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By John F. Unsworth



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Design of Modern Steel Railway Bridges By John F. Unsworth

Perhaps the first book on this topic in more than 50 years, **Design of Modern Steel Railway Bridges** focuses not only on new steel superstructures but also outlines principles and methods that are useful for the maintenance and rehabilitation of existing steel railway bridges. It complements the recommended practices of the American Railway Engineering and Maintenance-of-way Association (AREMA), in particular *Chapter 15-Steel Structures in AREMA's Manual for Railway Engineering* (MRE). The book has been carefully designed to remain valid through many editions of the MRE.

After covering the basics, the author examines the methods for analysis and design of modern steel railway bridges. He details the history of steel railway bridges in the development of transportation systems, discusses modern materials, and presents an extensive treatment of railway bridge loads and moving load analysis. He then outlines the design of steel structural members and connections in accordance with AREMA recommended practice, demonstrating the concepts with worked examples.

Topics include:

- A history of iron and steel railway bridges
- Engineering properties of structural steel typically used in modern steel railway bridge design and fabrication
- Planning and preliminary design
- Loads and forces on railway superstructures
- Criteria for the maximum effects from moving loads and their use in developing design live loads
- Design of axial and flexural members
- Combinations of forces on steel railway superstructures

Copiously illustrated with more than 300 figures and charts, the book presents a clear picture of the importance of railway bridges in the national transportation system. A practical reference and learning tool, it provides a fundamental understanding of AREMA recommended practice that enables more effective design.



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Editorial Review

About the Author

Since completion of a B.Eng. in Civil Engineering in 1981 and M.Eng. in Structural Engineering in 1987, Mr. Unsworth has held Professional Engineering and Management positions concerning track, bridge and structures maintenance, design and construction at Canadian Pacific Railway.

He is currently Vice President, Structures of the American Railway Engineering and Maintenance-of-way Association (AREMA) and has served as Chairman of AREMA Committee 15 – Steel Structures. In addition, he is current Chair of the Association of America Railroads (AAR) Bridge Research Advisory Group and is a member of the National Academy of Sciences Transportation Research Board (TRB) Steel Bridges Committee. Mr. Unsworth is also a member of the Canadian Society for Civil Engineering (CSCE) and International Association of Bridge and Structural Engineers (IABSE). He is a licensed Professional Engineer in six Canadian Provinces.

He has written papers and presented at AREMA Annual Technical Conferences, the International Conference on Arch Bridges, TRB Annual Meetings, the CSCE Bridge Conference and the International Bridge Conference (IBC). He has also contributed to the fourth edition of the Structural Steel Designer's Handbook and the International Heavy Haul Association (IHHA) Best Practices books.

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