جمعية المهندسين البحرينية - مركز التدريب
Bahrain Society of Engineers –TRAINING CENTRE

27-29
OCTOBER
2026

Bahrain

Non-Destructive Testing
of Concrete Structures

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Course Overview

Non-Destructive Testing (NDT) techniques offer a convenient mean for assessing the condition and integrity of concrete without damaging or destroying the concrete. The various methods available play a significant role in diagnosing potential issues and guiding maintenance repair efforts.

Several NDT methods are available and more would no doubt continue to come into the market in the future with the increasing advancement of technology. Each method provides a certain insight about the hardened concrete but each has its own advantages and limitations.

Planning and conducting the NDT tests, operating the relevant equipment and interpreting the readings are tasks of a specialized nature. Accordingly, adequate training in all the relevant aspects of NDT testing is imperative.

Outcomes

Upon completion of the course, the participants will be acquainted with:

- The concept of NDT, its uses and applicable technical standards.
- Methods available to assess certain characteristics of concrete and their respective limitations.
- Equipment and instruments used in each of the NDT test methods.
- The operation of NDT equipment through practical demonstration and interpretation of the results.

Equipment and Instruments:

Equipment and Instruments for the following will be demonstrated. The participants will have an opportunity to have a hands-on experience of their operation with training by experienced technicians:

- Ultrasonic Pulse Velocity
- Corrosion Mapping
- Compressive Strength
- Cover Meter
- Pull off
- Pull Out
- Adhesion
- Initial Surface Absorption
- Insulation
- Crack Width
- Crack Depth
- Chloride Permeability
- Chloride Migration
- Pile Integrity and Length
- Dynamic Pile Testing

Who should attend

- Civil engineers
- Concrete technologists
- Material engineers
- Academics

Course Agenda

DAY ONE

08.00 - 08.30	**Registration**
08.30 - 09.30	**Introduction to NDT, available standards and qualifications/certification of laboratories and personnel**
09.30 - 10.00	**Categories of NDT Tests**
10.00 - 10.30	**Visual Inspection: Applications, instruments and procedure**
10.30 - 11.00	**Coffee Break**
11.00 - 11.40	**Semi-Destructive Tests** • Core test • Pull-out test • Pull-off test • Carbonation measurements
11.40 - 12.20	**Surface hardness/ Compressive tests** • Schmidt Hammer • Windsor probe
12.20 - 13.00	**Internal Flaws and Homogeneity Tests** • Ultra-Sonic Pulse Velocity • Impact Eco • Infrared Thermography • Pile Integrity
13.00 - 14.00	**Lunch**
14.00 - 16.30	**Laboratory session**

DAY TWO

08.30 - 09.10	**Magnetic and Electro-Magnetic Methods (1)** • Resistivity Test • Half-Cell Measurement Test • Maturity Test
09.10 - 09.50	**Magnetic and Electro-Magnetic Methods (2)** • Eddy current • Magnetic Influx Leakage • Reinforcement mapping
09.50 - 10.30	**Pile Testing** • Pile Integrity and Length • Dynamic Pile Testing
10.30 - 11.00	**Coffee Break**
11.00 - 11.40	**Chloride Permeability & Migration and Water Permeability**
11.40 -12.20	**Petrographic examination**
12.20 - 13.00	**NDT Assessment Strategies and Planning**
13.00 - 14.00	**Lunch**
14.00 - 16.30	**Laboratory session**

DAY THREE

08.30 - 13.00	**Hands-On Training on Using NDT Equipment**

Course Presenter

K.G. Baburajan is the Managing Director of Qatar Engineering Laboratories operating mostly in Qatar and Bahrain. He has decades of experience in concrete testing and the investigation of concrete deterioration and failure. During his long career, he managed teams responsible for providing material testing services to numerous large-scale construction projects in Bahrain and Qatar. The footprint of his experience extends to Saudi Arabia, UAE, Yemen and Kazakhstan. He is a member of the Technical Evaluation Committee of the International Accreditation Services which is one of the leading accreditation bodies in the United States.

Rajath Baburaj is the Operations Manager of Qatar Engineering Laboratories operating mostly in Qatar and Bahrain. In addition to overseeing all the operations of QEL, he spearheads QEL's concrete testing and geotechnical engineering teams. He holds a Master's degree from the University of Birmingham in Geotechnical Engineering. Over a period spanning almost 20 years, Rajath was involved in providing concrete testing services for a substantial number of large-scale construction projects in Bahrain and Qatar.

Certificate

A certificate of completion will be awarded to participants who diligently attend all the course sessions.

Venue

The lecture sessions will be held at the Training Center of the Bahrain Society of Engineers.

Fees

BD 245.00 (US$ 650) inclusive of course material, refreshments and lunch

Registration

Please register here **REGISTER** or

Places at the course are limited as the course includes field sessions on the operation of Geotechnical Site Investigation equipment and instruments. Therefore, Early application is therefore strongly recommended.

Further Information

For further information, please contact Dr. Jameel Alalawi, Tel. No. +973 17727100.