



SECOND  
INTERNATIONAL  
CONFERENCE  
ON

INFRASTRUCTURE  
DEVELOPMENT



ICID  
2024

Department of Civil Engineering



**MAR BASELIOS**  
COLLEGE OF ENGINEERING AND TECHNOLOGY  
AUTONOMOUS

SUSTAINABILITY,  
RESILIENCE &  
TRANSFORMATIONAL ADAPTATION

September  
25 to 27  
2024

Pre-conference workshops : 25 Sept.

Paper presentations and Plenary sessions : 26,27 Sept.

In association with

Technical Partner



Department of  
Civil Engineering,  
IIT Madras

Co-branded by



Kerala Infrastructure  
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[www.icid24.in](http://www.icid24.in)

## STRUCTURAL CONDITION ASSESSMENT OF CONCRETE STRUCTURES USING NDT METHODS & REHABILITATION

In collaboration with



### Background

This workshop on the Non-Destructive Testing and Forensic Investigation of concrete structures is a preconference event conducted by the Civil Engineering Department of Mar Baselios College of Engineering and Technology (Autonomous), Thiruvananthapuram, for bringing together professionals, students and academics in the field of civil engineering prior to the second international conference on infrastructure development (ICID 2024). This workshop aims to share knowledge on advanced practices in the diagnosis and repair of concrete structures through forensic investigation techniques.

#### Why attend ?

1. Interaction with Industry Experts: Gain knowledge from expert professionals of MatterLab, which is one of the leading materials testing organizations in India.
2. Demonstrations: Hands-on experience with the latest instruments and technologies in forensic investigation and non-destructive testing of concrete structures.
3. Exposure to Cutting-edge Technology: Stay updated on the latest developments in the field of forensic engineering and non-destructive testing of concrete structures.
4. Appropriate Decision Making: Provides guidance to professionals to understand the purpose and limitations of each

#### Key Topics of Discussion

- **General Concrete Distresses**
- **Techniques for Assessing Concrete Deterioration**
- **Non-destructive Testing in Concrete Structures**
- **Methodology for Forensic Investigation of Concrete Structures**
- **General Concrete Rehabilitation and Repair Solutions**

#### Non-Destructive Testing and Forensic Investigation

When specifying a project during construction or assessing the condition of an existing structure, assumptions are often made about the quality of the concrete. When these assumptions are incorrect, it can result in failure or extra cost. This highlights the importance of a proper structural investigation study by conducting non-destructive tests (NDT) and partially destructive tests to aid the assessor. with substantiating data to make appropriate decisions about the structural stability & integrity of the project for further use and for repair or rehabilitation actions where required.

A range of different tests can be used during or after the construction phase to investigate the condition of concrete and to predict the future performance of the structures. Some tests are in situ while others require samples for lab testing. The general structural concrete investigations tests are:

- 1.Rebound (Schmidt) hammer testing
- 2.Ultrasonic pulse velocity testing
- 3.Concrete GPR survey
- 4.Concrete cover and rebar detection by rebar scanning
- 5.Carbonation testing
- 6.Determination of chloride profile
- 7.Determination of sulphate content
- 8.Half-cell potential survey to detect corrosion potential
- 9.Electrical resistivity survey to reaffirm corrosion potential
- 10.Concrete core testing
- 11.Structural load testing
- 12.Petrographic examination

All commercial, residential, and industrial concrete assets must comply with structural safety regulations. The concrete assets exposed to extra load and severe exposure conditions must meet special design requirements such as be restraint to withstand foot-fall impacts and chemical contamination. Non-destructive testing can help detect flaws, discontinuities, wear, and distress within the structure and allow for the evaluation of the asset's quality, integrity, and strength properties without causing permanent damage.

## Pre-Conference Workshop

September

25

### STRUCTURAL CONDITION ASSESSMENT OF CONCRETE STRUCTURES USING NDT METHODS & REHABILITATION

#### Speakers

##### **Freddy Soman**

General Manager  
MatterLab

##### **Ranjit Peter**

Business Development Manager  
MatterLab

##### **Nandagopan**

Special Testing Engineer- Matterlab

##### **Muhammed Thaslim**

Field Engineer- MatterLab

##### **Jenittin Joseph**

BDE, MatterLab

**For Registration:** [Click here](#)

##### **Venue**

**Mar Baselios College of Engineering and Technology,**  
Nalanchira P.O., Thiruvananthapuram,  
Kerala 695015

##### **Registration Fee**

Pre-conference workshop : ₹1000  
(Welcome kit, Refreshments and Lunch)



## MATTER LAB

Matter Laboratory is exceptionally well equipped with a group of Engineers and Technical Professionals committed to provide best in class Engineering & Technical solutions across the region for construction and other industries through material testing, inspection and consultancy services. Activities of Matter Laboratory include wide range of construction materials testing, chemical analysis & microbiological examination of water, food & food products, environmental testing, metallurgical (steel) testing, non-destructive concrete testing and forensic investigation of concrete structures.



## MBCET

Mar Baselios College of Engineering and Technology (MBCET), Thiruvananthapuram, Kerala was established in the year 2002 by the Major Archdiocese of Trivandrum with the noble objective of providing quality technical and skill education based on fundamental human values. As a proud part of the Mar Ivanios Vidyannagar on the blessed Bethany Hills, deriving the inner strength of truth and goodness from the visionary Patrons, MBCET inspires the aspirations of generations of knowledge-seekers. Dedicated towards moulding morally upright, socially committed and intellectually trained Engineers, the College strives to realize its dreams. MBCET offers 7 Undergraduate programmes and 7 Postgraduate programmes in Engineering. The institution is an approved research centre of APJ Abdul Kalam Kerala Technological University. Five B.Tech programmes including Civil Engineering are accredited by NBA since 2016. The institution is also accredited by the NAAC with A grade since 2016. The institution was conferred with the "Autonomous" status by the University Grant Commission (UGC) in the year 2020.

## DEPARTMENT OF CIVIL ENGINEERING

The Civil Engineering branch was started in Mar Baselios College of Engineering and Technology in 2005. The department currently offers an undergraduate program in Civil Engineering leading to a B. Tech degree and two graduate programs leading to M.Tech in Structural Engineering (SE) and Transportation Engineering (TE). The faculties in the department are well experienced, skilled technical staff, and well-equipped laboratories. The strong and dedicated group of faculty takes up consultancy activities in various streams of Civil Engineering. The Civil Engineering Students Association (CESA) regularly organizes technical sessions and other activities. The Department has very active student chapters of ASCE, IPA and IGS.

## Contacts

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**Mar Baselios College of Engineering and Technology ( Autonomous)**

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