05/08/2025

ASCE INSIGHTS

"Without Sight there is no Insight"

ASCE CET STUDENT CHAPTER

Monthly Newsletter

August Edition

Vice President's Message

Being part of the ASCE society with this amazing team fills me with pride and gratitude. The launch of the newsletter has been a great initiative to showcase the club's events, achievements, thoughts and more. The exposure's been incredible, and I'm looking forward to bigger accomplishments. I'd like to thank Anusha Mam for the constant efforts she has took for the growth of the club and extend my heartfelt thanks to each member of the team for their support, collaboration, and dedication – anticipating the best for the club.

-Devanarayanan Vinoj

Andhra Pradesh's steel-slag-based road repair pilot project

The Andhra Pradesh government has recently launched a unique pilot project in Mandadam village that focuses on eco-friendly road repair technology.This project utilizes a material known as Ecofix, a cold bituminous mix that incorporates steel slag, an industrial byproduct from steel manufacturing.

Ecofix is designed for instant road repairs, even under wet and damp conditions, making it highly suitable for India's monsoon-prone regions.Unlike traditional hot mix asphalt, this material does not require heating, which reduces both energy consumption and carbon emissions.The project is part of Andhra Pradesh's broader "Wealth from Waste" initiative aimed at promoting sustainable infrastructure. Steel slag is often seen as a waste material, but here it is being repurposed for civil engineering applications, giving it economic and environmental value. The road in Mandadam was chosen due to its poor condition and frequent pothole formation, making it a suitable test site.The cold mix was applied directly onto the damaged surface, and workers reported that it set quickly and bonded well with the existing pavement.Officials from the Central Road Research Institute (CRRI) were involved in validating the performance and safety standards of the mix.CRRI studies indicated that Ecofix showed good cohesion, stability, and resistance to water-induced damage.These properties are crucial in India, where roads often deteriorate quickly due to heavy traffic and seasonal rains.The pilot project is also being monitored for long-term performance, including crack resistance and durability over time.Preliminary results from the Mandadam test have been encouraging, with no significant failures observed in the first few weeks.

Book "Highway Engineering" by L. R. Kadiyali,

Published in 2017, is a comprehensive textbook widely used by civil engineering students and professionals across India. With a total of 604 pages, it covers both theoretical foundations and practical applications in the field of highway engineering. The book delves into topics such as highway planning and design, pavement materials, construction techniques, traffic engineering, geometric design, and road maintenance. It also touches upon modern developments like mechanistic pavement design and Intelligent Transportation Systems (ITS). Known for its structured explanations, illustrative diagrams, and solved examples, the book is particularly student-friendly and useful for competitive exams like GATE and IES. While it offers in-depth coverage of the subject, some readers find the presentation slightly traditional and feel it could benefit from updated visuals and formatting. Nonetheless, it remains a valuable resource for both academic learning and professional reference in the field of highway engineering.

EVENT HIGHLIGHTS

1. The Art of Engineering Design: Photoshop Workshop

On July 10, 2025, the ASCE CET Student Chapter organized a free **Adobe Photoshop workshop**, offering an exciting introduction to the world of digital design. This engaging session was not just a tutorial also a creative journey, designed to help participants unlock the artistic side of engineering communication.

What made this event particularly special was that the session was led by a fellow student from ASCE CET itself, showcasing the talent and initiative within our own community. Focusing on poster designing and essential design principles, the workshop highlighted how visual tools like Photoshop can be instrumental in effectively presenting technical ideas.

Through hands-on guidance, real-time demonstrations, and interactive activities, attendees learned how to transform concepts into compelling visuals. The workshop served as a powerful reminder that in engineering, it's not just about building structures, it's also about designing ideas that speak for themselves.

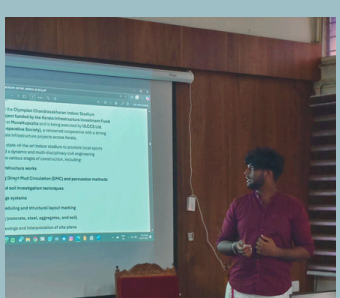
2. Internship Report Presentation

ASCE CET Student Chapter, organized an **Internship Report Presentation Competition** on the **14th and 16th of July, 2025**. Over two days of engaging sessions, seven enthusiastic teams presented their hands-on experiences from reputed organizations like PWD, KMRL, ULCCS, Artech, Indian Railways, HITES, and Cherian Varkey Construction and so on, offering peers and faculty a glimpse into life beyond textbooks.

The event, judged by Dr. Mitra and Mr. Renjith, witnessed fierce yet friendly competition. Sachu T Cherian (S7) secured first place with a compelling presentation, followed by Anagha Pavithran and Krishna (S7) who earned second prize. The third prize was bagged by the dynamic duo Devika and Pooja, applauded for their clarity and teamwork.

A big round of applause to all participating teams for their effort, enthusiasm, and for inspiring others to explore opportunities beyond the classroom.

Each team detailed the practical challenges, technical insights, and field knowledge they gained, offering fellow students and faculty members a valuable glimpse into professional civil engineering environments.



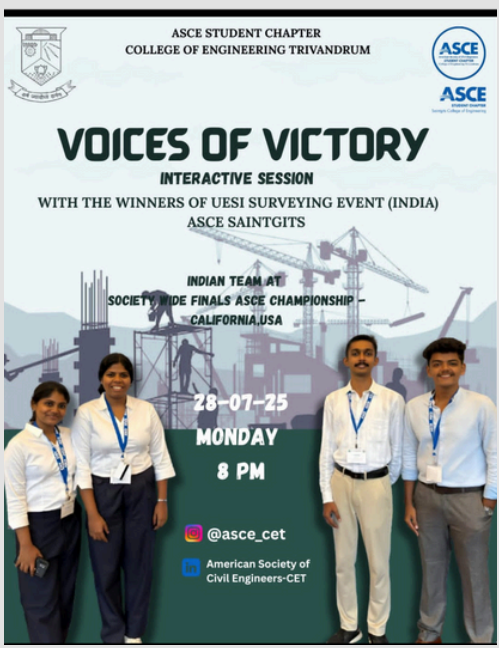
3. Group Discussion - Competition

ASCE CET Student Chapter successfully conducted an **Online Group Discussion Competition** on **20th July 2025**, open to civil engineering students across Kerala. With active participation from various colleges the event created a vibrant platform for young minds to express opinions, challenge perspectives, and sharpen their communication skills in a competitive yet collaborative environment.

Aswin (S7, CET Trivandrum) emerged as the winner, followed by Anikhitha and Vyshnav, both from GEC Thrissur, securing the second and third places respectively. The event not only highlighted articulate voices but also provided exposure to critical thinking, public speaking, and professional dialogue—skills vital for every aspiring civil engineer in today's dynamic world.

4.Interactive Session with ASCE Saintgits Student Chapter

On 28th July 2025, Monday evening, the ASCE CET Student Chapter hosted an inspiring **virtual interactive session** with the **ASCE Saintgits Student Chapter**, fostering inter-chapter bonding and knowledge exchange. The session, conducted online at 8:00 PM, was a remarkable celebration of engineering excellence and student achievements.



The highlight of the event was the commendable journey of Team ASCE Saintgits, who secured victory at the UESI Surveying Event at the national level, earning the exceptional honour of representing India at the prestigious ASCE Student Championship 2025 held in California, USA. Their dedication, discipline, and determination served as a true source of inspiration for all attendees.

Throughout the session, the Saintgits team shared their experiences from rigorous preparations to international exposure offering invaluable insights into the world of student competitions and global representation. The event stood as a testament to what passion and perseverance can achieve when combined with the right platform and purpose. The program witnessed the enthusiasm of young civil engineers with a large number of paricipation.

The evening concluded with enthusiastic interaction, thought-provoking questions, and a shared sense of motivation among participants. This collaboration not only celebrated success but also paved the way for stronger bonds and future joint initiatives between student chapters.

Building Foundations Beyond Concrete.

ALUMNI UPDATES

As I sit down to write this note, memories from my time at CET's Civil Engineering block come flooding back—dust-covered shoes from site visits, sleepless nights bent over design sheets, chai breaks that turned into deep conversations, and the unspoken bond we all shared as we tackled challenges together. I'm Sajeev S., a proud alumnus of the Civil Engineering Department, and it's a true joy to reconnect with you through this newsletter.

Since graduating, my journey has taken me across many terrains—from quiet rural roads where we laid the foundations of connectivity, to buzzing cities where I was part of large-scale structural projects. But through every blueprint and every site inspection, one thing has remained constant—the values CET instilled in me. Civil engineering, I've come to realize, is not just about steel, cement, and calculations. It's about patience in process, precision in practice, and perseverance through uncertainty. One of the biggest shifts I experienced after college was the sheer pace of real-world learning. The moment you step outside the classroom, the ground beneath your feet changes—literally and figuratively. On-site, there's no time to flip through notes. You learn fast, often under pressure, making decisions that carry weight. Mistakes teach you more than manuals ever could. It's overwhelming at first, yes—but also transformative.

That intensity, that exposure, is what shapes you into an engineer in the truest sense. If there's one lesson that's stayed with me, it's this: every structure we build has a soul. Be it a humble culvert or a towering flyover, it will touch people's lives in ways you may never witness. That knowledge keeps me grounded—it reminds me that engineering is not just a profession, but a responsibility. To the students reading this—make the most of your time here. Learn your subjects well, but also explore beyond the blackboard. Ask questions. Take the tough electives. Go on that survey camp, no matter how hot the sun. Sign up for that internship, even if it's unpaid. The real world doesn't wait for you to be perfect—it rewards those who are curious and willing to try.

As for the future, it's knocking loudly—sustainable materials, climate-resilient infrastructure, smart cities—civil engineering is no longer just about building, it's about innovating. The foundation you're building at CET is strong. Use it boldly.

As alumni, we're always here—cheering you on, sharing our experiences, and learning alongside you. Let's continue building—not just roads and buildings—but a more inclusive, resilient, and thoughtful world.

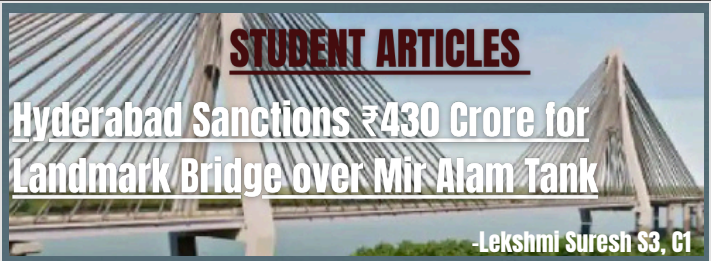
By Er Sajeev S.
CET1993

IS CODE OF THE MONTH: IS 800:2007

IS 800:2007 is the Indian Standard code of practice for general construction in steel. It provides guidelines for design, fabrication, and erection of steel structures using Limit State Method, ensuring both strength and serviceability requirements. The updated version replaced the older working stress approach and includes provisions for various load combinations like dead, live, wind, and seismic loads. It covers key aspects like material properties, design of structural elements (beams, columns, trusses), connection detailing (welded and bolted). Widely adopted in structural engineering practice across India, essential for designing safe, efficient, and code-compliant steel buildings, bridges, and industrial structures.

Software Spotlight:

STAAD.Pro, one of the most trusted structural analysis and design software used by civil and structural engineers worldwide. Developed by Bentley Systems, it offers a robust platform for modeling, analyzing, and designing wide range of structures like buildings, bridges, towers, and industrial facilities. Supporting multiple materials like concrete, steel, and timber, it enables simulation of real-world load conditions such as wind, seismic, and live loads. With powerful features like 3D modeling, dynamic analysis, and integration with BIM tools, it continues to be an industry-standard tool for safe and efficient designs.



STUDENT ARTICLES

Hyderabad Sanctions ₹430 Crore for Landmark Bridge over Mir Alam Tank

-Lekshmi Suresh S3, C1

The Telangana government has sanctioned ₹430 crore for the construction of a new 2.8 km, four-lane cable-stayed bridge across the historic Mir Alam Tank in Hyderabad. This project, aimed at easing traffic congestion in Bahadurpura, Shastripuram, and Rajendranagar, will connect the Bengaluru National Highway at Shastripuram to Chintalmet Road. Replacing an earlier ₹363 crore proposal, the bridge will be executed under the Engineering, Procurement, and Construction (EPC) model, with tenders set to be issued shortly. The Musi Riverfront Development Corporation Limited (MRDCL) will oversee the project, and a Project Management Consultancy (PMC) will ensure quality control and audit the construction process. Renowned institutions like IIT Hyderabad, NIT Warangal, or JNTU Hyderabad will vet the design submissions. Construction is expected to begin within a month and be completed in 24 months. The bridge is part of a larger vision to revitalize the Mir Alam Tank area into a tourism hub inspired by Singapore's Gardens by the Bay, including island zones, resorts, and improved zoo connectivity. Chief Minister A. Revanth Reddy has directed officials to complete the Detailed Project Report (DPR) within 90 days, targeting full project completion within 30 months. As Hyderabad's second cable-stayed bridge—after the Durgam Cheruvu bridge—the project is expected to become a new urban landmark, enhancing both mobility and aesthetics in the city.

How BIM is Reshaping Civil Engineering ?

Green cities like The Xiong'an New Area (China) and Masdar City (United Arab Emirates) share a strong commitment to sustainability, technological innovation, and urban quality of life. They use BIM modeling, urban twins, and IoT sensors to manage resources, along with smart energy systems and low-consumption buildings. Building Information Modeling (BIM) is revolutionizing civil engineering by turning traditional 2D plans into intelligent 3D models that integrate design, scheduling, cost, and maintenance in one platform. It improves collaboration, reduces errors, enables real-time updates, and supports sustainable design. From roads and bridges to water systems and urban planning, BIM makes construction faster, smarter, and more efficient. with AI and IoT merging with BIM, It provides accuracy, predictability,

Smarter Concrete for a Greener Future

-Sruthy Jayaraj

Researchers at USC Viterbi have developed Allegro-FM, a powerful AI model that simulates billions of atoms at once—unlocking the potential for carbon-neutral concrete that can also last for centuries. Concrete is a major source of global CO_2 emissions, but Allegro-FM has discovered a way to recapture CO_2 released during production and store it back in the concrete—making it stronger and more sustainable. This breakthrough could help cut the 8% of global emissions linked to concrete and create more resilient buildings, especially in wildfire-prone areas. By replacing slow quantum calculations with AI, the model can simulate complex materials faster and at larger scales than ever before—paving the way for the next generation of eco-friendly infrastructure.

Bamboo: The Green Steel of 21st Century Construction

Bamboo combines rapid renewability, impressive strength-to-weight ratio, flexibility, and low-carbon impact, earning its name as the "green steel" of sustainable construction. It is renewable compared to decades for traditional hardwoods and it regenerates without replanting, making it one of the most sustainable structural materials available. It delivers an impressive tensile strength between 115–309 MPa.

Structural Neglect Leads to Gujarat Bridge Collapse

On **July 9, 2025**, the tragic collapse of the **Gambhira bridge in Vadodara Gujarat** once again highlighted the silent dangers of neglected infrastructure. As a civil engineer,what's striking isn't just the loss of 20 lives, but the systemic failure in proper monitoring and maintenance. Preliminary findings by the Gujarat Roads and Buildings Department suggest that the failure occurred due to the crushing of pedestal and articulation joints the key components responsible for distributing loads and accommodating thermal movements in the structure. The compromised joints likely led to uneven stress distribution and eventual collapse. Following the collapse, four engineers were suspended, and inspections of over 130 similar bridges across the state have been ordered. The government also announced plans to establish a asset safety authority to oversee regular structural health. An internal assessment conducted in 2021 had flagged the bridge as unsafe. Despite this, no major repairs or restrictions were implemented prior to the incident, such the preliminary reports suggest. The incident has raised urgent concerns aboutmaintanence practices and audits, and the need for timely rehabilitation of aging civil structures.

-Devadath J N

IIT Indore Unveils Cement-Free,Eco-Friendly Concrete:Major Leap Toward Green Infrastructure

The Indian Institute of Technology Indore (IIT Indore) has unveiled a groundbreaking cement-free, eco-friendly concrete made from industrial waste materials like fly ash and ground granulated blast furnace slag (GGBS), marking a major advance in sustainable infrastructure development. This innovative geopolymer high-strength concrete (G-HSC) eliminates the need for traditional Ordinary Portland Cement (PCC) and water curing, significantly reducing carbon emissions by up to 80% and slashing construction costs by as much as 20%. Achieving compressive strength of over 80 MPa within just three days—much faster than conventional concrete —the new material is ideal for time-sensitive projects such as military bunkers, bridges, disaster shelters, and repair works, especially in water-scarce regions. Led by Dr. Abhishek Rajput and supported by IIT Indore's leadership, this eco-conscious technology not only repurposes industrial by-products that would otherwise become waste but also addresses critical environmental challenges like high CO_2 emissions from cement production and water scarcity. This aligns with India's sustainability goals and global climate commitments.

-Lekshmi Suresh

The Iron Pillar of Delhi: An Ancient Metallurgical Wonder

Historical Background

Believed to have been erected during the Gupta Empire, around the 4th century CE, the Iron Pillar was originally located in Udayagiri (Madhya Pradesh) and later moved to Delhi. An inscription in Sanskrit written in the Brahmi script attributes it to King Chandragupta II Vikramaditya.

Engineering Marvel !

At over 7.2 meters tall and weighing more than 6 tons, the Iron Pillar is made of 99.72% pure wrought iron. What's truly fascinating is that even after 16 centuries of exposure to Delhi's harsh monsoon climate, the pillar shows no significant corrosion.

This serves as a remarkable example of ancient Indian metallurgy.

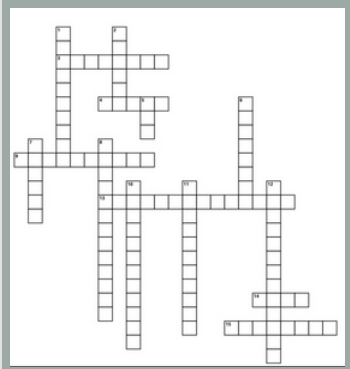
Why Doesn't It Rust?

Studies have revealed a combination of material composition and environmental factors are reason to corrosion resistance:

High Phosphorus Content: Ancient Indian iron was smelted with charcoal, giving it a high phosphorus and low sulphur content. This allows formation of a protective passivation layer (iron hydrogen phosphate hydrate) on the surface.

Formation of a Protective Film: Over time, a thin layer called misawite formed on the surface, shielding the core metal from moisture and oxygen.

"Engineer your Brain"



Across

[3] A system that is used to collect and remove wastewater from buildings.

[4] A type of construction material that is made from heated clay.

[9] The base upon which a structure is built; it distributes the load of the structure to the soil below.

[13] A device used to measure the distance between two points.

[14] A structural member that is used to support weight, typically in a building or bridge.

[15] A structure that is built to carry water over an obstacle

Down

[1] A type of bridge that is supported by cables anchored at both ends.

[2] A type of material used in construction that is made by mixing cement, sand, and water.

[5] The software used in creating a computer generated model.

[6] Road construction material that is made from a mixture of gravel, sand, and cement.

[7] This structural element is used to support vertical loads in buildings.

[8] The measurement of the strength of a material.

[10] The science of designing and constructing buildings and other structures.

[11] The force that squeezes a material together.

[12] Steel bars or mesh added to concrete to increase its strength.

1. **Orifice metre is used to measure?**
2. **Eutrophication of water bodies is caused by?**
3. **The cleaning of slow sand filter is done by?**
4. **The ratio between run off to rainfall is known as?**
5. **As per elastic theory of design the factor of safety is the ratio of ?**

Upcoming events

The ASCE CET Student Chapter is organizing a three-day workshop on SketchUp and V-Ray this week, tailored for students at the beginner to intermediate level. The session will cover 3D modelling fundamentals and realistic rendering techniques, helping participants enhance their design and visualization skills in civil engineering

Ancient Civil Engineering Wonder

1.The Pyramids of Giza Used Precision

Built around 2630–2611 BC, the Great Pyramid is aligned almost perfectly to the cardinal points — with an error of less than 0.05 degrees. No lasers, just genius engineering!

2. Ancient Dams in India

The Kallanai Dam, built across the Kaveri River in Tamil Nadu around 100 AD, is still in use today. Built by the Chola dynasty, it's one of the oldest water-regulation structures in the world.

3. Machu Picchu's Drainage System

The Inca engineers built Machu Picchu with an advanced subsurface drainage system to handle the region's heavy rains — a system that still works centuries later!

4.Aqueducts Carried Water Miles Away

The Romans built aqueducts to carry water over long distances. The Aqua Marcia, built in 144 BC, stretched over 91 km and supplied water to the city of Rome for over 1,800 years.

Contact Us:

: asce_cet

: American Society of Civil Engineers CET

Articles are invited.
Please do scan the below attached QR Code and sent your articles.