



Bridge Inspection Webinar Series

October 2021

Complete Package Description

This webinar series is designed to give the railway professional an understanding of what is involved in inspecting bridges, culverts and tunnels to ensure they are safe for the passage of trains. These webinar modules will give a basis for knowing when to ask an expert about a potential concern. The instructors teach the participant how to recognize early signs of issues that, if not addressed, can develop into serious problems. The Bridge Inspection Webinar is based on the New AREMA Bridge Inspection Handbook Second Edition© published in 2017. Instructors are experienced railroad bridge professionals.

PDH Credits: 13

On Demand access will be available after the live Webinar. Attendees can earn PDH credits (based on your State's approval) once the presentations are completed at your convenience. The PDH Certificate will be available for download on the Platform. PowerPoint slides will be available for download on the Platform before the Webinar begins.

Date Time (ET)	Module Number	Title Description	Instructor*	PDH
October 20 1:00 – 3:30 PM	Module 1	<p>Bridge Safety Management Programs & The Inspector</p> <p>The Bridge Safety Management Programs & the Inspector section introduces the entire AREMA Railway Bridge Inspection course. It looks at the regulations and requirements that a railroad bridge inspector works under and then discusses the safety practices and tools the inspector commonly uses in meeting those requirements.</p> <p>It addresses the requirements in Canada and the US – noting where the requirements are similar and where some of the differences exist between the US's Federal Railway Administration and Transport Canada Requirements.</p> <p><i>Learning Outcome</i> This section is intended to explain why we do our inspections, the importance of the work we do and some of the tools, equipment and safety methods we use to complete those inspections.</p>	McCammion	2.5
	Module 1 Continued	Site Conditions	Hill	

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		<p>This module section explores practices and procedures concerning the areas around and approaching each bridge to be inspected.</p> <p><i>Learning Outcomes:</i></p> <ul style="list-style-type: none"> • What is there to see? • What does what we see mean? • How do we identify things? • Why do we identify things? • What is around the bridge that may affect it? <p>Site Conditions information is intended as one of the basic tools any inspector will use to begin the inspection. In addition, it takes a close look at practices and procedures concerning the areas around and approaching each bridge to be inspected.</p>		
	Module 1 Continued	<p>Loads and Forces</p> <p>This section is intended for anyone who is inspecting railroad bridges or assessing damage to bridges.</p> <p><i>Learning Outcomes:</i></p> <p>The loads and forces inspection section will familiarize the student with:</p> <ul style="list-style-type: none"> • Common railroad bridge terminology • Understand how loads and forces are applied to railroad bridges • Understand how loads and forces impact different bridge types • Inform inspectors on what to look for on different types of bridges 	Davis	
October 21 1:00 – 3:00 PM	Module 2	<p>Timber Bridge and Deck Inspection</p> <p><i>Learning Outcomes:</i></p> <p>This module is designed to provide an explanation of why we have timber bridges of the components, spans and look we have today, the properties of the material, decay prone areas, and causes of deterioration. In looking at bridges and decks, the common use of treated timber in railroad bridges is explored to understand the critical components to inspect.</p> <p>Typical nomenclature is used, starting with recommendations from the AREMA manual and then discussing “local” terms that are used. The clues that a timber bridge can provide an</p>	McCammon	2.0

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		<p>inspector are discussed and when repairs are made, what those repairs typically consist of and what the inspector needs to be observing in after-repair inspections. Typical conditions of treated timber open and ballast decks are provided including inner-guardrail inspection.</p> <p>A typical inspection process is provided using a top-down approach to summarize the material presented and give the attendee an idea of how the process would work when applied in the field.</p>		
<p>October 25 1:00 – 3:15 PM</p>	<p>Module 3</p>	<p>Concrete Masonry & Structure Inspection</p> <p>This module takes a close look at practices and procedures when evaluating the condition of bridges and drainage structures comprised of concrete or masonry construction. Regardless of the specific material type, many common defects are found. And specific to the culvert construction material, there are defects to be identified, categorized, and documented by the bridge inspector.</p> <p>This module addresses:</p> <ul style="list-style-type: none"> • The safety aspects of a Bridge Inspection with regards to the Bridge Inspector, the Public and the Railroad. • The proper techniques for accessing inspecting and documenting the condition of structures. <p>This module is intended for anyone who may be responsible for the condition evaluation and documentation of bridges and drainage structures subjected to the railroad environment.</p> <p><i>Learning Outcomes:</i> Students completing this module should be familiar with the types of bridges and drainage structures, locations and uses of concrete and masonry and were commonly utilized, defects found at these types of structures and how to document the location and significance or severity of the defect found on or around these types of structures supporting or near railroads.</p>	<p>Shafer</p>	<p>2.25</p>
<p>October 26 1:00 – 3:15 PM</p>	<p>Module 4</p>	<p>Steel Bridge Inspection</p> <p><i>Learning Outcomes:</i></p> <ul style="list-style-type: none"> • The typical elements that make up a steel bridge 	<p>Davis</p>	<p>2.25</p>

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		<ul style="list-style-type: none"> Steel properties, member shapes and fastening systems used on steel bridges as well as typical defects The types of floor systems and bearings used along with typical defects found on these bridges The types of steel bridges along with their unique characteristics and where defects generally occur. 		
	Module 4 Continued	Movable Bridge Inspection <i>Learning Outcomes:</i> <ul style="list-style-type: none"> The three types of movable bridges and how they carry dead and live loads Mechanical and electrical inspection of movable bridge drive and safety systems and where defects typically occur Specific requirements of swing bridge inspection Specific requirements of bascule bridge inspection Specific requirements of vertical lift bridge inspection Specific requirements for fender system and navigation aid inspection The types of steel bridges along with their unique characteristics and where defects generally occur. 	Davis	
October 27 1:00 – 3:00 PM	Module 5	Tunnel Inspection <i>Learning Outcomes:</i> This module section is important because most Bridge Inspectors spend time inspecting the tunnels that may be on their territory. Presented are basic items with a key recommendation that if something is observed that is of concern, a tunnel expert be brought in. A brief description of basic tunnel construction is provided for a basic understanding of why we have tunnels shaped and made of the materials we have today. The different types of tunnels are presented along with key items to observe for each type. Basic inspection checklists are used along with photos of typical tunnel components to aid the inspector in understanding the conditions and observations that should be made.	McCammon	2.0
	Module 5 Continued	Culvert Inspection The Culvert Inspection Module takes a close look	Shafer	

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		<p>at practices and procedures when evaluating the condition of a culvert drainage structure. Regardless of the material type, many common defects are found. And specific to the culvert construction material, there are defects to be identified, categorized, and documented by the bridge inspector.</p> <p>This module addresses:</p> <ul style="list-style-type: none"> • The safety aspects of a Bridge Inspection with regards to the Bridge Inspector, the Public and the Railroad. • The proper techniques for accessing inspecting and documenting the condition of structures. <p>This module is intended for anyone who may be responsible for the condition evaluation and documentation of culverts subjected to the railroad environment.</p> <p><i>Learning Outcomes:</i> Students completing this module should be familiar with the types of culverts, materials commonly utilized, defects found at these types of structures and how to document the location and significance or severity of the defect found on or around culvert structures supporting or near railroads.</p>		
<p>October 28 1:00 – 3:00 PM</p>	<p>Module 6</p>	<p>Scour This module section serves as an introduction to the concepts and impacts of scour and erosion on railroad structures and right of way.</p> <p><i>Learning Outcomes:</i></p> <ul style="list-style-type: none"> • Describes how flow causes scour and erosion • Provides guidelines for scour and erosion inspection • Defines and illustrates leading types of scour and erosion problems at railroads • Explains how to identify each type • Lays a groundwork for what types of countermeasures can be applied <p>This module is intended as an introduction for inspectors to aid their understanding of to recognize the impact of moving water on railroads.</p>	<p>Hill</p>	<p>2.0</p>

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	Module 6 Continued	<p>Emergency Bridge Inspection This module section takes a close look at practices and procedures when responding to an event which may have affected the intended carrying capacity of your bridge to safely carry the loads for which it is intended.</p> <p><i>Learning Outcomes:</i></p> <ul style="list-style-type: none"> • The safety aspects of an Emergency Bridge Inspection with regards to the Bridge Inspector, the Public, and the Railroad. • The proper responses for a Bridge Inspector to bridges that may have been damaged by Impacts, Fires, Earthquakes and Floods. <p>This module is intended for anyone who may be responding to an emergency event and for those who may need to better understand what that bridge inspector is facing.</p>	Hostler	
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***Instructor Biographies:**

Peter Davis, PE has over 44 years of experience in the inspection, assessment, design and maintenance of complex Infrastructure systems. The first 20 years of his career was in emergency service contracting for heavy industry including steel and Paper mills, Railroads, Movable Bridges, Hydraulic structures and Maintenance facilities.

Stephen Hill, PE is a railroad engineering professional with nearly 50 years of experience in track design, construction, inspection and maintenance and bridge maintenance, construction and inspection. He has held various key field and office positions for Class 1 railroads, Short Lines and Commuter operations.

James Lee Hostler, PE is a 1977 Texas Tech University graduate with his bachelor's degree in Civil Engineering. He has 37 years of class one Railroad experience with the Burlington Northern Santa Fe and its predecessor road, the Atchison, Topeka, and Santa Fe.

Donald McCammon, P.E., Vice President and Sr. Project Manager, a nearly 24-year HDR Employee, has over 46 years of experience in transportation engineering, focusing on freight railroad bridge and track design, construction, and maintenance including 11 ½ years with a Class 1 Railroad.

Mark Shafer, PE is a 1991 graduate of Iowa State University earning BSCE and MSCE degrees. He has over 30 years of structural engineering and bridge inspection experience. He has worked for and led bridge design and inspection teams and has specialized in bridge condition assessment and rehabilitation design.

This webinar series is comprised of recommended practices and relevant accumulated knowledge from subject matter experts in the railroad industry. It is not intended as a regulatory qualification.

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		Regular
*Pricing:	Members:	\$950.00
	Non-Members:	\$1150.00
	Life Members:	\$450.00
	Student Members:	\$475.00

*Webinar fees are non-refundable and by registering you agree to this policy.

Included in the price is the Bridge Inspection Handbook, 2nd Edition and will be downloadable.

Webinar Time is Eastern Time and will be conducted on the Zoom platform.