

FHWA InfoTechnology™

FHWA InfoTechnology is a web portal that provides knowledge related to nondestructive evaluation and sensing technologies for highway infrastructure condition assessment. This problem-focused tool assists practicing transportation engineers in finding and using recommended technologies for the NDE of bridges, pavements, and tunnel components and for detecting and locating underground utilities. To access FHWA InfoTechnology, visit <https://infotechnology.fhwa.dot.gov/>.



Virtual Tour of FHWA NDE Laboratory

See the FHWA NDE Laboratory at Turner-Fairbank Highway Research Center like you have never seen it before—from your computer, tablet, or smartphone!

While on the virtual tour, you can open touchpoints to learn more about the laboratory and its equipment and groundbreaking studies.



FHWA NDE: <https://highways.dot.gov/turner-fairbank-highway-research-center/labs/nondestructive>

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Our Mission

The mission of the FHWA NDE Laboratory is to conduct practical research, development, and implementation of nondestructive testing systems and technologies to improve the assessment of the condition of the Nation's highway infrastructure assets. The NDE Laboratory is a resource for FHWA, State DOTs, industry, and academia to provide unbiased expertise on applicable NDE technologies to evaluate the condition of our Nation's highway infrastructure.

Contact Us

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Cover image source: FHWA.

Different types of NDE testing, including an aerial drone, a van with an antenna system, and a structural crawler, all sending data back to a lab. ▶



FHWA Advanced Sensing Technology & Nondestructive Evaluation Program

Turner-Fairbank
Highway Research Center



U.S. Department of Transportation
Federal Highway Administration

NDE

FHWA Advanced Sensing Technology & Nondestructive Evaluation Program



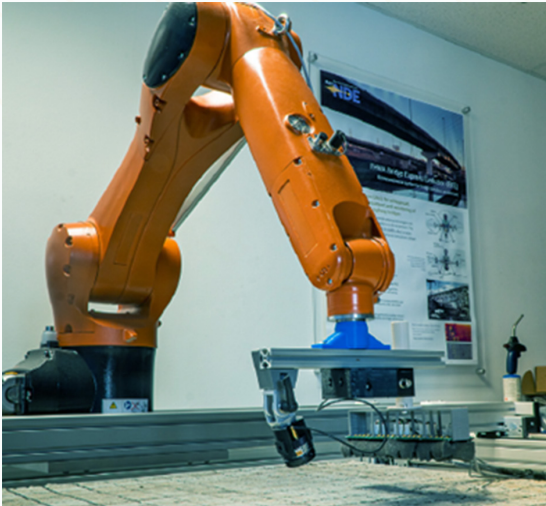
Turner-Fairbank
Highway Research Center



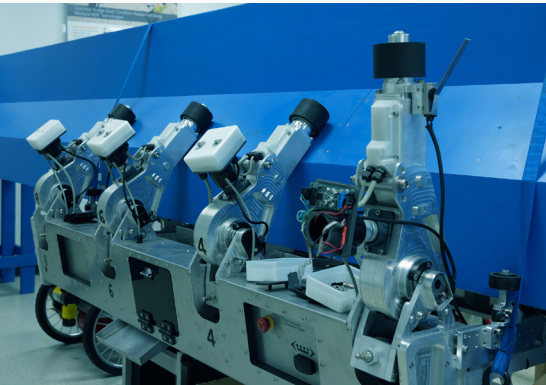
U.S. Department of Transportation
Federal Highway Administration

What Is NDE?

Nondestructive Evaluation (NDE) is a means of assessing the condition of various structural components of inservice and newly constructed highway infrastructure assets—pavement, bridges, and tunnels—without damaging them.



Source: FHWA.
Robotic arm used to automate data collection in the laboratory.



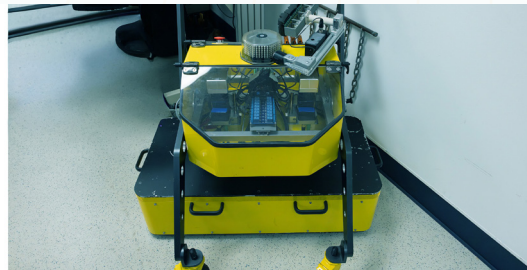
Source: FHWA.
A magnetic flux leakage rover with robotic arms.

About the FHWA NDE Laboratory

The FHWA NDE Laboratory is a world-class research and testing facility dedicated to advancing the application of NDE technologies for assessing the condition of highway infrastructure. The laboratory supports FHWA's mission by developing, evaluating, and deploying innovative NDE methods and tools to improve the safety of bridges, pavements, and tunnels.

Equipped with state-of-the-art instrumentation and testbeds, the NDE Laboratory conducts research on emerging sensing technologies, data analytics, robotics and automation, artificial intelligence, and field-deployable inspection systems. Its work enables the integration of NDE into asset management practices, and helps transportation agencies make data-driven maintenance and preservation decisions.

In addition to research and technology development, the NDE Laboratory provides technical assistance and forensic investigations to support FHWA field offices, State departments of transportation (DOT), and other stakeholders. These efforts ensure that NDE technologies are effectively implemented in real-world applications.



Source: FHWA.
An air-coupled acoustic array system.

Laboratory Capabilities

- Ground-penetrating radar testing.
- Infrared thermography testing.
- Impact echo testing.
- Surface wave testing.
- Structural health monitoring.
- Numerical simulation.
- Automated data collection, analysis, interpretation, visualization, and fusion.
- Conventional, phased array, and full matrix captures for ultrasonic testing.
- Conventional and advanced eddy current testing.
- Acoustic emission.
- Noncontact and remote sensing.

Laboratory Specimens

An extensive collection of concrete and steel specimens from decommissioned bridges and commercial NDE equipment can be accessed at the NDE Laboratory upon request.



Source: FHWA.
Test specimens from a decommissioned bridge.