

CIVIL CHRONICLE



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



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.

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FOOD FOR THOUGHT



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**

D-ZONE WOMEN'S VOLLEYBALL CHAMPIONS



Women's volleyball team of the institute has brought pride and glory to our institution by clinching the APJ Abdul Kalam Technological University (KTU) D-Zone Women's Volleyball Championship title. Demonstrating remarkable consistency, teamwork, and determination, the team delivered an outstanding performance throughout the tournament, showcasing their skills and sportsmanship on every occasion.

INSTITUTE EVENTS

SECOND RUNNER-UP POSITION IN D-ZONE CHAMPIONSHIP



Men's volleyball team of the institute delivered an inspiring performance in the APJ Abdul Kalam Technological University (KTU) D-Zone Men's Volleyball Championship, earning the well-deserved title of Second Runner-Up.

INSTITUTE EVENTS

EXPERT TALK: JOB OPPORTUNITIES IN GEOTECHNICAL ENGINEERING

The Department of Civil Engineering organized an Expert Talk on “Job Opportunities in Geotechnical Engineering” on Monday, 27 October 2025, at 3:00 PM. The session aimed to enlighten students about the diverse career avenues, industry requirements, and emerging trends in the field of geotechnical engineering. The distinguished speaker for the event was Dr. C. R. Parthasarathy, Founder, Chairman, and Managing Director of Sarathy Geotech and Engineering Services. Dr. Parthasarathy is an internationally recognized leader in geotechnical engineering, known for his decades of experience in leading industry-defining projects, pioneering technical innovations, and providing strategic direction to a multinational geotechnical consultancy.

During his insightful session, Dr. C. R. Parthasarathy shared his extensive professional journey and discussed the vast scope and growing demand for geotechnical engineers in both national and international markets. He highlighted the importance of foundational knowledge, continuous learning, and hands-on exposure to modern testing and analysis techniques. The talk also covered various roles in consulting, infrastructure development, research, and offshore geotechnics. The event was well received by both students and faculty members, who appreciated the opportunity to interact with such an eminent expert in the field. The session was coordinated by Dr. Parameswaran T G, Associate Professor and Ms. Veena S Kumar, Assistant Professor of the Department.

EXPERT TALK: JOB OPPORTUNITIES IN GEOTECHNICAL ENGINEERING



Adi Shankara							
Sl No	Depth Below Sea Floor, m		Description	TCR (%)	RQD (%)	Point Load Index, MPa	UCS, MPa
	From	To					
1	0.00	0.60	CALCARENITE	20-70	NIL	1.30-4.24	-
2	1.60	4.70	CALCARENITE	40-90	NIL-55	0.99-2.10	-
3	4.70	15.00	CALCISILTITE	NIL-100	20-50	0.50-2.01	7.00
4	15.00	17.50	CALCILTUTITE	60-80	25-35	0.30-2.16	7.96
5	17.50	26.10	CALCISILTITE	20-85	NIL-63	0.26-2.21	3.36-6.88
6	26.10	31.30	CALCARENITE	50-70	20-60	0.16-0.87	4.65-10.46
7	31.30	35.00	CALCISILTITE	100	45	0.10-0.34	2.02
8	35.00	41.20	CALCILTUTITE	65-90	50-80	0.15-0.56	2.41-7.88
9	41.20	42.80	CALCARENITE	60-100	80	0.59-4.77	-
10	42.80	48.40	CALCISILTITE	33-100	8-90	0.28-1.78	3.16-4.25
11	48.40	50.00	CALCARENITE	90	40	0.17-0.49	4.11

OFFSHORE MIDDLE EAST
(Abu Dhabi)

DEPARTMENT EVENTS

WORKSHOP ON TOTAL STATION



The Department of Civil Engineering organized a Workshop on Total Station on 17th October 2025 in collaboration with Survey Zone, a reputed organization specializing in advanced surveying instruments and training. The workshop was conducted to provide faculty and lab instructors with practical exposure to modern surveying techniques and enhance their understanding of total station operation and applications in civil engineering projects.

The session covered hands-on training, focusing on the fundamentals of total station, data collection, setting out, coordinate measurement, and topographical mapping. Experts from Survey Zone guided faculty through real-time demonstrations, enabling them to gain confidence in handling the instrument and understanding its relevance in field surveying, construction layout, and infrastructure development.

DEPARTMENT EVENTS

PAPER PUBLICATIONS



Dr. K DHANASEKAR
PROFESSOR & HOD



Dr. P K SURESH
SENIOR PROFESSOR



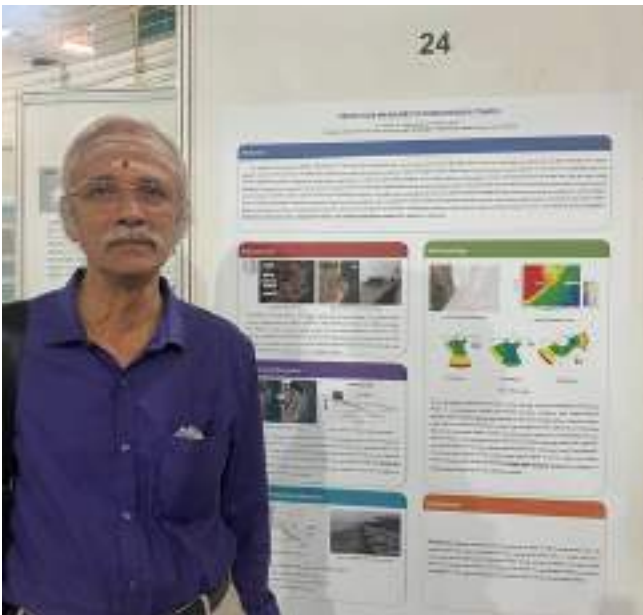
Dr. PARAMESWARAN T G
ASSOCIATE PROFESSOR

Dr. K Dhanasekar, Professor and HOD, Dr. P K Suresh, Senior Professor and Dr. Parameswaran T G, Associate Professor of the department presented a paper titled “Studies for Design of Spur in Meandering River - Tamilnadu” in the International Conference on Civil Engineering and Architecture for Sustainable Infrastructure Development and Environment (CEASIDE 2025) organised by Government Engineering College Thrissur during 9th to 11th October 2025.

STAFF OUTREACH

GUEST LECTURE AND PAPER PUBLICATIONS

- Dr. P K Suresh, Senior Professor of the Department presented a research paper entitled, “PROTECTION MEASURES TO THIRUCHENDUR TEMPLE” in the Tamil Nadu Land Use 2025 – International Conference on Research & Innovation for a Sustainable Future held on 6th & 7th October 2025 at IIT Madras Research Park, Chennai.
- The School of Civil Engineering, Department of Environmental and Water Resources Engineering, Vellore Institute of Technology (VIT), organized a guest lecture (hybrid mode) on “Water Resources – Technical & Management Aspects” on 15th October 2025. The session was delivered by Dr. P. K. Suresh, Senior Professor of the department.



- An abstract titled “Estimation of Flood Peak discharge and Flood plain, in Wetlands Tank Cascade system - A Study on Kaluvelli watershed, Tamil Nadu, India” by Dr. P K Suresh has been accepted for oral presentation at the First International conference on Sustainability, Circularity, Outreach and Policy for Environment (SCOPE 2025), organised by the Centre for Environmental Science and Engineering, Indian Institute of Technology, Kanpur.

ADJUNCT FACULTY AT IIT ROORKEE



Dr. P K SURESH
SENIOR PROFESSOR

The Department is delighted to announce that Dr. P. K. Suresh, Senior Professor, has joined the Department of Water Resources at the Indian Institute of Technology (IIT) Roorkee as an Adjunct Faculty Member.

Dr. P K Suresh brings with him extensive academic and research experience in the field of water resources engineering, with particular expertise in hydrology, water management, and environmental systems analysis. Over his distinguished career, he has contributed significantly to teaching, research, and professional consultancy in various aspects of sustainable water resource development. The Department congratulates Dr. P K Suresh on this prestigious appointment and extends best wishes for a productive and enriching engagement with IIT Roorkee.

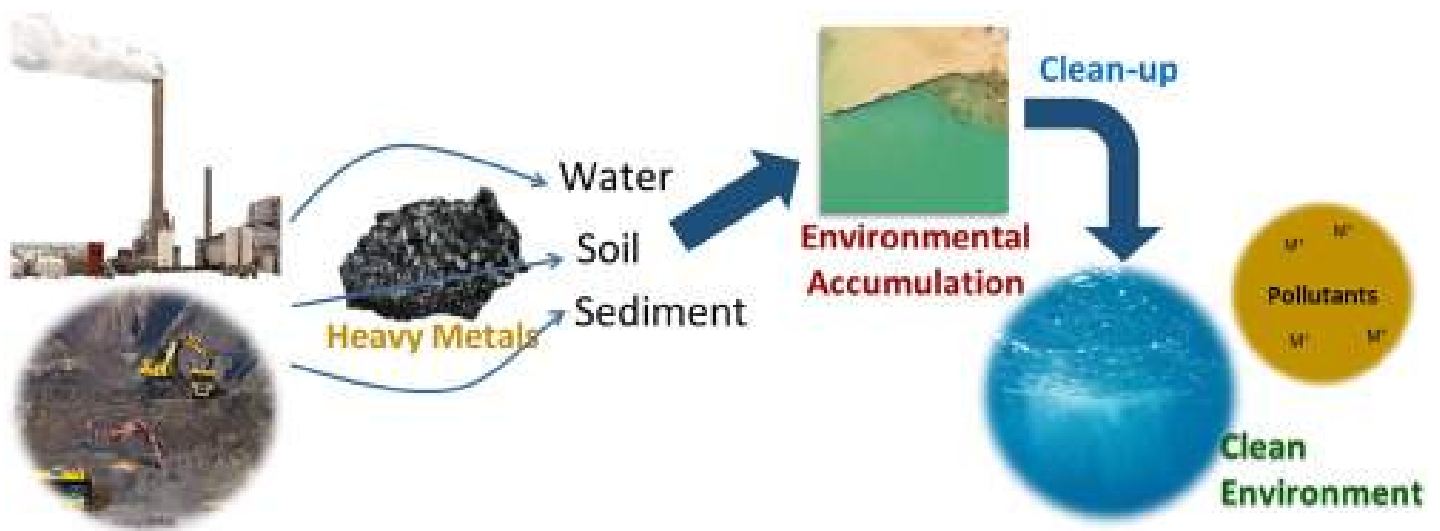
HEAVY METAL CONTAMINATION: MONITORING AND REMEDIATION MEASURES

Heavy metal contamination has emerged as a critical environmental issue worldwide. Metals such as lead (Pb), cadmium (Cd), chromium (Cr), mercury (Hg), arsenic (As), and nickel (Ni) are of particular concern due to their toxicity, persistence, and tendency to bioaccumulate in living organisms. Unlike organic pollutants, heavy metals do not degrade and can persist in soils, sediments, and water for decades, posing long-term risks to ecosystems and human health.

Rapid industrialization, urbanization, and intensive agricultural practices have accelerated the release of heavy metals into the environment. Major sources include mining and smelting operations, electroplating industries, tanneries, fertilizers, pesticides, and improper waste disposal.

In many developing countries, including India, heavy metal levels in industrial effluents and urban soils often exceed permissible limits set by regulatory agencies such as the World Health Organization (WHO) and the Central Pollution Control Board (CPCB). For instance, chromium contamination near tannery clusters and lead levels in urban roadside soils remain persistent challenges. Elevated metal concentrations in food crops and groundwater have also been reported, highlighting the potential for bioaccumulation and food-chain transfer.

Exposure to heavy metals can cause severe health issues. Lead and mercury affect the nervous system, cadmium damages kidneys and bones, and arsenic exposure is linked to skin and lung cancers. In aquatic systems, heavy metals disrupt biological processes, reduce biodiversity, and impair fish reproduction and growth.



Addressing heavy metal contamination requires a combination of preventive and corrective strategies:

1. Source Control:

- Implementation of cleaner production technologies.
- Strict enforcement of effluent discharge standards.
- Proper management and recycling of industrial wastes.

2. Physicochemical Methods:

- Adsorption (using activated carbon, zeolites, biochar).
- Ion exchange, chemical precipitation, and membrane filtration for water treatment.
- Soil washing and solidification/stabilization for contaminated land.

3. Biological Approaches:

- Phytoremediation: Use of metal-tolerant plants such as *Brassica juncea* and *Pteris vittata* to extract or stabilize metals.
- Microbial remediation: Utilization of metal-resistant bacteria and fungi to immobilize or transform toxic metals.
- Biochar amendment: Improves soil health and immobilizes heavy metals through adsorption.

4. Monitoring and Policy Measures:

- Continuous environmental monitoring programs.
- Public awareness and community participation.
- Adoption of circular economy principles to minimize metal waste.

Heavy metal contamination remains a global environmental concern with far-reaching ecological and health consequences. While technological and biological remediation methods show promise, the most sustainable solution lies in prevention—reducing emissions at the source and promoting responsible industrial and agricultural practices. A coordinated approach involving science, policy, and community action is essential to restore and protect the environment from heavy metal pollution.

Monitoring mechanism

1. Electrochemical & nano-material-based sensors

- Advances in portable electrochemical sensors (e.g., voltammetry, anodic stripping) allow on-site and real-time detection of metal ions like Pb, Cd, Hg and As.

- The sensitivity, selectivity and speed are being boosted via new electrode materials: metal oxides, metal-organic frameworks (MOFs), MXenes, carbon nanotubes, nanocomposites.
- These sensors are moving toward field-deployable, real-time, lower-cost systems rather than just lab analysis.

2. Remote sensing & hyperspectral monitoring

- Instead of only spot-sampling water, techniques using remote sensing (hyperspectral satellites/airborne sensors) are being explored for detecting heavy metal contamination in larger water bodies.
- These methods exploit correlations between heavy metal presence and optical signatures such as total suspended matter (TSM), near-infrared (NIR) reflectance, etc.

3. Integration of IoT, AI and smart monitoring platforms

- Sensor networks, Internet-of-Things (IoT) devices, combined with intelligent algorithms are starting to enable continuous, remote, and automated monitoring of heavy-metals — not just periodic sampling.
- AI/ML techniques are being used to process large datasets from sensors/remote sensing to detect patterns, correct interference, improve prediction of contamination events.

Although sensors are advancing, achieving ultra-trace detection, selectivity (avoiding interference from other ions/substances) and robustness in real environmental conditions (rather than controlled lab) is still difficult. For AI/ML approaches, large datasets (sensor + field + remote) are required; environmental variability complicates model building.



Ms. HARSHANANDA T N
ASSISTANT PROFESSOR

THE FUTURE OF TRANSPORTATION: HOW SMART SYSTEMS ARE CHANGING THE GAME

In today's world, how we move around shapes both economic progress and everyday routines. With towns growing bigger and more cars hitting the streets, jams, crashes, or dirty air are now serious headaches. Old-style traffic control just can't keep up anymore - so smarter ways of handling transport had to come along, like ITS, which uses tech-savvy tools to manage travel better.

A smart transport setup combines high-tech tools - like data handling, signals, and automation - to make travel quicker, safer, or greener across roads and routes. It pulls live updates from gadgets such as detectors, video feeds, or location trackers so it can study how vehicles move and share useful alerts with travelers, riders, or road managers. This tech helps keep traffic flowing freely, cuts jams, yet also lowers emissions at the same time.

The core aim of ITS is building transport networks that are secure, steady, plus work well. It keeps an eye on how traffic moves, handles light patterns on roads, while delivering quick alerts about current travel conditions. Take automated toll setups - cars can pay fees without halting, cutting down both delay and gas use. In much the same way, intelligent signal controls apply detectors along with flexible timing to change lights depending on live vehicle movement, lessening idle moments where streets cross.

Transit services gain a lot too, thanks to location tech and digital boards showing arrival details, boosting timeliness together with consistent performance. One big plus of smart transport setups? They cut down heavy traffic along with long drive times. Since these systems gather info nonstop, they spot trends on the road while offering detours before jams happen.

Drivers get alerts fast - thanks to instant notifications about crashes, bad weather, or unexpected holdups - which keeps things safer out there. When cars move more steadily, engines burn less gas; that means fewer fumes in the air and a healthier planet overall.

In India, ITS is rolling out across key cities and road networks. With FASTag now live, toll payments happen fast using RFID - no more long waits at booths. Places such as Delhi and Bengaluru run traffic hubs powered by cameras plus intelligent software that keeps flow under check.

NHAI's pushing ahead too, linking major routes with smart tools to follow vehicles and act on accidents without delay. As part of the Smart City push, towns nationwide are bringing in these systems to get transport moving better, cut crashes, and clean up the air.

Still, using ITS isn't always easy. Costly setup and upkeep scare many places, particularly poorer nations. Not enough experts exist to build or run these smart setups. Keeping info safe matters too - these networks gather live traffic details nonstop.

On top of that, linking fresh tech with old transit frameworks often gets messy. As things move ahead, transport tech's going to keep changing thanks to new tools popping up.

Thanks to AI mixed with IoT and super-fast 5G links, how we get around might turn into a web where cars, streets, and signals all talk back and forth. Self-driving rides, adaptive lights, along with upkeep that guesses problems early could make trips safer, cleaner on the air, while also saving time. In short, smart transport setups are pushing road systems into a new era.

Instead of just relying on old methods, blending tech with basic engineering tackles city travel issues in ways that last. With urban areas expanding fast, using these systems more often leads to fewer accidents, less pollution, and sharper city planning - changing how people move around towns for good.



ATHULYA KARUNAKARAN
S5 CE

CHIEF EDITOR



Dr. K DHANASEKAR

STAFF EDITORS



Ms. REEMA PIUS

STUDENT EDITORS



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S3 CE**

HOD'S MESSAGE



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