



All photos source: FHWA.¹

The Federal Highway Administration (FHWA) developed InfoTechnology™ to fill the knowledge gap between highway infrastructure practitioners/asset managers dealing with highway infrastructure performance challenges and researchers developing and refining nondestructive evaluation (NDE) technologies to support their efforts.

The InfoTechnology web portal was developed and is maintained by the FHWA Office of Infrastructure Research and Development. FHWA encourages the application of NDE technologies to better understand the performance of highway infrastructure, which is critical for efficient transportation asset management. As highway agencies increasingly incorporate NDE technologies to assess infrastructure, this web portal will:

- Provide information on the available technologies for detecting and characterizing a specific issue.
- Allow for a better understanding of the technologies and methods of analysis.
- Describe limitations and advantages of NDE methods.



Users can click on these icons on the InfoTechnology web portal to explore NDE technologies by asset type.

InfoTechnology is a web-based portal that provides concise information about NDE technologies for the assessment of highway infrastructure. It has an intuitive and user-friendly interface that provides an overview of specific NDE technologies. A description of the technology, the engineering principles used for the method, and application of the technology, analysis procedures, limitations, and advantages are displayed in an easy-to-read format. The information is supplemented with images, diagrams, tables, and references. Filters enable users to quickly identify and access information on NDE technologies related to bridges, pavements, and tunnels.

The FHWA InfoTechnology web portal assists practitioners in using NDE technologies for bridge, pavement, and tunnel infrastructure components.

FIND TECHNOLOGY

The Find Technology feature allows users to narrow their searches by selecting the type of asset (bridge, pavement, or tunnel), materials, structural element, and the target of the investigation.

For instance, if users are interested in accessing information regarding the recommended NDE technologies for detecting corrosion of reinforcement bars in concrete bridge decks, they may select the following:

- Asset Type: Bridge.
- Material: Concrete.
- Structural Element: Deck.
- Target of Investigation: Rebar Corrosion.

Upon selection of a particular technology, the information on the technology, the target of the investigation, and a description of the structural element to be assessed are displayed on the screen.

LIBRARY

The library feature provides a Glossary of terms and a list of Acronyms and Abbreviations that are used within the web portal. Practitioners and asset managers can use the library search tool to find information on unfamiliar technical terms and acronyms used in the field of NDE. The search capabilities of the library facilitate accessing the information on technical terms.

Source: FHWA.¹

Asset Type				
Bridge	Technology	Target of Investigation	Structural Element	
Pavements Tarnel	Electrical Resistivity (ER) Excer PDI			
Material	Target of Investigation			
nn allan san	Electrical resistivity can be used to de	atermine the following:		
 Concrete Steel 	Reinforced concrete's susceptibility to corrosion. Regions susceptible to moisture and chickle penetration.			
Structural Element	Resistivity measurement can be used in tandem with other corrosion assessment techniques such as half-cell potential, which identifies corrosion activity, to provide a more comprehensive assessment of corresion.			
Deck				
Girder - Concrete	The presence and concentration of water, chlorides, saits, and other corrosive substances significantly contribute to a corrosive environment in concrete. The electrical resistivity			
Target of Investigation	method can be used to evaluate the existence of such corrosive environment. Damaged and cracked areas, due to increased porosity, will form preferential paths for fluid and ion flow. This will lead to higher mointure and chicride concentrations and higher concerne electrical contactivity, manifesting as a lower electrical resistivity. The lower the electrical resistivity of			
Concrete cover depth Cracking Determination	In the metal in highline description of the constraints and ingriture description of descript			
 Deterioration 	Electrical Resistivity (KQ*cm)	Cerrosion Rate		
O Differential Settlement	< 5	Very High		
O Honeycombing	5 - 10	High		
 Overlay Debonding 	10 - 20	Moderate - Low		
Rebar Corrosion	> 20	Low		
Rebar Locating and Mapping Thickness Measurement Voids	The Wenner probe is a commonly us concrete bridge deck.	ed electrical resistivity probe (figure 1). The probe ha	s four electrodes. Figure 2 shows electrical resistivity	measurement being conducted on a
Applicable Technologies	Shi i b	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		
Electrical Resistivity (ER) Gahanostatic Pulse Measurement (GPM) (denvination and corronism) Half-Cell Potential (HCP) Unear Potercation (LPR) Magnetic Flux Loskage (MFL)				

Source: FHWA.1

REFERENCE

¹ Federal Highway Administration. n.d. "FHWA InfoTechnology" (web page). https://infopave.fhwa.dot.gov/infotechnology, last accessed October 13, 2021.

CUSTOMER SUPPORT



For more information about FHWA InfoTechnology, contact the Long-Term Infrastructure Performance Customer Support Service Center at LTIP@dot.gov.

FHWA-HRT-22-009 HRDI-30/11-21 (WEB)E

Recommended citation: Federal Highway Administration, FHWA InfoTechnology[™] (Washington, DC: 2022) https://doi.org/10.21949/1521695

