Resource Persons

1. Dr M.V.N. Sivakumar, Assoc. Professor, Civil Engineering Department, NITW
2. Dr. M. Nithyadharan, Associate Professor, Civil Engineering Department, IIT Tirupati
3. Dr. P. Subbarao, Assistant Professor, Civil Engineering Department, IIT-Madras, Chennai
4. Dr Sudheer Kumar, Asst Professor, Civil Engineering Department, NITW
5. Dr. Sk. Mahabu Subhani, Assistant Professor, Civil Engineering Department, NIT AP
6. Dr. P. Sreedhar, Senior Faculty, WRE Development Division, ESCI, Hyderabad
7. Dr. Uma Maheswar Arepalli, Asst. Professor, Civil Engineering Department, SRM University, AP
8. Dr. Harish Puppala, Asst. Professor, SRM University, AP
9. Dr. C. Arun , Professor, NICMAR, Hyderabad
10. Dr Siva Sankar Asadi, Professor, Vignan university, Civil Engineering Department
11. Dr P. Poluraju, Consultant and Former HOD, Civil Engineering Department, KL University.
12. Dr. Rajesh Khanna, Technical Head, Ultratech Cements Regional Office, Vijayawada
13. Sri P.A.V. Govindarajulu, Deputy Executive Engineer, Civil Designs, AP Transco, Vijayawada

Registration Particulars:

Registration link

- Registration Fee: **NIL**
- Registration link: https://tinyurl.com/5c4wyamv

Certificate Criteria:

- All eligible candidates who attend all the sessions and submit the feedback form will get e-certificate.
- Attendance is mandatory

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Dr. K. V. Ramana, Rector, JNTUK-Kakinada

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Dr. Shaik. Shameem Banu, Assistant Professor, Dept. of CE, UCEK, JNTUK-Kakinada

CO-COORDINATOR

Dr K.V. Ramana, Assoc. Professor and HOD, Dept. of Civil, LBRCE, Mylavaram

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2. Sri J. Rangaiah, Assoc. Professor, Civil Engineering Department, LBRCE
3. Sri K. Harish Kumar, Sr. Asst. Professor, Civil Engineering Department, LBRCE

INSTITUTION'S INNOVATION COUNCIL (Ministry of HRD Initiative)

A Five Day Faculty Development Program
On

EMERGING TRENDS IN CIVIL ENGINEERING AND RESEARCH CHALLENGES TOWARDS SUSTAINABILITY

7th July – 11th July 2025

Organized by
Dept. of Civil, UCEK, JNTUK, Kakinada
In association with
Dept. of Civil, LBRCE, Mylavaram

VENUE: EEE Seminar Hall at LBRCE

For more details,

Dr. Shaik. Shameem Banu, Ph.no: 8008770501

Dr. K.V. Ramana, Ph.no: 9347099092

ABOUT JNTUK

University college of Engineering Kakinada (Autonomous) JNTU Kakinada was originally 'The College of Engineering, Vizagapatam' at the time of its establishment in the year 1946 by Government of the composite Madras state. It is now a sprawling campus of 110 acres, green with mango trees in the fast developing port city of Kakinada. This college becomes constituent college of the Jawaharlal Technological University, Hyderabad w.e.f. 02-10-1972. The college has become Autonomous in the year 2001. On 20th August 2008 it became a constituent college for the newly established **JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA**

ABOUT LBRCE

The Lakireddy Bali Reddy College of Engineering (LBRCE), Mylavaram was established in the year 1998 by Lakireddy Bali Reddy Charitable Trust, whose architect is Er. Lakireddy Bali Reddy garu. The institute is established with the sole aim of providing high quality educational opportunities in the field of Science, Engineering, Technology and Management. It is spread over 60 acres of sprawling lush green landscape spotted with orchids and grooves. It is approved by AICTE, affiliated to JNTUK, Kakinada and attained Autonomous status in the year 2010. It is accredited with NAAC and NBA for all the major Engineering branches - ASE, CE, CSE, IT, ECE, EEE & ME, under Tier-I. A separate R&D cell is established in the college to focus on continuous sponsored research. It has various sponsored research projects funded by various funding agencies. At present, Nine B. Tech programs, 4 M. Tech programs and a M.B.A program are offered in the campus.

ABOUT CIVIL ENGINEERING. UCEK

Department of Civil Engineering was established in the Year 1946. The Department has created its own reputation through its teaching, research, consultancy and extensive activities. It offers Undergraduate program in Civil Engineering and Postgraduate Programs in Structural Engineering, Soil Mechanics and Foundation Engineering. The department is equipped with strength of materials and concrete technology, Fluid mechanics and hydraulics machinery, geotechnical, environmental, surveying, transportation engineering, engineering geology and CAD and GIS laboratories. The department has advanced civil, computer application and geotechnical laboratories for post graduate students to perform research in respective areas.

ABOUT CIVIL ENGINEERING. LBRCE

The Department of Civil Engineering was established in the year 2012, with B. Tech in Civil Engineering degree programme with an intake of 60 students. Accredited by NBA under Tier-1 for three years wef 2023-24. The department focuses on making the students strong in both technical and practical aspects to meet the national and international requirements. The department plans to establish interaction with industry for improving teaching research and consultancy aspects for continuous development of students, faculty and institution. The department is well equipped with very good laboratory facilities for developing practical skills and fundamentals of students. The Department has all the adequate laboratories with state-of-art facilities catering to the academic, research and consultancy requirements. The department is having well qualified and experienced faculty members.

ABOUT The FDP

The FDP sessions are planned to provide the current and emerging technologies in the various domains of Civil Engineering such as Structural Engineering, Construction Management, Transportation Engineering, Geotechnical Engineering, Geo Spatial Technology, Water Resources and Environmental Engineering. The sessions are intended to present an insight to the challenges to be explored through Research and academics. As we move on with the technology, the need of the hour is to assess the existing technologies and analyse its compatibility to adapt to the new trends of technological advancements. The technology adopted should be sustainable and meet the social acceptance with ease and comfort.

Objectives of FDP

The main objectives of this FDP are

- To provide in depth Knowledge on sustainable technologies in Civil Engineering
- To Bridge Academic Research and Practical Applications
- To Facilitate knowledge sharing among institutions
- To support Skill Development for Faculty and Professionals

Expected Outcomes of FDP

- Promotion of Sustainable and Eco-friendly Practices in Construction
- Encourage Research and innovation in Civil Engineering
- Awareness on new technologies implanted in industries
- Awareness on GIS applications in various fields

DAY WISE TOPICS COVERED IN FDP

DAY	DATE	Topics Covered
DAY 1	7th Jul 2025	Eco friendly, sustainable materials used for construction
DAY 2	8th Jul 2025	Exploring the Trends in Design of Pavements and Research opportunities using GIS Technology
DAY 3	9th Jul 2025	Awareness on Water resource management systems
DAY 4	10th Jul 2025	Current challenges in the construction management
DAY 5	11th Jul 2025	Retrofitting of RCC Elements and Pile Foundations

Target Audience:

Faculty, Research scholars, PG Students & Industry Professionals from the state and spread across India.

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC & NBA (Under Tier - I), ISO 9001:2015 Certified Institution

Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada

L.B. REDDY NAGAR, MYLAVARAM, KRISHNA DIST., A.P.-521 230.

Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF CIVIL ENGINEERING

A Five Day Faculty Development Program On EMERGING TRENDS IN CIVIL ENGINEERING AND RESEARCH CHALLENGES TOWARDS SUSTAINABILITY

7th July – 11th July 2025

SESSIONS OVERVIEW

Total no. of participation: 33

Day -1 (7th July): Inaugural Ceremony: Inauguration of a one week FDP

Day-1 (7th July): Sessions 1 & 2

Title: Evolving trends and Challenges in the Pavement Analysis and Design

Summary of the presentation: Dr Uma Maheswar Arepalli covered various aspects of pavement engineering from materials and different equipment's used to test the properties. The session also addressed recycling technologies such as full depth reclamation (FDR) by blending with additives likes cement lime, Asphalt emissions. The session focused on various asphalt mix like HMA, WMA,CMA, porous asphalt & plastic roads. A separate discussion on few case studies to obtain pavement management system, LCCA & Moisture damage is presented with excellent illustrations.

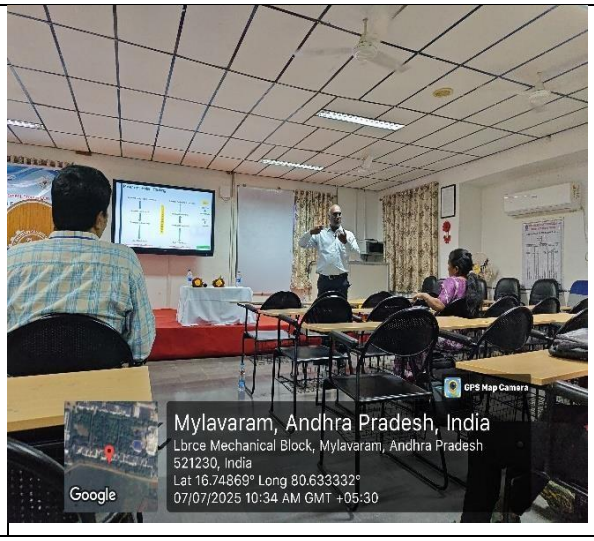
Outcome of Presentation

- Awareness on conventional & advance materials, pavement design & construction.
- Illustration of several advanced equipment used for characterization of pavement materials.
- Illustrated the applications in advanced pavement materials in design & maintenance operational

problem using several case studies.

Day-1 (7th July): Sessions 1 & 2

Title: Evolving trends and Challenges in the Pavement Analysis and Design
Resource Person: Dr Uma Maheswar Arepalli, Asst Professor, Civil Engineering Dept., SRM University



Day-1 (7th July): Sessions 3 & 4

Title: Waste Management & Water Quality Modelling: Practices and Challenges

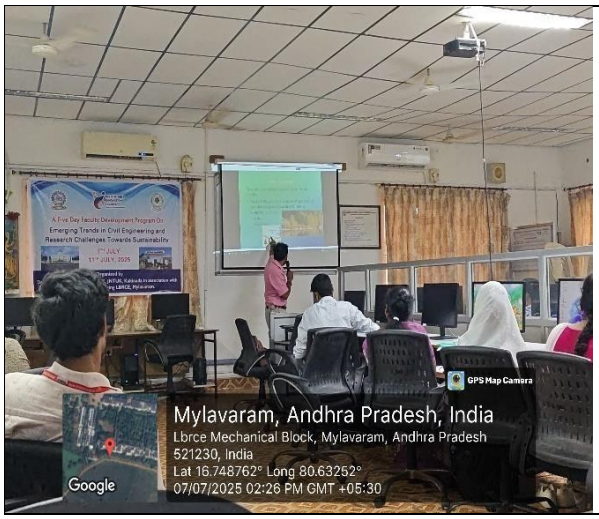
Summary of the presentation: Dr. Siva Sankar Asadi presented fundamentals of remote sensing and discussed the different types of satellites working on it. He provided an explanation of the services offered by NRSC and the various applications of remote sensing. He deliberated on the role of GIS in analyzing Remote sensing data and addressed on Digital Terrain Models (DTM) and Triangulated Irregular Networks (TINs). He illustrated the GIS usage for various applications such as environmental impact assessment study, Water quality, water shed development, Highway planning, Waste management facilities etc.

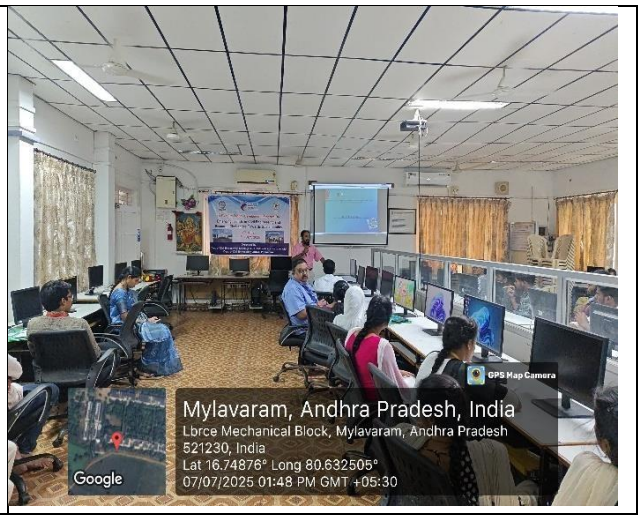
Outcome of Presentation

1. Understanding of concepts of remote sensing and GIS.
2. Realization of application of GIS in general and civil engineering in particular.

Day-1 (7th July): Sessions 3 & 4

Title: Waste Management & Water Quality Modelling: Practices and Challenges
Resource Person: Dr. Siva Sankar Asadi, Professor, Civil Engineering Department, Vignan University, AP





Day-2 (8th July): Sessions 1 & 2

Title: Performance Evaluation of Eco Friendly Reinforcing Bars in High Strength Concrete

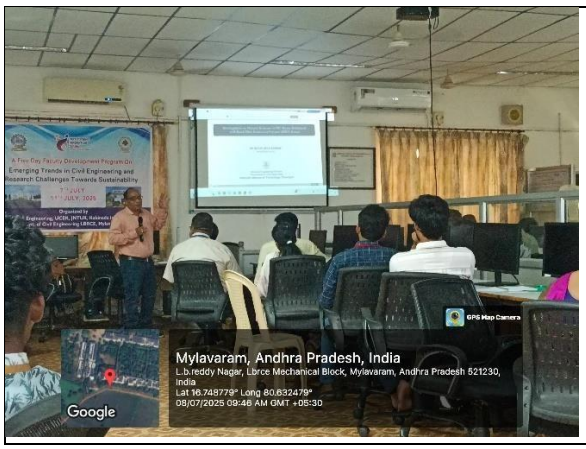
Dr M.V.N. Siva Kumar in his presentation focused on utilization of supplementary cementitious materials in concrete and eco-friendly sustainable alternate materials as reinforcing material. The chemical & mechanical properties of Supplementary cementitious materials(SCMs) are highlighted. And also the stress-strain characteristics of Poly Vinyl Alcohol Fibre Reinforced Concrete (PVAFRC) & Basalt Fibre Reinforced Concrete (BFRC) are discussed. Later, the flexural characteristics of BFRP rebar reinforced members are emphasized. The presentation illustrated the properties of these materials, optimum combinations for their utility in practical conditions. The experimental results are compared with the results from that of software models.

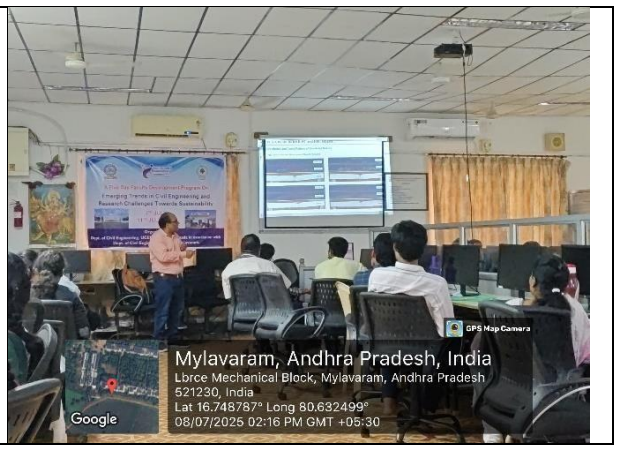
Outcome of Presentation

1. Recognizing the various properties of eco-friendly reinforcing bars.
2. Identification of similarities with experimental and software model results for optimum combinations

Day-2 (8th July): Sessions 1 & 2

Title: Performance Evaluation of Eco Friendly Reinforcing Bars in High Strength Concrete
Resource Person: Dr M.V.N. Siva Kumar, Assoc. Professor, Civil Engg. Dept., NIT Warangal





Day-2 (8th July): Sessions 3 & 4

Title: Geo polymers for Sustainable Ground Improvement

Dr Sudheer Kumar discussed the basic composition of Geo-polymers and their application in sustainable Ground improvement. Materials like fly ash, GGBS, Silica glass, Gypsum, red mud, glass wool, etc. were used earlier while the presented work discuss about use of new industrial wastes like

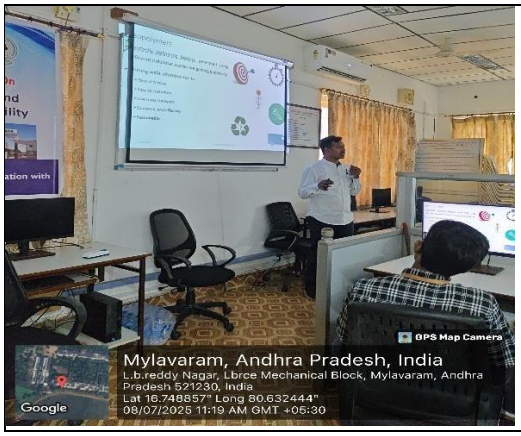
coal gangue, iron ore tailings and others in geo-polymerization process. The study explains the performance of geo-polymer mixtures in ground improvement works recognized through unconfined compressive strength, California bearing ratio, durability, wetting-drying, freeze thaw testing's and also confirmed through scanning electron microscope, X-ray diffraction, FTIR analysis. Application of geo-polymers in Australian Airport construction was also further highlighted.

Outcome of Presentation

1. Identifying the various properties of geo-polymers
2. Illustration of the performance of geo-polymers in sustainable ground improvement. eco-friendly reinforcing bars.

Day-2 (8th July): Sessions 3 & 4

Title: Geo polymers for Sustainable Ground Improvement
Resource Person: Dr Sudheer Kumar, Asst Professor, Civil Engg. Dept., NIT Warangal



Day-3 (9th July): Sessions 1

Title: Water resources systems management under changing climate

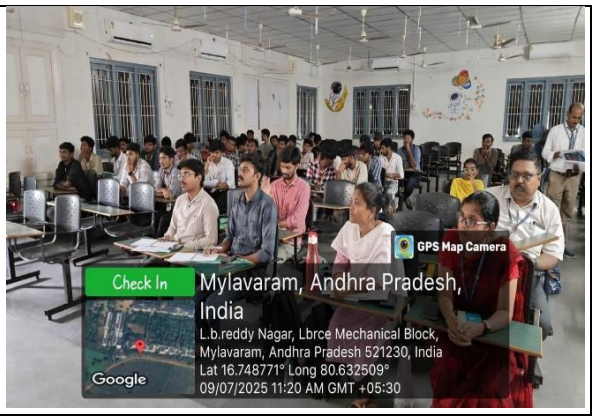
The presentation by Dr P. Subba Rao focused on surface water supply challenges being faced in the world. The global challenges and associated global climatic systems are discussed. Factors influencing basin scale hydrology and various water resources systems in practice are detailed. The solutions such as inter-linking of rivers to counter imbalance of water resources are illustrated along with importance of water resources planning and management.

Outcome of Presentation

1. Understanding the problems with the quality and quantity of available water due to climatic changes
2. Identification of various water resources systems and potential inter-linking of rivers to solve the imbalance of water availability.
3. Illustration of water resources planning and management and dam safety aspects.

Day-3 (9th July): Sessions 1

Title: Water resources systems management under changing climate
Resource Person: Dr P. Subba Rao, Assistant Professor, IIT Madras, Chennai (Online)



Day-3 (9th July): Sessions 2 & 3

Title: Cold-formed steel wall panel building – Sustainable solution for housing in India

Dr Nithyadharan in his presentation highlighted the emergence of Cold-formed steel as a sustainable material for construction of various structures. The process of making various products using Cold-

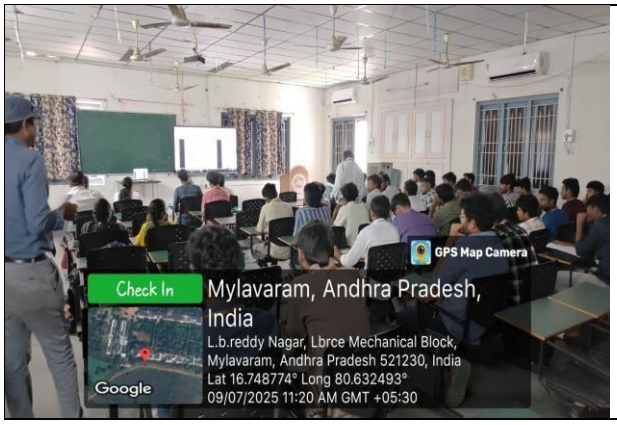
formed steel and their characteristic properties are discussed. The several products that are currently employed such as walls, struts, Windows, Sheets, etc. are demonstrated. The ease of assembling these products in real-life is illustrated through various examples. The advantages, disadvantages, and operational issues associated with the Cold-form steel structures are addressed.

Outcome of Presentation

1. Highlighting the importance of Cold-formed steel as a sustainable building material
2. Demonstration of ease of designing, fabrication and installation of Cold-form steel structures in real-life applications

Day-3 (9th July): Sessions 2 & 3

Title: Cold-formed steel wall panel building – Sustainable solution for housing in India
Resource Person: Dr Nithyadharan, Associate Professor, IIT Tirupati (Online)



Day-3 (9th July): Sessions 4 Title:

Retrofitting of RC Elements

Dr Poluraju addressed the need of retrofitting of existing structures which has become a major part in the construction activity in order to strengthening or upgrading the property of the elements of a structure without disturbing the existing structural elements. Structures were originally designed based on the codes to withstand the gravity loads but the impact of earthquake loads are not considered over many places in India. Retrofitting the existing structural elements may reduce the structural damage due to unforeseen natural hazards.

Outcome of Presentation

1. Demonstration of importance of Retrofitting of the structures
2. Realizing the significance of safety aspects in the structural construction.

Day-3 (9th July): Sessions 4

Title: Retrofitting of RC Elements
Resource Person: Dr P. Poluraju, Consultant and Former HOD, Civil Engineering Department, KL University

Day-4 (10th July): Sessions 1

Title: Water Shed Management: Practices and Challenges

Dr. P. Sreedhar presented the classification of watersheds based on the geographical area covered. He addressed the guidelines existing for watershed management in India and illustrated the major elements of watershed management. The common practices involved in the water management are discussed along with importance of soil and water conservation aspects. A case study of actual implementation of watershed management is illustrated along with the benefits achieved.

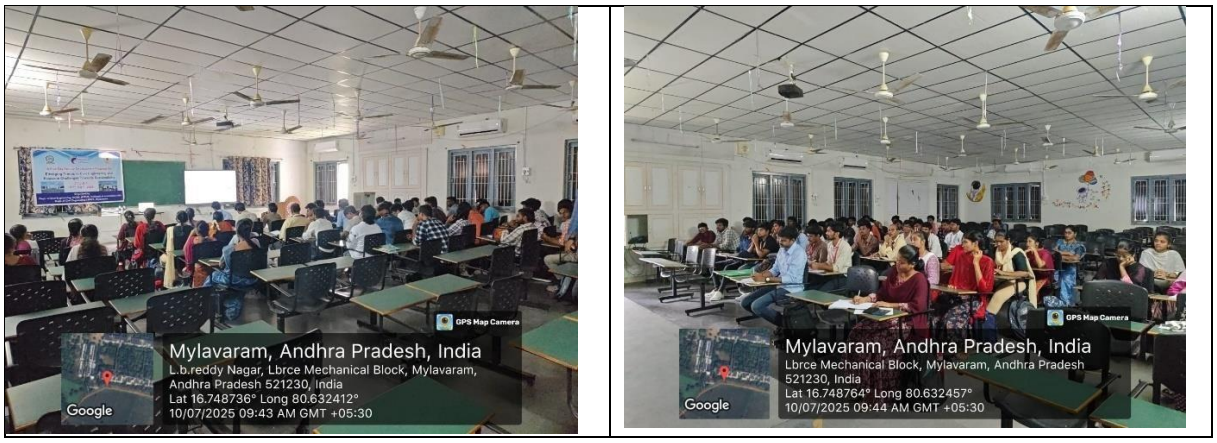
Outcome of Presentation

1. Understanding the categories & components of watershed management.
2. Recognizing the guidelines available and practices followed in India.
3. Illustration of implementation of watershed management project and the benefits obtained.

Day-4 (10th July): Sessions 1

Title: Water Shed Management: Practices and Challenges

Resource Person: Dr. P. Sreedhar, Senior Faculty, WRE Development Division, ESCI, Hyderabad (Online)



Day-4 (10th July): Sessions 2

Title: Advanced Construction Materials in Concrete Technology and its Applications

Dr Poluraju in his presentation highlighted the importance of optimum mix ratios of Mix design in concrete technology and stressed the need for combining them at appropriate ratios to obtain desired strength. He addressed the significance of admixtures, accelerators and retarders for obtaining the desired efficiency of concrete structures. He compared materials usage in mix design for a blended concrete mix of cement, GGBS and Fly ash and illustrated the results.

Outcome of Presentation

1. Understanding the importance of Mix design to obtain desired strength of concrete structures.
2. Illustration of applicability of blended concrete and subsequent cost savings

Day-4 (10th July): Sessions 2

Title: Advanced Construction Materials in Concrete Technology and its Applications

Resource Person: Dr P. Poluraju, Consultant and Former HOD, Civil Engineering Department, KL University

Day-4 (10th July): Sessions 3 & 4

Title: Trends and challenges in traffic design & safety: AL, ML and Simulation Tools in Transportation Engineering

Dr A.V.A. Bharat Kumar in his presentation explored emerging trends and pressing challenges in traffic design and safety, emphasizing the transformative role of Artificial Intelligence (AI), Machine Learning (ML), and Simulation Tools in modern transportation engineering. The expert discussed how AI and ML algorithms are being utilized for real-time traffic prediction, accident risk assessment, and adaptive traffic signal control. Simulation platforms such as VISSIM and SUMO were highlighted for their capabilities in modeling complex traffic scenarios and testing design alternatives in virtual environments. Key challenges addressed included data quality, integration of heterogeneous systems, and ensuring safety in mixed traffic environments involving autonomous and human-driven vehicles. The session concluded with a call for interdisciplinary collaboration and continuous innovation to meet future mobility demands.

Outcome of Presentation

1. Understanding the challenges in the traffic design and Safety.
2. Applying tools such as AI, ML and simulation tools to solve the real world problems related traffic management and safety aspects.

Day-4 (10th July): Sessions 3 & 4

Title: Trends and challenges in traffic design & safety: AL, ML and Simulation Tools in Transportation Engineering

Resource Person: Dr A.V.A. Bharat Kumar, Assistant Professor, Civil Engg. Dept., Vignan University, AP

Day-5 (11th July): Sessions 1

Title: Pile Foundations – Design, Construction and Challenges

Sri Govindarajulu in his presentation focused on different types of shallow and deep foundations in general, and Pile foundations in particular. He discussed the conditions under which the pile foundations are laid, and the depth of soil exploration to be considered for the pile foundations. He discussed the technical aspects involved in the design of Pile foundations and particularly for the Electrical Transmission towers and for soft soils. He illustrated the technical aspects by taking few case studies such as Polavaram dam, and few Transmission tower installations.

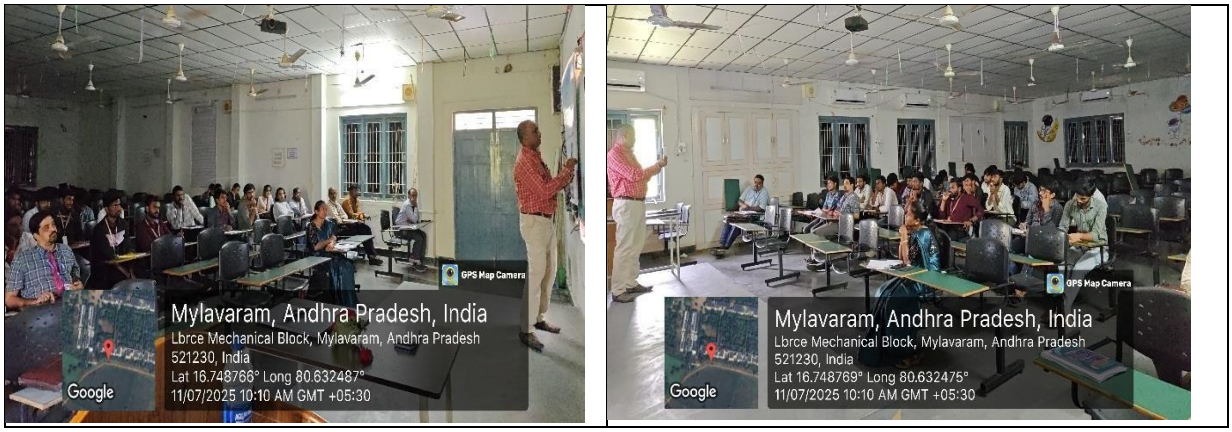
Outcome of Presentation

1. Understanding the technical aspects involved in the design and establishing deep foundations.
2. Illustration of design and erection of pile foundations using few specific case studies.

Day-5 (11th July): Sessions 1

Title: Pile Foundations – Design, Construction and Challenges

Resource Person: Sri Govindarajulu, Deputy Executive Engineer, Civil Designs, AP Transco, Vijayawada



Day-5 (11th July): Sessions 2 & 3

Title: Special Concrete

Sri Rajesh Khanna in his presentation highlighted the necessity and technical aspects involved in various types of Special Concretes. He deliberated on the type of Special Concretes, their properties, their production process from batching and mixing to final placing, including appropriate and effective testing methods. High performance Concrete, Self-compacting concrete, Fibre Reinforced Concrete, Fly ash concrete, Coloured Concrete and Illuminating concrete etc. are discussed along with their applications.

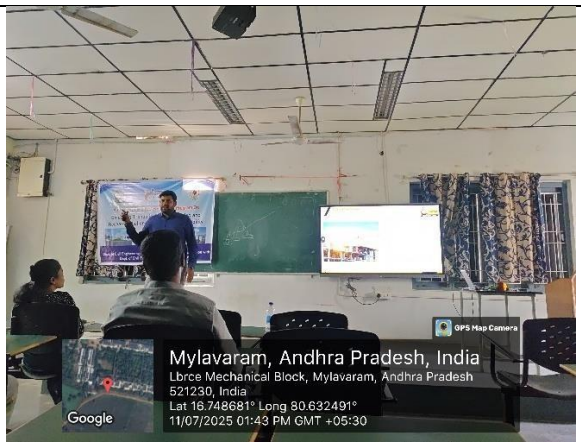
Outcome of Presentation

1. Realizing the need for special concrete and the technical aspects to be understood for using in specific applications.
2. Identification of various types of special concretes used in practice and the difference between normal concrete and special concrete through few specific case studies.

Day-5 (11th July): Sessions 2 & 3

Title: Special Concrete

Resource Person: Sri Rajesh Khanna, Technical Head, Ultratech Cements Regional Office, Vijayawada



Day-5 (11th July): Sessions 4

Title: Re use of agro waste ashes in construction sector in building sustainable infrastructure Dr Subhani in his presentation addressed the Agro-waste ashes, by-products of agricultural processes and the related technical aspects to effectively reuse them in construction sector to promote sustainable infrastructure. These ashes, often rich in silica, can be incorporated into concrete as supplementary cementitious materials or used as aggregates, reducing dependence on traditional materials such as cement and sand. This substitution not only lowers the carbon footprint of construction but also helps manage agricultural waste, contributing to a circular economy and sustainable development. Agro-waste ashes can exhibit variations in their chemical and physical properties depending on the source and processing method. Establishing clear standards and quality control measures is crucial for ensuring the consistent performance of agro-waste ash-based materials. More research is needed to fully understand the long-term performance and durability of agro-waste ash-based materials in different construction applications. By addressing these challenges and promoting further research and development, agro-waste ashes can play a vital role in building more sustainable and environmentally friendly infrastructure.

Outcome of Presentation

1. Understanding the technical aspects involved in the properties of agro-waste ashes for their potential reuse in Sustainable construction
2. Illustration of potential applications and research challenges in the domain through case studies.

Day-5 (11th July): Sessions 4

Title: Re use of agro waste ashes in construction sector in building sustainable infrastructure

Resource Person: Dr Subhani, Assistant Professor, NIT-AP

Day-5 (11th July): Valedictory Ceremony

Day-5 (11th July): Valedictory Ceremony: Feedback from the participants