What we do!
With the latest high end NDE equipment non destructive tests are performed to assess the various types of subsurface condition of concrete structures.

NDE Equipment

Ground Penetrating Radar (GPR):
- Uses radar pulses to image the subsurface
- Can detect rebar, concrete cover, changes in material properties, voids and cracks within structure

Impact Echo (IE):
- Measures the possible presence of delamination
- Creates an impact and records the reflected sound wave on test surface

iCOR:
- Corrosion evaluation and condition assessment of reinforced concrete structures

Schmidt Hammer:
- Measure the ratio between the rebound velocity and the impact velocity (Q)

Ultrasonic Tomography Device:
- Works based on the ultrasonic multichannel pulse echo technology using 8 channels

Infrared Camera:
- Building diagnostics, moisture inspection, energy losses in buildings
- Detects delamination and bubbles close to surface of FRP retrofitted concrete

SX-10 Trimble Scanner:
- Combines surveying and 3D scanning
- General and topographic surveys
- Power line inspection
- Tank calibration and dimension control

Case Study

Quantitative Non-Destructive Evaluation of Rebar Diameter and Corrosion Damage in Concrete Using GPR:
- To develop new methods for quantitative estimation of rebar diameter and loss of area of rebar due to corrosion using Ground Penetrating Radar (GPR)
- A major finding was, the maximum positive amplitude of the reflected wave form rebar was sensitive to size of the rebar
- Also a method was proposed to determine the amount of corrosion in the field

Quantitative Non-Destructive Evaluation of Fiber Reinforced Polymer (FRP) Laminate-Concrete Bond Strength:
- For determining the suitable non-destructive method to detect different parameters by determining the effect of each parameters on the bond strength between the concrete and the FRP
- To prepare a set of relationship graphs between each of the parameters and the bond strength
- The study demonstrate that all the NDE technics used were capable of identifying some or all the parameters that affect the bond strength

Scanning on St. Francis Bridge Deck:
- To determine rebar location, rebar clear cover, rebar spacing, water penetration, concrete deterioration and delamination in the deck
- This study indicates lower cover depth ranging from 1-2 in. occupying 29% of total area, also strong signs of delamination in different areas

Rebar diameter vs maximum normalized amplitude for numerical and experimental data
Amplitude vs rebar diameter at different depths [1 in. (25 mm), 2 in. (50 mm), and 3 in. (75 mm)]
Rebar diameter vs maximum normalized amplitude for numerical and experimental data

Levels of Delamination
- No Delimation
- Low Delimation
- Medium Delimation
- High Delimation
- Severe Delimation

[Graphs and images of NDE equipment and test results]