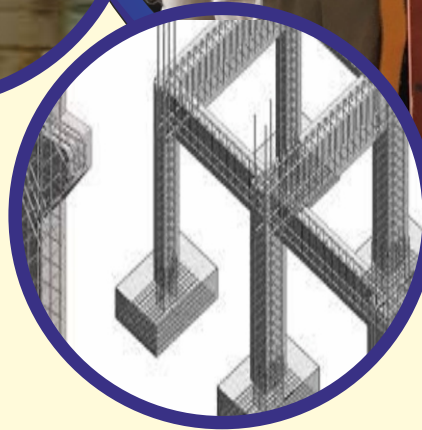




**INDIAN CONSULTING ENGINEERS**



### **Non Destructive Testing (NDT)**

**Structural Assessment and Condition Survey of Buildings**

**Pre-purchase Inspection and Evaluation of Buildings**

**Bridge Inspection and Serviceability Assessment**

**Seismic Fitness Assessment of Buildings and Structures**

**Design of Retrofit Works for Buildings, Bridges and Structures**

**Restoration of Fire Damaged Buildings**

**Construction Management & Structural Design**

**Inspection and Audit of Industrial Establishments**

**Tenders, Contracts & Arbitration**

**Indian Consulting Engineers (ICE) is an engineering solution provider in the field of structural strength & durability assessment; non-destructive testing (NDT); seismic evaluation.**

**We design cost effective retrofitting for enhancing serviceability, safety and durability of buildings, bridges and other structures. We also provide professional services in construction management, quality assurance, structural designing, tenders, contracts & arbitration matters.**

**Our team makes judicious use of state of the art testing equipment's, techniques and vast experience of senior civil engineering professionals for arriving at the optimal solutions.**

# NDT SOLUTIONS FOR STRUCTURAL INVESTIGATION, EVALUATION AND RESTORATION



## Structural health assessment of institutional, commercial and residential buildings, design of restoration solutions and Structural Stability Certification

The application area includes; condition assessment of old buildings, quality assurance of new buildings and forensic investigation as a part of quality audits.

Methodology of assessment and restoration scheme normally includes one or more of the following processes

- Visual inspection to ascertain visible deterioration and distress
- Detailed In-situ concrete quality test for compressive strength and uniformity
- In-situ reinforcement condition evaluations for probability and extent of corrosion
- Identification and mapping of structural cracks
- Identification of weak zones in the structures
- Detecting seepage/leakage and dampness using Thermal Imaging Technique
- Analysis of test data and assessment of strengthening required in the structure
- Design of strengthening scheme

## Bridge Inspection and Structural Assessment

Application area includes; Structural health assessment of distressed bridges, assessment of the structural and durability performance of existing old bridges, viaducts, flyovers, subways and culverts and footover bridges (FOB).

- Detecting distressed component & deteriorated area by visual inspection
- Detailed non destructive testing
- Indication of in situ condition of concrete and reinforcement
- Condition assessment of structural steel components, welded and riveted connections by DPT, MPT & Ultrasonic tests
- Load testing and deflection measurements using strain gauges and transducers

## Durability Assessment of Structures

Critical features of the structures affecting their durability are mapped and analysed by:

- Crack analysis by crackoscope and Ultrasonic equipment
- Determination of extent of corrosion in steel rebars
- Detecting location and extent of delamination
- Measurement of concrete cover by covermeters
- Carbonation depth measurement in concrete
- Concrete permeability measurement
- Chlorides & sulphates content and PH value determination
- Surface defects such as detecting the location and extent of honeycombing
- Prediction of mechanical properties of damaged concrete

## Pile Integrity Testing

We offer advanced non-destructive testing methods for the assessment of pile integrity. The test methods are applicable for quality assurance of new bored as well as cast-in-situ RCC piles.







## Pre-Purchase Inspection / Evaluation and Structural Stability Certification

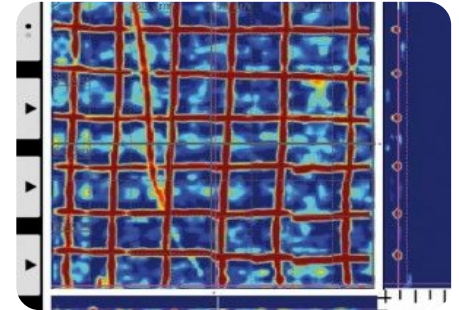
We provide Pre-purchase Technical Evaluation Services for all kind of properties for buyer's assurance of Safety, Durability and Value for money .We do:

- Evaluation of construction materials used
- Strength and Durability of 'As Built structure' through Forensic Investigations
- Inputs to the Quality Audits Team by providing data for Qualitative & Quantitative comparison of Concrete Grade, reinforcements, specifications of steel etc with respect to GFC drawings
- Listing out the Structural Deficiencies in the property
- Detecting seepage/leakage and dampness using Thermal Imaging Technique

## Concrete Imaging and Scanning

We provide cost-effective and Rapid Ground Penetrating Radar (GPR) scanning for sub-surface evaluation and mapping of concrete elements. Our GPR services can help customer with locating steel rebar in concrete structures, as well as locating ducts, conduits etc. at different depths. This is useful for :

- Concrete quality assessment
- Design of strengthening schemes
- Detecting delamination in RCC structures
- Planning of major drilling or cutting in RCC structure



## Corrosion Monitoring

We use advanced portable system for effective monitoring and measurement of corrosion probability (likelihood of corrosion) and corrosion rate by measuring

- Half-cell potential values
- Concrete surface electrical resistivity

Services also include recommendations of remedial measures to slow down the process of corrosion in the structures.



## Seismic Evaluation of Buildings and Strengthening

- Rapid Visual Screening of buildings to assess seismic damageability and rehabilitation needs and identifying the requirement for detailed evaluation
- Structural evaluation by seismic analysis, listing out deficiencies, design and methodology for remedial action
- To identify simplified retrofitting requirements
- Creation of as built structural drawing using various NDT techniques

## Construction Management Services for residential and service buildings

- Pre-construction planning including most optimum design & drawings
- Detailed construction planning, including flow of material, labour, equipment and supervision
- Layouts, ordering of materials, supervision of work and quality control
- Ensure best quality and durable construction by precise detailing and workmanship



## Tender, Contract & Arbitration Services

- Formulation of tender documents, Quality Assurance Plan and Estimation of bill of quantities ( BOQ)
- Contract Management for compliance of work standards, Time schedule and Cost control
- Contract Dispute Resolution: Conciliation and Arbitration

## Inspection and Audit of Industrial Establishments

We do comprehensive audit of existing industrial buildings, factories and warehouses which includes

- Structural Safety Audit
- Electrical Safety Audit

## Non Destructive Testing (NDT) facilities

- Rebound Hammer Test
- Ultrasonic Pulse Velocity (UPV)
- Ferro Scanning
- Ground Penetrating Radar (GPR)
- Concrete Core Cutting and Testing
- Crack Mapping
- Thermography
- Carbonation Test
- Concrete Resistivity
- Cut And Pull Out ( CAPO) Test
- Half Cell Potential Test
- Chlorides, Sulphates & PH Value Tests
- Dye Penetration Test ( DPT)
- Magnetic particle Test ( MPT)
- Pile Integrity Test
- Pile Load Test
- Slab Load Test
- Mortar Ratio Test

## Type of Customers and Area we work for are

- Civil Construction contractors
- Structural Repair and Retrofitting
- Modifications / Extensions of old structures
- Industries like manufacturing units, chemical industries
- Architects , design consultants
- Facility managers of commercial buildings
- Infrastructure maintenance
- Restoration of Fire Damaged Buildings
- Property managers of commercial buildings
- House & Commercial Complex owners & buyers
- Hospitality Industry
- Institutions like schools , hospitals

## Management

### BS Malik Director (Infrastructure)

Er. B.S Malik is BE (Civil) Hons, FIE. He is alumnus of Punjab Engineering college Chandigarh. He is Ex. Railway Chief Engineer, having vast experience in planning, design, Construction and maintenance of structures and Buildings. He also worked as Executive VP with a India's most reputed Infrastructure company Afcons Infrastructure Limited as head of their Railways and Metro Projects. He has keen interest in structural assessment, planning and design of structures. He is Fellow (IIE) & active member of various professional bodies like Institute of Bridge Engineers (IBE) Institute of Permanent Way Engineers (IPWE). He is in-charge for all types of infrastructure works related consultancy projects and PMC works undertaken by the Company in this field.

### PK Aggarwal Director (Buildings & PMC)

Er. PK Aggarwal is BE (Civil) Hons; MBA (Finance) & MBA (Pub Admn). He is alumni of PEC Chandigarh & MDI Gurgaon. He has over 36 years of experience (including international) in the Infrastructure and Building Construction sector. He served in CPWD for 24 years in various capacities in most parts of India before retiring voluntarily as Chief Engineer (Civil). There after he worked with reputed corporates - IRCON, Era Infra and C&C Constructions Ltd. for 11 years as VP; President and Vertical Head (Buildings). He is Chartered Engineer & Fellow (IIE), Sr. PE (ECI) & active member of various professional bodies like IBC; IRC; ICA; IGS; ISSMFE. He is in-charge of all types of buildings related consultancy projects and PMC undertaken by the Company.

### Vikram Kumar Jangra Director (Operations)

Er. Vikram Kumar Jangra is B Tech (Civil) Hons; PG (Construction Management), alumnus of Regional Engineering College, Kurukshetra. He has over 20 years of experience in the areas of Project execution and Quality Control of Civil Infrastructure projects, Concrete Technology, Non Destructive Evaluation, and Structural Repair & Retrofitting. He has worked for companies like Gammon India Ltd., L&T, UltraTech cement and ACC Ltd. He is a Chartered Engineer and Member (IIE); NRMCA certified Concrete Technologist; member of professional bodies like Indian Concrete Institute (ICI), Indian Society for Non-Destructive Testing (ISNT), Indian Institute of Bridge Engineers ( IIBE). He is in-charge of all type of operational activities undertaken by the company.

## Indian Consulting Engineers Pvt. Ltd.

585, Sector-27, Golf Course Road,  
Gurugram-122 002 (INDIA)

M : +91 (0) 919599453557 , 9833218839, 9717702772

E : info@icepl.in, vikram.kumar@icepl.in, bs.malik@icepl.in, pk.aggarwal@icepl.in

W: www.icepl.in

