

AMBALIKA INSTITUTE OF MANAGEMENT & TECHNOLOGY



PRAYOG

— Theory into Practice —



TECHNICAL MAGAZINE -2026

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DEPARTMENT OF CIVIL ENGINEERING

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WHY “PRAYOG” WORKS PERFECTLY



Academic + Practical Meaning

The word PRAYOG literally means *experiment, application, or practice*. In engineering education—especially in Civil Engineering—learning is incomplete without applying theoretical concepts to real-world problems.

PRAYOG symbolizes the transition from classroom knowledge to laboratory work, site execution, design implementation, and problem-solving, which is the core objective of engineering education.

Strong Indian Identity

PRAYOG is deeply rooted in the Indian academic and scientific tradition, where experimentation, observation, and practical validation have always been central to the learning process. The use of an Indian-origin name gives the magazine a distinct cultural identity and aligns it closely with Indian educational values that emphasize learning by doing. It also creates a strong sense of ownership and originality, making the publication uniquely representative of indigenous academic thought. Moreover, the name reflects the spirit of **Atmanirbhar Bharat** by promoting self-reliance, innovation, and indigenous knowledge systems in technical and engineering education.

Reflects Application of Theory

Civil Engineering is not limited to formulas and drawings—it involves design execution, material behavior, site management, safety practices, and sustainability.

The title PRAYOG clearly communicates that the magazine focuses on:

- Case studies
- Practical challenges
- Site experiences
- Innovative solutions
- Industry-based learning

The tagline “*Theory into Practice*” conveys some philosophies

Ideal for Engineering Education

Engineering students learn best when they understand how theory works in real conditions. PRAYOG encourages: Experimental thinking, Hands-on learning, Innovation and research, Analytical and practical skills

It motivates students to move beyond textbooks and engage in experimentation, observation, and application, which are essential qualities of a successful engineer.

Bridges Academia and Industry

PRAYOG serves as a platform connecting students, faculty, and alumni, where students share practical learning, faculty guide through theory and research and alumni contribute industry experience. This makes the magazine relevant, dynamic, and industry-oriented.

Timeless and Scalable Name

Unlike trendy names, PRAYOG is timeless. It can evolve with future editions, new technologies, and changing industry demands while maintaining its core identity. The name remains relevant for technical articles, research, innovation, and real-life engineering applications.

FACULTY MEMBERS



Dr. Shivangi

Mr. Aditya Mishra



Dr. Mohammad Baquir



Mr. Aman Saini

ABOUT

Ambalika Institute of Management and Technology



At Ambalika Institute of Management and Technology (AIMT), we are dedicated to nurturing future leaders, innovators, and changemakers in the fields of engineering, management, and technology. Recognized among the leading educational institutions in Lucknow, AIMT provides a vibrant academic environment that fosters excellence, creativity, and professional growth. Our commitment to quality education is reflected in a curriculum that combines strong theoretical foundations with practical, industry-oriented learning experiences. Through cutting-edge laboratories, modern infrastructure, innovative teaching methodologies, and active industry collaborations, students are equipped with the knowledge and skills required to thrive in a rapidly evolving global landscape. Guided by a team of experienced faculty members and supported by state-of-the-art facilities, our students are encouraged to explore new ideas, engage in research, and develop solutions to real-world challenges. Beyond academics, AIMT emphasizes holistic development, leadership, and ethical values, preparing graduates to excel in their careers and contribute meaningfully to society.

As we continue our journey of academic excellence and innovation, we invite aspiring learners to become a part of the AIMT family—where talent is nurtured, opportunities are created, and ambitions are transformed into achievements.

Chairman's Message

Mr. Ambika Misra



It brings me great pleasure to offer PRAYOG, the Department of Civil Engineering's Technical Magazine. This bi-annual publication serves as a venue for our students and faculty members to share their new ideas, technical skills, and research achievements. Our department is dedicated to establishing an environment of learning, creativity, and research. Students are encouraged to investigate emerging technologies, while faculty members actively participate in research and disseminate their discoveries via academic forums and conferences. PRAYOG embodies this attitude of inquiry while also strengthening the institute's research and documentation culture.

I would want to take this time to thank the editorial team, faculty, staff, and students for their significant contributions to this issue. I am convinced that this publication will keep its readers up to date on the latest advancements in civil engineering and inspire them to strive for greatness in their industry.

I hope PRAYOG great success in its objective to advance technical excellence and intellectual advancement. maiden issue of “PRAYOG”. This technical magazine is an effort to acquaint its readers with the latest technological developments in the field of Civil Engineering.

Director General's Message

Dr. Syed Qamar Abbas



It is a great pleasure to me to witness the release of PRAYOG – Theory into Practice, the Technical Magazine of the Department of Civil Engineering. This journal shows the creativity, technical skills and academic excitement of our students and professors.

At AIMT we think that education is not limited to classrooms. PRAYOG is our commitment to innovation, research and experiential learning and acts as a forum for knowledge sharing, ideas and practical insights. These activities motivate and empower young minds to think critically, learn continuously and contribute meaningfully to society.

I congratulate the Department of Civil Engineering, editorial board and all the authors for their committed efforts. I am sure PRAYOG will inspire the future engineers to translate knowledge into action and ideas into effect.

Director's Message

Dr. Ashutosh Dwivedi



It is my pleasure to present the current issue of PRAYOG, the Technical Magazine of the Department of Civil Engineering. This publication is a reflection of our dedication to promoting technical excellence, innovation, and a culture of continual learning.

PRAYOG is an important venue for students, academics and researchers to exchange their ideas, information and achievements and to promote creativity and professional development. Such programs play a significant role in improving academic engagement, research activities and result focused education.

Congratulations to the Department of Civil Engineering, the editorial staff and all contributors for their committed efforts. I am sure PRAYOG will continue to inspire young engineers, promote academic achievement, contribute significantly to the growth and development of the university.

Additional Director Message

Dr. Shweta Mishra



It gives me great satisfaction to see the release of the Technical Magazine of the Department of Civil Engineering, PRAYOG – Theory into Practice. The initiative represents the department's dedication to academic achievement, innovation and experiential learning.

The journal provides a valuable forum for students, professors and alumni to share their knowledge, research and real-world experience. PRAYOG is a forum for sharing of ideas and technical insights, which aids in bridging the gap between classroom learning and professional practice.

I would like to thank the Department of Civil Engineering, the Editor and other contributors for their hard work. I am sure PRAYOG will go a long way in promoting creativity, technical knowledge and help in the holistic development of the future engineers.

HOD's Message

Dr. Shivangi

(B. Tech, M. Tech-Structure Engineering, Ph. D)



**Head, Department of Civil Engineering
Ambalika Institute of Management & Technology**

It is my pleasure to bring PRAYOG – Theory into Practice, Technical Magazine of Department of Civil Engineering. This publication is a testament to our mission to develop talented, inventive and socially responsible engineers who convert knowledge into meaningful solutions for society.

Civil Engineering is an important element in developing sustainable infrastructure and enhancing quality of life. Through PRAYOG we encourage students to think of fresh ideas, exchange technical know-how and relate classroom learning to practical problems. The magazine is a place for students, professors and alumni to share their research, experiences and accomplishments.

I would like to thank the Editorial Team and all Contributors for their commitment to make this edition possible. I hope PRAYOG would spark curiosity, innovation and brilliance and empower our students to make positive contribution to the profession and country building.

My best wishes to all our students for a successful and fulfilling engineering journey.

ABOUT

Department Of Civil Engineering



The Department of Civil Engineering at Ambalika Institute of Management & Technology is dedicated to imparting quality technical education and developing competent civil engineers capable of addressing contemporary infrastructure and societal challenges. The department focuses on outcome-based education with an emphasis on strong fundamentals, practical application, and professional ethics.

The department offers comprehensive learning in core areas such as Structural Engineering, Geotechnical Engineering, Transportation Engineering, Environmental Engineering, and Construction Planning and Management, supported by qualified faculty members and well-equipped laboratories. Teaching-learning processes are designed to integrate classroom instruction with laboratory experiments, field exposure, site visits, internships, and project-based learning.

To bridge the gap between academia and industry, the department actively promotes industry interaction, alumni engagement, research activities, and experiential learning. Students are encouraged to participate in technical workshops, seminars, competitions, and innovation-driven projects to enhance technical competence, problem-solving ability, and employability.

The department also emphasizes sustainable development, safety, and social responsibility, aligning engineering solutions with environmental and societal needs. Through continuous improvement practices and stakeholder involvement, the Department of Civil Engineering at Ambalika Institute of Management & Technology strives to produce industry-ready, ethically responsible, and lifelong learners who contribute effectively to nation building.

DEPARTMENTAL VISION

To create high quality civil engineers with knowledge par excellence who may contribute in nation building with highest moral and ethical values as true citizens of a civilized society.



DEPARTMENTAL MISSION

- To adapt teaching and learning process that gives student power to think and to analyse.
- To impart practical knowledge by means of lab exposure and industrial interaction.
- To conduct co-curricular activities for updation of technological advancement
- To impart moral and ethical values by means of various program

Programme Educational Objective (PEO's)



PEO 1 – Professional Competence

Graduates will apply fundamental principles of Civil Engineering to analyze, design, and execute engineering projects using appropriate tools and techniques in professional practice.

PEO 2 – Industry Readiness and Lifelong Learning

Graduates will demonstrate readiness for employment, higher education, and professional certifications by engaging in continuous learning to adapt to emerging technologies and industry requirements.

PEO 3 – Ethical and Social Responsibility

Graduates will practice engineering with ethical responsibility, safety awareness, and consideration of environmental sustainability and societal needs.

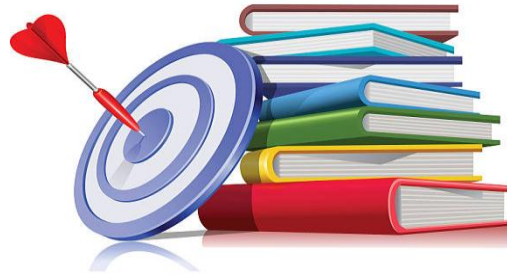
PEO 4 – Problem Solving and Innovation

Graduates will identify, analyze, and solve complex engineering problems using critical thinking, creativity, and research-oriented approaches.

PEO 5 – Professional Skills and Teamwork

Graduates will communicate effectively, work efficiently in multidisciplinary teams, and demonstrate leadership qualities in professional and organizational environments.

Programme Objectives(POs)



PO1 – Engineering Knowledge

Apply knowledge of mathematics, science, engineering fundamentals, and Civil Engineering principles to solve complex engineering problems.

PO2 – Problem Analysis

Identify, formulate, review research literature, and analyze complex Civil Engineering problems to reach substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3 – Design/Development of Solutions

Design solutions for complex Civil Engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental aspects.

PO4 – Conduct Investigations of Complex Problems

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PO5 – Modern Tool Usage

Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex Civil Engineering activities with an understanding of limitations.

PO6 – The Engineer and Society

Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to professional Civil Engineering practice.

PO7 – Environment and Sustainability

Understand the impact of professional Civil Engineering solutions in societal and environmental contexts and demonstrate knowledge of sustainable development.

PO8 – Ethics

Apply ethical principles and commit to professional ethics, responsibilities, and norms of Civil Engineering practice.

PO9 – Individual and Team Work

Function effectively as an individual, and as a member or leader in diverse and multidisciplinary teams.

PO10 – Communication

Communicate effectively on complex engineering activities with the engineering community and society at large, such as being able to comprehend and write effective reports, design documentation, make effective presentations, and give and receive clear instructions.

PO11 – Project Management and Finance

Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects in multidisciplinary environments.

PO12 – Life-long Learning

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

FACULTIES WISDOM



WISDOM

Assessment of the Mechanical Property of Hybrid Fibre Concrete with the Optimal Mix

Advanced Offshore & Structural Engineering Journal

When two or more distinct types of fibres are used in conjunction with a combined matrix to produce a composite material known as a hybrid, this type of material can be referred to as a hybrid composite. This hybrid material represents the benefits of each of the individual components used in the fibres. An optimized mix containing hybrid fibres was produced through parametric research on the effects of varying fibre contents on the mechanical properties of the concrete structure, specifically the compressive strength, shear strength, and toughness. The mechanical qualities of the concrete construction were shown to benefit from these modifications. Additionally, it was shown that when utilizing various fibre compositions, the combination of glass and polypropylene fibre produces the best outcomes in terms of compressive strength and toughness. Hybrid fibres were added to the concrete mix at various ratios, but they didn't replace any other ingredients from the M30 mix designs. In this investigation, different amounts of fiber containing cement (0.5%, 1%, 1.5%, and 2%) were added and tested individually in a compression testing machine with a 2000-ton capacity after 7 and 28 days of curing. The readings were taken to determine the optimal percentage of fibers to add to concrete, aiming to increase the concrete's compressive strength significantly. Additionally, research has been conducted to determine how different types of fibre affect the mechanical properties of concrete structures. It also helps to understand the effect of age on concrete structures. Additional comparisons between various destructive and non-destructive tests have been conducted, and a correlation has been established between the two types of examinations.

Dr. Shivangi
Civil Engineering

Enhanced Durability of Hybrid Fiber-Reinforced Concrete in Acidic and Sulfated Environments

(SCI INDEXED: Journal of Structural Design and Construction Practice)

This study investigates the performance of hybrid fiber-reinforced concrete (HFRC) incorporating polypropylene and glass fibers under aggressive chemical environments. Concrete specimens of M30 grade were subjected to curing in sulfuric acid (H_2SO_4) and magnesium sulfate (MgSO_4) solutions, evaluating short- and long-term mechanical properties. HFRC demonstrated enhanced durability with reduced mass loss and superior resistance to acid-induced degradation compared to conventional concrete. Compressive strength, rebound hammer tests, and microstructural analyses using SEM and EDX highlighted the role of hybrid fibers in mitigating crack propagation, improving microstructure, and reducing porosity. Results confirmed that HFRC retained higher strength and mass stability under extended exposure to acidic and sulfate-rich conditions. This research underscores HFRC's potential for sustainable construction in chemically aggressive environments, ensuring enhanced durability and reduced maintenance costs for infrastructure applications. The study addresses gaps in chemical resistance, hybrid fiber synergy, varied curing conditions, and long-term durability, demonstrating hybrid fiber-reinforced concrete's superior performance in aggressive environments through advanced experimental analysis.

Dr. Shivangi
Civil Engineering

Methamphetamine and Cocaine Addiction on Drug Craving Suppression Through Transcranial Direct Current Stimulation and Transcranial Magnetic Stimulation: A Comprehensive Study

(Jornal: Life Sciences)

Methamphetamine and Cocaine addiction are major problems worldwide, involving intricate interactions within the brain's reward system, affecting brain areas, namely the ventral tegmental area, nucleus accumbens, and prefrontal cortex. Such substances temporarily disrupt the normal functioning of neurons, temporal imitation or modification of the natural neurotransmitters' effects. According to the previous researches neurocognitive model of addiction is led by impairments in cognitive control and decreased activity in the prefrontal cortex, specifically the dorsolateral prefrontal cortex (DLPFC). This literature review has emphasised encouraging results on the usage of transcranial direct current stimulation (tDCS) on the right DLPFC to alleviate cravings in individuals struggling with methamphetamine and cocaine addictions. This comparative investigation study on the efficacy of transcranial direct current stimulation (tDCS) and transcranial magnetic stimulation (TMS) in addressing addiction. Furthermore, this study aims to enhance our understanding of key aspects of addiction suppression. tDCS and TMS techniques have shown promising results in modulating drug cravings. As focus shifts to economic device development, tDCS is being explored instead of TMS and neuromodulation medicines due to its economic suitability with smaller electrodes, making it more viable for wider application in targeting specific brain regions. tDCS has promising factors in methamphetamine addiction and cocaine addiction, but not for alcohol and cannabis addiction.

Dr. Mohammad Baquir

Civil Engineering

STUDENTS CONTRIBUTION



INDIAN PLUMBING ASSOCIATION LUCKNOW

CHAPTER

1. Election of Student Chapter Committee

Students of Civil Engineering Department actively participated in the celebration of World Plumbing Day organized by Indian Plumbing Association (IPA), Lucknow Chapter on 11th March, 2026. The program offered students with a great opportunity to learn about modern plumbing procedures, sustainable water management and emerging prospects in the plumbing sector.

Another achievement of the department was the election of **Mr. Shivank Srivastava** as the **Student Vice President** of the **IPA Student Chapter**. His appointment is a recognition of his leadership qualities, devotion, and active involvement in professional and technical activities.



Figure 1. Student Vice-President (Mr. Shivank Srivastava- B.Tech 3rd Year)

Furthermore, **Dr. Shivangi**, Head of the Department of Civil Engineering, was appointed as the Coordinator of the IPA Student Chapter, reflecting her dedication to fostering professional engagement and industry-academia collaboration among students.



Figure 2. Faculty Co-Ordinator (Dr. Shivangi-HOD-CE)

The Department of Civil Engineering congratulates *Mr. Shivank Shrivastava* and *Dr. Shivangi* for their accomplishment and wishes them success in his new role. Such achievements motivate other students to work with professional bodies and encourage the development of the engineering profession.

2. World Plumbing Day Poster Making Competition

As part of the celebration, a Poster Competition was organized. Civil Engineering students displayed their creativity and technical understanding in the competition.



Mr. Noor Alam(B.Tech-2nd Year)



Ms. Divyanshi(B.Tech- 3rd Year)

Figure 3. Student winners of Poster Competition

Mr. Noor Alam grabbed **First Position** and won a cash prize of ₹ 2500 and **Ms. Divyanshi** slotted into **Third Position** and was handed a cash prize of ₹ 1500 for their excellent presentations.

The Department of Civil Engineering congratulates all the winners and participants for their great efforts and bringing accolades to the department

TECH CARNIVAL 2K26

Tech Carnival 2K26, the annual technical carnival of Ambalika Institute of Management and Technology (AIMT), Lucknow, was organised by the students of different departments with tremendous enthusiasm. It was a colourful affair for the young inventors to display their technical capabilities, creativity, team spirit and problem-solving skills.

Technical competitions, project exhibitions, quizzes and inventive activities were organised in large number to encourage the students to use their knowledge

e beyond the classroom and experience learning. The funfair inculcated a spirit of invention, healthy competition and teamwork among participants.



The Department of Civil Engineering actively participated in the event and displayed technical excellence and passion via numerous competitions and presentations. Tech Carnival 2K26 was a successful mix of talent, innovation and learning which inspired the students to discover new ideas and get ready for the future career difficulties. The institute congratulates all the participants, winners, organisers and faculty coordinators for making the event a spectacular success and contributing to a dynamic culture of technical achievement

1. TECH BUZZ 2K26

The Tech Buzz Competition was organized as a part of Tech Fest 2K26 at Ambalika Institute of Management and Technology, Lucknow to assess the technical knowledge, analytical thinking and problem-solving skills of the students. The students of the Department of Civil Engineering performed quite well in the competition. From **B.Tech 3rd Year** : **Mr. Ayush Yadav** earned ***First Position*** and **Mr. Shivank Srivastava** secured ***Second Position*** to showcase their technical skills and competitive attitude.



Mr. Aayush Yadav
(B.Tech -3rd Year)



Mr. Shivank Srivastava
(B.Tech -3rd Year)

Figure 4. Winners of TECH BUZZ 2K26

In the B. Tech Second Year, **Mr. Arvind Yadav** secured ***First Position*** through his impressive technical understanding and confident performance, earning appreciation from the judges and audience alike.

Mr. Atish Kumar Gond secured ***Second Position*** in the same category. His dedication, knowledge, and enthusiasm were evident throughout the competition, contributing to the overall success of the Department of Civil Engineering.



Figure 5. Winners of TECH BUZZ 2K26

The department was proud of their impressive accomplishment that demonstrated the students' hard work and dedication. The Department of Civil Engineering congratulates both recipients on their exceptional achievement and wishes them continued success in their academic and professional endeavors.

2. Straw Scraper Competition – Tech Fest 2K26

The Straw Scraper Competition, organized during Tech Fest 2K26 at Ambalika Institute of Management and Technology, provided students with an opportunity to demonstrate their creativity, teamwork, and practical engineering skills. Participants were challenged to design and construct innovative structures using limited materials while ensuring strength, stability, and efficiency.

Representing the Department of Civil Engineering, Mr. Ayush Yadav and Mr. Shivank Shrivastava delivered an outstanding performance and secured First Position in the competition. Their innovative approach, structural design, and effective teamwork impressed the judges and showcased their ability to apply engineering principles in a practical environment.



Figure 6. Winners of Straw Scrapper Competition Ayush Yadav and Mr. Shivank Srivastava (B. Tech -3rd Year)

Their achievement reflects the department's emphasis on experiential learning and highlights the technical competence, creativity, and problem-solving abilities of Civil Engineering students. The Department congratulates both students for bringing laurels to the institution and wishes them continued success in their future endeavors.

3. Model Making Competition- Tech Fest 2K26

Ambalika Institute of Management and Technology the Model Making Competition was held under the aegis of Tech Fest 2K26. The event gave an opportunity for students to demonstrate their creativity, technical skills and new ideas through practical demonstrations of models.

The Department of Civil Engineering actively engaged in the event with two zealous teams. **Team 1, Ms. Divyanshi and Ms. Anamika Singh** presented a novel model: **"Smart Street: footstep power production system"** demonstrating their technical grasp and creative approach in handling the contemporary engineering difficulties.

Team 2 was of **Mr. Shivank Srivastava, Mr. Ankit, Mr. Ayush Yadav, Mr. Sarthak Singh and Mr. Aryan Jaiswal** who presented a model on the theme “**Next Generation Smart City**”. Their initiative showcased sustainable urban development, smart infrastructure, effective resource management, and technology-driven solutions for future cities.



TEAM 1



TEAM 2

Both teams displayed a lot of innovation, technical skill and presentation. The judges, guests and fellow competitors were really impressed by their unique concepts and well-executed models. The presentations showcased the students' abilities to combine theory and practice and gave vital insights into the future of civil engineering and urban planning.

The Department of Civil Engineering acknowledges the efforts of all the participants for their dedication and praiseworthy performance which gave prominence and pride to the department during Tech Fest 2K26.

STUDENTS PROJECT

Design and Structural Analysis of an Elevated Circular Water Tank Using STAAD. Pro

Elevated water tanks are common in water supply systems to store water at a high elevation and to produce the pressure necessary for gravity powered distribution. The structures have to be correctly designed as they are exposed to a combination of loads including hydrostatic pressure of stored water, wind loads and self-weight of structural components. The absence of appropriate design may lead to the formation of structural problems in the form of cracking and leakage, and excessive deformation or even the failure of the structure. This research describes the building and analysis of a circular reinforced concrete water tank with elevated platform using STAAD. Pro software. The planned tank has the capacity to hold 300m³ of water and provide service to about 1500 people. The study has been done in three dimensions in the STAAD. Pro software, and it consists of the parts such as the vertical wall of the tank, a dome-shaped roof, the base, supporting columns, and the cross beams. According to the respective Indian Standard codes, various load conditions, which include dead load, live load, hydro-static pressure, and wind load, are applied. The results of the analysis which entail stresses, bending moments, axial forces, and displacement are used to determine the structural performance of the tank. The results show that the proposed design meets the safety and serviceability requirements with a low consumption rate of construction materials.

By: Ajaj Ahmed, Sunny Patel, Rishu Gautam

Supervisor: Mr. Aditya Mishra

B. Tech -4th Year

Design and Performance analysis of Flexible Pavement design Using Partially Coconut Shells as Aggregate and Coir Fibre Reinforced in Cement-Treated Base

The rapid consumption of natural aggregates has led to the need for alternative and sustainable construction materials. This study examines the use of coconut shell (CS) as a partial substitute for coarse aggregates and coconut coir fibre (CF) as reinforcement in a cement-treated base (CTB) for flexible pavement systems. Experimental investigations were carried out on an M20 control mix along with modified mixes. Results indicate that replacing 24% of conventional coarse aggregates with coconut shells does not significantly reduce strength. Furthermore, the addition of 5% coir fibre enhanced tensile and flexural strength while improving ductility. Using the optimized mix (CSCF25-5), a pavement structure was designed following IRC: 37-2018 guidelines, proving suitable for medium traffic conditions.

By: Rahul Kumar, Nitin Kanauiya, Sufiyan Khan

Supervisor: Dr. Shivangi

B. Tech -4th Year

An Enhanced Experimental Investigation of the Mechanical Behavior of Glass Fiber Reinforced Concrete (GFRC)

Glass Fiber Reinforced Concrete (GFRC) is primarily employed to overcome the poor tensile performance of conventional concrete. Ordinary concrete tends to crack and fail suddenly due to its brittle nature, and the inclusion of glass fibers helps in controlling this behavior by improving its resistance to tensile stresses. In the present work, M25 grade concrete was mixed with different amounts of alkali-resistant glass fibres, starting from 0% and going up to 1%. The purpose of adding fibres was to see how the basic strength properties, such as compressive, tensile, and flexural strength, change with fibre inclusion. During testing, it was observed that fibres helped in controlling cracks after loading and allowed the concrete to carry load even after initial cracking. The best overall performance was noticed when the fibre content was kept between 0.33% and 0.67%. When a higher fibre percentage was used, the

concrete became difficult to handle and the fibres were not distributed properly, which finally reduced the strength. Based on the results, GFRC can be considered suitable for construction works where better toughness, ductility, and durability are required.

By: Kaushal Yadav, Aakash Dubey, Akash Sharma, Sourabh Verma

Supervisor: Mr. Mohammed Baquir

B. Tech -4th Year

Comparative Study of Reinforced Concrete Box Culverts: Manual Method & Staad PRO

The rapid expansion of highway infrastructure, such as the National Highway-48 (NH-48) expansion, necessitates efficient and robust design methodologies for cross-drainage structures. This research paper presents a comparative study on the analysis and design of a Reinforced Concrete (RC) Box Culvert (3m x 3m span). The study evaluates the structural behaviour under critical loading conditions, specifically IRC Class AA tracked vehicle loads, utilizing two distinct approaches: conventional Manual Analysis using the Moment Distribution Method (MDM) and Computational Analysis using Finite Element Method (FEM) via STAAD.Pro V8i. The parameters compared include bending moments, shear forces, and deflection patterns across the top slab, bottom slab, and side walls. Results indicate that while manual methods provide a fundamental understanding of load distribution, FEM offers superior precision in handling complex load combinations and soil-structure interaction, yielding slightly higher design moments (approx. 5-7% variation) which contributes to a more conservative and safer design.

By: Shubham Mourya, Ayush Agrahari, Shivanshu Verma, Aniket Bajpai

Supervisor: Mr. Mohammed Baquir

B. Tech -4th Yea

OUR PATRONS



Chairman's Profile

Mr. Ambika Misra



Director General's Profile

Dr. Syed Qamar Abbas



Director General's Profile

Dr. Syed Qamar Abbas



Additional Director

Dr. Shweta Mishra

