



**IRF**  
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# Bridge Management & Inspection

*Expert training by professionals, for professionals*

**Milan, Italy**  
**July 14-19, 2024**



# Workshop



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## Background

Bridges are some of a road agency's most expensive assets to build and maintain. However, too often, their maintenance needs are neglected and/or deferred, which can have disastrous consequences, as we have witnessed recently with several high-profile bridge failures around the world. That's why it is essential for road agencies to have a robust bridge management and inspection program in place that ensures the safety of the traveling public and maximizes the value of these vital assets.

This course presents best practices and state-of-the-art methods for effective bridge maintenance, management, and inspection. A major part of the course focuses on bridge repair and rehabilitation issues, bridge management systems, the needs of highway agencies, and bridge-related safety and risk issues. It also addresses best practices for bridge inspections and how to utilize new technologies for accurate results in a timely and cost-efficient manner.

The contents of the course are based on international standards as well as the hands-on experience of the course instructors.

## Learning Objectives

- ✓ Better understanding each of the aspects of Existing Bridge Inventory and Inspection and their related functions
- ✓ Recognize the main structural problems of bridges;
- ✓ Gain knowledge of the main techniques of structural investigation and structural monitoring;
- ✓ Understand the importance of good bridge inspection practices in order to achieve optimal bridge management targets;
- ✓ Acquire the most up-to-date techniques for bridge inspection;
- ✓ Learn about bridge management optimization and tools for resource allocation;
- ✓ Understand predictive bridge maintenance and its possible applications.

## Target Audience

- ✓ Road & Bridge Authorities & Operators
- ✓ Bridge Design Consultants
- ✓ Bridge Program Managers
- ✓ Designers
- ✓ Transportation Planners
- ✓ Bridge Management Engineers
- ✓ Bridge Preservation & Maintenance Engineers
- ✓ Bridge Inspectors

## Instructor



**Dr. Amin K. Akhnouk**

Dr. Amin K. Akhnouk is Professor in the Construction Management Department at East Carolina University (ECU). Prior to joining ECU in August 2017, Dr. Akhnouk worked as an Assistant and Associate Professor at the Construction Management & Civil and Construction Engineering at the University of Arkansas at Little Rock, a Senior Design Engineer at Dar El-Handasa, and an Engineer at Orascom Engineering, Cairo, Egypt. Dr. Akhnouk's main research interests are in the fields of construction materials, with an emphasis on concrete and asphalt. Dr. Akhnouk has an extensive teaching portfolio with more than 14 undergraduate and graduate level courses, including Structure Analysis, Mechanics of Materials, Soil Mechanics and Foundations, Reinforced and Prestressed Concrete, Flexible and Rigid Pavement Design, Sustainability in Construction, and Construction Quality. Dr. Akhnouk is a registered Professional Engineer in the States of Arkansas and North Carolina and a registered Associate Constructor by the American Institute of Constructors, Virginia, USA. Dr. Akhnouk has more than 75 refereed publications in prestigious journals and local and international conferences. Dr. Akhnouk is a member of the American Society of Civil Engineers, American Concrete Institute, and Precast/Prestressed Concrete Institute. Dr. Akhnouk is a Fellow of the International Road Federation (IRF) and the National Aeronautics and Space Administration (NASA).

## Registration (No Hotel Included)

- 2,500 USD IRF Members /Groups of 3 or more)
- 3,000 USD Non IRF Members

**Seminar Hotel: TBD**

**Registration: <https://www.irf.global/event/brm24-ws-milan2/>**

**For any support, please contact [melabyad@irf.global](mailto:melabyad@irf.global)**

# Schedule

Sunday to Friday (9:00 AM – 4:00 PM)

## **Day 1: Introduction to Bridge Management and Inspection**

- **Morning Session:**
  - Course Introduction and Overview
  - Fundamentals of Bridge Management Systems
  - Overview of Bridge Inspection: Types, Importance, and Objectives
- **Afternoon Session:**
  - Key Components and Terminology of Bridges
  - Introduction to Common Bridge Types and Materials

## **Day 2: Bridge Inspection Techniques and Procedures**

- **Morning Session:**
  - Standard Procedures for Bridge Inspection
  - Tools and Equipment Used in Bridge Inspection
- **Afternoon Session:**
  - Hands-on Demonstration: Basic Inspection Techniques
  - Workshop: Identifying Common Structural Issues

## **Day 3: Structural Analysis and Load Rating**

- **Morning Session:**
  - Fundamentals of Structural Analysis for Bridges
  - Understanding Load Rating and its Importance
- **Afternoon Session:**
  - Case Study: Structural Failures and Lessons Learned
  - Exercise: Calculating Load Rating for a Sample Bridge

## **Day 4: Maintenance, Repair, and Rehabilitation Strategies**

- **Morning Session:**
  - Developing Effective Maintenance Plans for Bridges
  - Strategies for Repair and Rehabilitation
- **Afternoon Session:**
  - Cost-Efficient Maintenance and Repair Techniques
  - Group Activity: Planning a Rehabilitation Project

## **Day 5: Advanced Inspection Techniques**

- **Morning Session:**
  - Introduction to Advanced Inspection Methods (e.g., Non-Destructive Testing)
  - Utilizing Technology in Bridge Inspection (e.g., Drones, Sensors)
- **Afternoon Session:**
  - Field Exercise: Applying Advanced Inspection Techniques
  - Analyzing Data from Advanced Inspection Methods

## **Day 6: Bridge Management Systems and Course Conclusion**

- **Morning Session:**
  - Understanding and Implementing Bridge Management Systems
  - Course Review and Key Takeaways
  - Final Assessment/Quiz
- **Field Trip**

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**IRF**<sup>®</sup>  
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## **International Road Federation**

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