended the 2-day session “BIM Career Connect 2025” held at Lulu Marriott on 23rd August 2025. The event, organized by CAD International, provided valuable insights into Building Information Modeling (BIM) and emerging career opportunities in the field of Civil Engineering.

KNOWLEDGE TRIUMPHS IN QUIZ COMPETITION

Our team showcased their brilliance at the Biggest Civil Engineering Quizzing Event, Civilianz Maze 7.0 hosted by Government Engineering College, Thrissur. Representing us with remarkable enthusiasm and dedication were:

Arundhathy Suresh, Benedict Baby, Abirag P S, Nihan Augustine, Abhijith M H, and Dijindev M, students of S3 CE. Their participation highlighted not only their individual talent but also our team's collective spirit and passion for Civil Engineering.

A special applause goes to Dijindev M, who secured 1st Prize in the Audience Quiz Round, bringing pride and glory to the team.

We are truly proud of the spirit, effort, and excellence displayed by all our participants at this prestigious event.

THAKRITHI 2025 RESULTS

During the Thakrithi Onam Celebration, the Civil Engineering Department showcased an impressive performance in Onappattu, earning them the Second Prize. Their vibrant presentation, synchronized teamwork, and enthusiastic spirit truly won the hearts of all attendees.

Participants were Anaina Parvin T K, Thamanna P S, Arundhathy Suresh, Aryanandha C P, Nikhil Krishna V U, Anusree K, Anjana Raju P R and Aghila V.

RESEARCH PUBLICATIONS

Dr. P K Suresh
Senior Professor

We extend our hearty congratulations to Dr. P. K. Suresh, Senior Professor of the Department for publishing his research paper titled "Multidisciplinary Approach – A Case Study of Water Management" in the International Journal of Scientific Research in Science and Technology (IJSRST), July 2025 edition.

Dr. Parameswaran T G
Associate Professor

We are delighted to share that Dr. Parameswaran T G, Associate Professor of the Department of Civil Engineering, has published his research work entitled "Numerical Assessment of Soil Dispersivity Based on Inter-Particle Energy Dynamics" in a prestigious Q1 journal published by Springer. This remarkable achievement reflects his commitment to academic excellence and enhances the global visibility of our institution. It also serves as a source of motivation for students and colleagues to actively pursue impactful research.

STAFF OUTREACH

FRIDAY TALK ON ‘GRANT ANICUT - AN ANCIENT IRRIGATION SYSTEM’

A Friday Talk on “Grant Anicut - An Ancient Irrigation System” was conducted by the institute on 26th September 2025 at the Main Seminar Hall. The session was led by Dr. P K Suresh, Senior Professor of the Department, who provided an insightful overview of the historical significance and engineering excellence behind one of India’s oldest irrigation structures. He explained the design principles, construction techniques and sustainable practices employed in the Grant Anicut, highlighting its continued relevance in modern water management. The session was highly informative and offered faculty a deeper appreciation of traditional engineering wisdom and its enduring value in contemporary Civil Engineering.

STAFF OUTREACH

Review of Construction Legacy of Hindu Temples in Ancient India through Civil Engineering perspective.

The article cites various Hindu Scriptures and texts which give description about the methodology used in construction of Civil Engineering wonders, the Hindu Temples, known as "Mandira" in Sanskrit. History of construction is discussed from 700 to 500 BC. Various Architectural styles which were adopted due to cultural as well as linguistic and geographic factors have been discussed.

Architectural Styles of ancient Indian temples and its characteristics

Architectural Style	Characteristics	Prominent Temples and Examples
Gandhara Style	Influenced by Greco Buddhist art, featuring Greek and Roman architectural elements.	Prominent in early Buddhist monuments.
Nagara Style	Towers with curvilinear spires (shikhara), square sanctum (garbhagriha), and mandapa.	Prominent in temples of North India, especially in the Himalayan region.

Architectural Style	Characteristics	Prominent Temples and Examples
Dravidian Style	Towering gopurams (entrance towers), large and open mandapas, axial alignment of shrines, and elaborate sculptural work.	Prominent in temples of Tamil Nadu, Karnataka, Andhra Pradesh, and Telangana
Vesara Style	A fusion of Nagara and Dravidian styles, characterized by a central tower with elements of both square and circular plans.	Prominent in temples of Maharashtra and parts of Karnataka.
Maru-Gurjara Style	Elaborate and intricate architecture, often with domes and toranas (arched gateways).	Prominent in temples like the Dilwara Temples in Mount Abu.
Vijayanagara Style	Large and ornate structures, intricate carvings, and pillared halls.	Prominent in temples of the Vijayanagara period, including the Virupaksha Temple in Hampi.

Architectural Style	**Characteristics**	**Prominent Temples and Examples**
Hoysala Style	Star-shaped platforms, sculpted walls with intricate detailing, and lathe-turned pillars.	Prominent in temples like the Chennakesava Temple in Belur
Kalinga Style	Pyramidical towers (rekha deula), sculptures depicting stories from epics, and a focus on intricate carvings.	Prominent in temples like the Lingaraja Temple in Bhubaneswar.
Chalukya Style	Flat roof structures, carved pillars, and ornate sculptures.	Prominent in temples like the Badami Cave Temples.
Pallava Style	Rock-cut architecture, monolithic structures, and sculptural decorations	Prominent in temples like the Shore Temple in Mamallapuram

In ancient India, building temples was a sacred and intricate process guided by religious, architectural, and cultural beliefs. The steps involved were:

1. Choosing the Right Spot: Picking the perfect location based on ancient architectural guidelines, considering direction, landscape, and energy flow.
2. Setting the Foundation: A solid foundation was laid with precision, symbolizing the temple's strength and longevity, accompanied by rituals and prayers.
3. Designing and Planning: Architects crafted detailed plans incorporating regional styles, religious beliefs, and royal preferences, outlining layouts and decorative elements.
4. Selecting Materials: Durable materials like stone (sandstone, granite), wood, and metal were chosen, impacting the temple's durability.
5. Artistic Carving: Skilled artisans sculpted intricate reliefs and statues depicting deities and myths, infusing spiritual meaning and aesthetic beauty.
6. Constructing the Structure: Stones or bricks were meticulously assembled following the architectural plan, often featuring a central sanctum, hall, and tower.
7. Adding Ornamentation: Elaborate decorations like motifs, friezes, and carvings adorned both interior and exterior surfaces, enhancing visual appeal.
8. Installing Deities: After completing the main structure, a consecration ceremony infused spiritual energy, installing idols of deities.
9. Conducting Rituals: Priests performed rituals to bless and sanctify the temple, marking the beginning of worship and religious activities.

Temple construction wasn't just about building; it was a spiritual and communal effort, blending religious principles, traditional craftsmanship, and cultural symbolism to create enduring architectural marvels. Ancient Indian temple construction followed several simple stages as outlined in ancient Sanskrit texts:

1. Choosing the Right Spot: Examining the land to find fertile soil for the temple and town.
2. Selecting Materials: Picking suitable materials for making the sacred image.
3. Growing Crops and Purifying: Growing specific crops on the land, feeding them to cows to signal readiness for construction.
4. Seeking Divine Favor: Conducting a ritual to seek blessings for construction.
5. Clearing the Area: Removing unwanted items like shrubs, bushes and bones from the construction site.
6. Starting Foundation: Laying the foundation stone to begin building.
7. Ritual and Construction: Sprinkling water mixed with special items, then digging a pit filled with gems and seeds to start construction.

The Technological Advancements in the Construction of Ancient Hindu Temples

According to the references, the temple's construction materials comprised stone slabs, metal plates, palm fronds, and timber parts. Dravidian and Nagara temple construction techniques were substantially similar, culminating in temple construction. Minor variances arose as a result of factors such as the variety of construction materials, climate considerations, and the availability of manual labor during the construction process.

The building of the temples began with the gathering of a knowledgeable group under the direction of the chief architect, whose titles differed according to the location (sompuras in the western region, mahapatras in the eastern region, and Sthpatis in the southern region). The building team was divided into four different classes.

I. Sthapati: The chief architect, well-versed in traditional knowledge, mathematics, and Shilpa shastras.

II. Sutragrahin: Responsible for executing tasks allocated by the “Sthapati”.

III. Taksaka: extensively involved in the precise shaping and engraving of stones.

IV. Vardhakin: The stonemason responsible for assembling all the individual components. The sequence of temple construction is explained below;

Planning the Temple

The construction of a temple, an extensive and lengthy process lasting years, commenced with meticulous planning.

The initial phase involved the selection and inspection of the site, determining the orientation and layout, and choosing materials. This process utilized the Indian Circle Method and an instrument known as "shanku yantra." . The orientation of the temple was significantly influenced by the nature of the main deity. The chosen stone for construction had to exhibit specific qualities, including even color, hardness, and a pleasing tactile feel

Carving the Temple Parts

The subsequent phase focused on the intricate carving of different temple components. The takshaka guided sculptors and shilpis in carving according to specified drawings.

Stone cutting and carving adhered to predetermined shapes, and rough joinery was established during the cutting process. Locally crafted tools such as hammers and chisels were regularly sharpened for use. Sketching was executed using charcoal or sharpened bamboo, and the polishing process involved the use of stone bars.

Assembling the Temple

The final stage encompassed the assembly of temple parts, marking the actual construction phase. Mortise and tenon joints, a key joinery system involving a peg secure between two mortises in diverse stones, were prominently used.

This method prevented movement due to lateral forces and was particularly employed between two courses of masonry. Lap joints were also utilized during assembly.

Stone Wall Thickness: The typical thickness of stones employed for constructing walls ranged between 800 mm to 1200 mm.

Column Structure: The five integral pieces of a column were two segments that made up the base of the column, one segment that made up the shaft of the column, and two portions that made up the capital.

Monolithic Construction: Both columns and beams were constructed as monolithic structures, ensuring a seamless and cohesive architectural integrity. Hindu temples were established across a myriad of locations, each characterized by its distinct geography, topography, and meteorological conditions. As a result of this diversity, several building styles and materials were incorporated. Here are some instances of these many temple locations:

Temples in Varied Locations

- Mountain Temples: Notable examples include Mansa Devi and Vaishno Devi. · Cave Temples: Examples encompass Chandrabhaga and the Chalukya Ellora Caves. · Step Well Temples: Prominent instances are Mata Bhavani stepwell and Khodiyar Mata stepwell, both situated in Ahmedabad, Gujarat.
- Temples inside forests: Locations like “Kasaun” and “Kusama” are representative of temples in forested areas.

- River Bank and Seashore Temples: Iconic temples situated along riverbanks and seashores include Jagannath Puri, Somnath, Kashi, Prayag (Allahabad), Hardwar, and Rameswaram, among others.

Discussion

This paper intricately explores a spectrum of facets including styles, design geometry, philosophical underpinnings, construction technology, and the intriguing concept of self similarity between the human body and temple elements. The geometric intricacies of Indian temples, including the extent of work and the area they encompass, are contingent upon multifarious factors such as location, budget constraints, and the availability of specific building stones for construction.

Across temporal and geographical dimensions, the geometry of temples undergoes dynamic transformations, adapting to the available materials and evolving design paradigms. The prevalent use of fractal architecture transcends various styles and regions of temple construction, persisting as a dominant practice even in contemporary times. The meticulous stone artwork adorning every facet of the temples appears to be meticulously crafted with the purpose of preserving and transmitting information.

The shikhara's fractal geometry imparts an ambient aesthetic, achieving an exquisite equilibrium between mass and symmetry. Vertical offsets, increasing in a zigzag fashion with each side recess, contribute to a discernible vertical rhythm, while horizontal abutments and carvings enhance the structural stability of the temple. The temple's geometric configuration is not merely an architectural feat; rather, it symbolically mirrors the human body, aligning with the sequential awakening of the seven chakras of Kundalini Shakti from feet to head. The thoughtful design, not only aesthetically pleasing but also resilient, was orchestrated to endure moderate seismic activities, reinforcing the temples as not just structures but profound symbolic representations of the human spiritual journey.

Concluding remarks

Temple architecture represents significant advancements in ancient Indian construction technology. The paper researches into the elegance, geometric design, styles, philosophical foundations, construction techniques, and the concept of self-similarity with the human body. Geometric complexities are influenced by factors such as site location, budgetary constraints, and the availability of building materials.

Temple geometry undergoes changes over time and across different locations, adapting to shifts in materials and design preferences. Fractal architecture remains a dominant feature in modern temple construction. The intricate stone artwork is painstakingly crafted to preserve and convey information. The shikhara's fractal geometry achieves a delicate balance between mass and symmetry. Vertical offsets arranged in a zigzag pattern and horizontal abutments enhance structural stability. The geometric layout of the temple symbolically reflects the human body and the awakening of chakras. The thoughtful design combines aesthetic appeal with resilience, crafted to withstand seismic activity, embodying a profound spiritual journey.

Dr. K Dhanasekar
Professor & HOD

AI in Civil Engineering: Shaping the future of construction and design

Civil Engineering has always been at the core of human progress. From ancient monuments to modern skyscrapers, civil engineers have been responsible for shaping the spaces where we live, work, and connect. But today, a new force is revolutionizing the field: Artificial Intelligence (AI). AI is no longer limited to robotics or computer science—it is becoming an essential tool for civil engineers, architects, and planners. By analyzing data, generating designs, and improving efficiency, AI is transforming how construction projects are planned, executed, and maintained.

AI in Planning and Design

One of the most time-consuming aspects of civil engineering is the planning stage. Traditionally, engineers and architects spend weeks creating floor plans, testing different layouts, and adjusting designs based on client needs.

AI can now automate much of this process:
Plot Measurement: AI systems can analyze site dimensions and create accurate models.
Vastu-Based Planning: In regions where Vastu is culturally important, AI tools can design layouts that align with traditional principles, ensuring harmony and energy balance.
Floor Plan Generation: By processing customer requirements (such as number of rooms, garden space, or open area), AI can quickly produce multiple floor plan options.

AI in Construction

Predictive Analytics: AI can analyze soil conditions, weather data, and material performance to predict possible risks.

Resource Management: By forecasting material usage and labor needs, AI helps reduce waste and cut costs.

Automation & Robotics: Robots powered by AI are now being used for bricklaying, concrete pouring, and road construction.

Safety Monitoring: AI-driven cameras and sensors can monitor construction sites, ensuring workers' safety and detecting hazards early.

AI in Smart Infrastructure

Modern civil engineering is moving toward smart cities and sustainable infrastructure. AI plays a crucial role here:

Traffic Management: AI systems analyze traffic flow to design better roads and reduce congestion.

Structural Health Monitoring: Sensors in bridges, dams, and buildings provide real-time data that AI uses to predict maintenance needs.

Energy Efficiency: AI can optimize building designs for natural lighting, ventilation, and energy savings.

Muhammed Fazil P B
S7 CE

CHIEF EDITOR

Dr. K DHANASEKAR

STAFF EDITORS

Ms. REEMA PIUS

STUDENT EDITORS

Abhishek Anilkumar
S7 CE

Gopika Shanavas
S7 CE

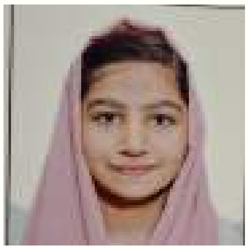
Midhuna Mani
S7 CE

Merinda Rose Shijan
S5 CE

Lakshmi Mani
S5 CE

Afsa Usman
S3 CE

Anaina Parvin T K
S3 CE



Thamanna P S
S3 CE

HOD'S MESSAGE

AS THE DEPARTMENT HEAD, I ENVISION OUR COLLEAGUES AND STUDENTSWALKING HAND IN HAND, COLLECTIVELY CONSTRUCTING INNOVATIVE IDEASFOR A MORE DEVELOPED NATION.
LET'S CONTINUE THIS MOMENTUM AND STRIVE FOR EXCELLENCE IN ALL OURENDEAVOURS.