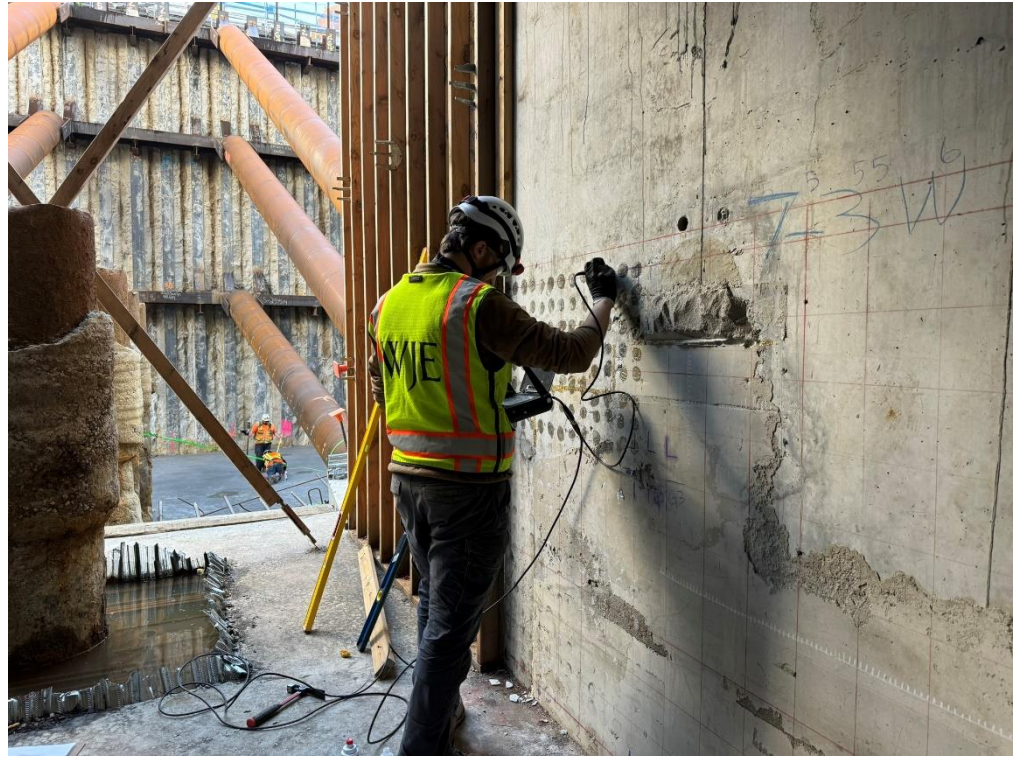


Nondestructive Evaluation



Testing Methods

- Corrosion Rate
- Half-cell Corrosion Potential
- Concrete Resistivity
- Reinforcement Cover Surveys
- Ground Penetrating Radar (GPR)
- Impact Echo (IE)
- Ultrasonic Pulse Velocity (UPV)
- Ultrasonic Shearwave Tomography (UST)
- Impulse-Response
- Infrared Thermography
- Ultrasonic Testing (UT) of Steel
- Eddy Current Flaw Detection
- Magnetic Particle (MP)
- Dye Penetrant (DP)

When there are uncertainties surrounding a structural, architectural, or materials issue, testing is a crucial step toward understanding its scope and source. Traditional testing methods, though often effective, can be physically intrusive, time-intensive, and costly. Alternately, nondestructive evaluation methods allow for the assessment of as-built conditions, material properties, and distress in a component or system without altering or damaging its form. Used in lieu of or in tandem with traditional testing, these methods can provide valuable information.

We have pioneered the use of nondestructive evaluation methods—such as ground penetrating radar, impact echo testing, ultrasonic shearwave tomography, and half-cell corrosion potential surveying—in civil, structural, and architectural investigations. Our depth and breadth of experience evaluating thousands of structures and materials using nondestructive methods are unmatched.

From identifying complex reinforcement placement and internal flaws in nuclear power structures to detecting air leakage and moisture infiltration in historic building envelopes, we offer a wide range of nondestructive evaluation options to efficiently diagnose issues that otherwise may require expensive and disruptive exploratory openings and testing to detect and correct.

In addition to minimizing costs and time spent out of service, nondestructive evaluation techniques allow our engineers to gain a broader understanding of a structure's condition and performance. We then use this information to develop better targeted and more effective recommendations for clients.



Nondestructive Evaluation

REPRESENTATIVE PROJECTS

- Black Hawk Bridge - Lansing, IA: Ultrasonic testing of fracture critical steel pins and eye bars
- Chino Wastewater Treatment Facility - Chino, CA: Shear wave ultrasonic tomography to determine the depth and prevalence of voids in concrete of digester under construction
- Federal Highway Administration - McLean, VA: Study of fiber-reinforced polymer strengthening methods using infrared thermography and establishment of Nondestructive Evaluation Validation Center
- Iowa DOT/Illinois DOT Multi-Phase Research Study: Evaluation of nondestructive testing capabilities for assessment of internal flaws and corrosion in slip-formed concrete barriers
- Kennedy Space Center, Vehicle Assembly Building - Titusville, FL: Corrosion assessment of concrete elements using corrosion rate, half-cell potential, and resistivity test methods
- MacArthur Maze - Oakland, CA: Impact echo and ultrasonic pulse velocity testing of fire-damaged concrete deck, piers, and seismically retrofitted columns
- Nuclear Power Plant, Essential Natural Draft Cooling Tower - Midwest, United States: Impulse response testing to evaluate internal delaminations in reinforced concrete veil
- Safeco Field - Seattle, WA: Ultrasonic inspection of steel connections in roof bogie axles
- Washington Monument - Washington, D.C.: Detection of seismic damage to stone elements using impact echo and shearwave tomography and identification of unknown support and connection details using ground penetrating radar

