

Matthew G. Dick

PE

Head of Rail Strategy and Development



Matthew Dick, PE, is a railway industry leader with 25 years of experience spanning freight and passenger rail. As Head of Rail Strategy and Development, Dick is responsible for developing and executing strategic growth plans for the Railroad Practice, identifying new clients and market opportunities, and expanding technical consulting services at Engineering Systems Inc. (ESi).

Throughout his career, he has built a diverse technical foundation in operations, rolling stock, track, vehicle dynamics, component failure analysis, and rail technology. He has performed derailment, collision, and fatality incident investigations for every Class I railroad, many shortline railroads, and passenger transients.

Over the past 15 years, he led major technology deployments such as the delivery of North America's first Autonomous Track Geometry Measurement System (ATGMS) and deploying the V/TI Clusters Artificial Intelligence algorithm, which both have significantly reduced track-caused derailments.

Dick is an active rail community contributor, having completed two industry committee chair roles and delivered more than 90 conference presentations, webinars, and industry publications. He holds 11 patents for automated railway inspection technologies.

Education

MS, Mechanical Engineering. University of Nebraska. 2005

BS, Mechanical Engineering. University of Nebraska. 2003

Licenses & Certifications

- Nebraska P.E. License E-12961 2009 | Expires: 12/31/2027

Positions Held

Engineering Systems, Inc. (ESi)

- Head of Rail Strategy and Development, 2025 – Present

ENSCO Inc., Vienna, Virginia

- VP, Strategy & Business Development, 2024 – 2025

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ESi Atlanta

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Peachtree Corners, GA 30092

Areas of Specialization

- Derailment Investigation & Prevention
- Track, Rolling Stock & Operations for Freight/Passenger Railways
- Railroad Wheels, Axles & Bearings
- Rail & Track Components
- Failure Analysis
- Fatality Incident Investigations
- Regulatory Compliance
- Railway Inspection & Automation Technology

ENSCO Inc., Springfield, Virginia

- Chief of Strategy & Development, 2022 – 2024
- Division Manager, ENSCO Rail, 2021 – 2022
- Deputy Division Manager, ENSCO Rail, 2016 – 2021
- Director, Business Development, ENSCO Rail, 2014 – 2016

ENSCO Inc., Charlottesville, Virginia

- Staff Technical Manager, ENSCO Rail, 2010 – 2014

Rail Sciences Inc., Omaha, Nebraska

- AVP, Engineering and Dynamic Studies, 2007 – 2010
- Manager, Mechanical Research, 2005 – 2007
- Intern, 2002, 2003, 2004

University of Nebraska–Lincoln, Omaha, Nebraska

- Research Assistant, 2000 – 2005

Professional Affiliations/Honors

AREMA

- Chair Emeritus, Committee 2, 2022 – 2024
- Chair, Committee 2, 2019 – 2022
- Vice-Chair, Committee 2, 2016 – 2019
- Secretary, Committee 2, 2013 – 2016
- Led two committee meetings per year
- Led education seminars, both in-person and web
- Led 213-page rewrite of the AREMA Manual for Railway Engineering (MRE) Chapter 2 – Track Measurement and Assessment Systems

ASME Rail Transportation Division

- Advisory Chair, 2013 – 2014
- Division Chair, 2012 – 2013
- Papers Chair, 2010 – 2012
- Asst. Paper Chair, 2008 – 2010

- Led two conferences per year, including financial management and organizing supplier booths, technical presentations, hotel arrangements, and contracts
- Peer reviewer for numerous papers on all railway topics

Publications

“Hands-On Experience Building at the TTC,” **M.G. Dick** and G. Holtman, Railway Track and Structures Magazine, September 2025.

“Derailment Investigation, Prevention, and Detection in Rail Transportation,” G. Holtman and **M.G. Dick**, Railway Age Magazine, August 2025.

“Importance of Rolling Stock Health to Track Health,” **M.G. Dick**, Railway Track and Structures Magazine, July 2025.

“Full Charge Ahead: Advancements in Battery Electric Trainsets for Rail Transit,” **M.G. Dick**, Mass Transit Magazine, May–June 2025.

“Battery Safety in Rail Transportation,” **M.G. Dick**, Railway Age Magazine, February 2025.

“Dual-Mode Motive Power: Advancing Sustainability and Efficiency at the Transportation Technology Center,” **M.G. Dick**, Mass Transit Magazine, January–February 2025.

“The Future of Railway Passenger Research,” **M.G. Dick** and R. Pena, Mass Transit Magazine, November–December 2024.

“Custom Track Geometry Exceptions,” **M.G. Dick**, Railway Track and Structures Magazine, November 2024.

“Electrified Rail Vehicle Testing at the Transportation Technology Center,” **M.G. Dick** and R. Lang, Railway Age Magazine, October 2024.

“Advancing Heavy Haul Railroad Research and Safety: The Role of the Next Generation Transportation Technology Center,” **M.G. Dick**, International Railway Journal, October 2024.

“Expanded Blast & Fire Testing at the Transportation Technology Center,” P. Rakoczy and **M.G. Dick**, Railway Age Magazine, August 2024.

“Pioneering Sustainability with Stadler’s FLIRT H2 Setting Guinness World Record at the Transportation Technology Center,” **M.G. Dick** and S. Bernsdorf, Railway Age Magazine, June 2024.

“The Transportation Technology Center: A Hub for Advanced Passenger Train Testing,” **M.G. Dick**, Mass Transit Magazine (Online), April 2024.

“Software Resiliency Through Quality Controls,” **M.G. Dick**, Railway Track and Structures Magazine, May 2024.

“Facility for Underground Rail Security and Safety Testing,” P. Rakoczy and **M.G. Dick**, Railway Age Magazine, April 2024.

“AI and What it Means for the Rail Industry,” **M.G. Dick** and S. Sandikcioglu, Railway Track and Structures Magazine, March 2024.

“Impact Wall Visit During TTC Tour,” **M.G. Dick** and P. Rakoczy, Railway Age Magazine, February 2024.

“Addressing the Critical Need for Specialized Training in Lithium-Ion Battery and Hydrogen Railway Vehicle Emergencies,” L. Nelson and **M.G. Dick**, Railway Age Magazine, December 2023.

“Rail Crashworthiness for Alternative Fuel Powered Vehicles,” P. Rakoczy and **M.G. Dick**, Railway Age Magazine, August 2023.

“Case Study of Autonomous Track Inspection Technology with MARTA and FTA to Gain Enhanced Safety and Asset Management,” **M.G. Dick**, J. Zahaczewski, A. Joshi, and R. Wagley, Railway Track and Structures Magazine, July 2023.

“Railway Cybersecurity Regulations and Standards,” **M.G. Dick**, J. Baca, and E. Plemons, Railway Age Magazine, June 2023.

“Fabrication and Testing of the Prototype Fortis Railcar for Transporting Spent Nuclear Fuel and High-Level Radioactive Waste,” P. Rakoczy and **M.G. Dick**, Railway Age Magazine, April 2023.

“Cybersecurity and What It Means to Track, Structures, and Signal,” **M.G. Dick**, J. Baca, and E. Plemons, Railway Track and Structures Magazine, January 2023.

“Autonomous Track Inspection is Already Here,” **M.G. Dick**, International Railway Journal, August 2022.

“Automating Geometry Measurement Offers Real-Time Benefits,” **M.G. Dick**, International Railway Journal, August 2016.

“Assessing the Effects of Coupler Force and Train Speed on Freight Car Curving Resistance,” **M.G. Dick**, G.P. Wolf, and J.S. Chislett, Interface Journal, October 2008.

“Development of a Predictive Life Tool for Tapered Roller Bearings Using Measured Residual Stress and Retained Austenite Data,” B.M. Wilson and **M.G. Dick**, Powder Diffraction Journal, Vol. 23, No. 2, pp. 118–120, June 2008.

Presentations

“Advances in Track and Rolling Stock Condition Monitoring,” **M.G. Dick**, Proceedings of the 2025 Asia Rail Pacific Conference, 2025.

“Center for Hands-on Training and Learning Environment for the Next Generation Railroad Technical Workforce - HTL Center,” **M.G. Dick**, Proceedings of the 2024 University of Delaware Big Data Conference, 2024.

“Vehicle-Track Measurement Technologies,” **M.G. Dick**, Proceedings of the 2024 Wheel Rail Interface Seminar, 2024.

“Importance of Railway Academic Research and Partnership with the Transportation Technology Center,” **M.G. Dick**, Plenary Session of the 2024 Joint Rail Conference, 2024.

“Vehicle-Track Measurement Technologies,” **M.G. Dick**, Proceedings of the 2023 Wheel Rail Interface Seminar, 2023.

“Automated Track Geometry Inspection: Current State of the Art,” **M.G. Dick**, Proceedings of the 2023 Wheel Rail Interface Seminar, 2023.

“Vehicle-Track Measurement Technologies,” **M.G. Dick**, Proceedings of the 2022 Wheel Rail Interface Seminar, 2022.

“Track Inspection Best Practices for Semi-High Speed Rail Operations,” **M.G. Dick**, Proceedings of the 2022 IPWE Seminar, 2022.

“Case Study on Ultrasonic Rail Flaw,” **M.G. Dick**, Proceedings of the 2022 RT&S Virtual Conference on Track Geometry and Rail Flaw Detection, 2022.

“Vehicle-Track Measurement Technologies,” **M.G. Dick**, Proceedings of the 2021 Wheel Rail Interface Seminar, 2021.

“Autonomous Track Geometry Case Study,” **M.G. Dick**, Proceedings of the 2021 RT&S Virtual Conference on Track Geometry and Rail Flaw Detection, 2021.

“Autonomous Vehicle-Track Interaction Monitoring and Railway Infrastructure Maintenance,” S. Jovanovic, P. Tešić, and **M.G. Dick**, Proceedings of the 2020 ICRI Conference, 2020.

“Vehicle-Track Measurement Technologies,” **M.G. Dick**, Proceedings of the 2019 Wheel Rail Interface Seminar, 2019.

“Machine Vision Asset Inventory and Innovative Condition Monitoring,” **M.G. Dick**, G. Thiel, Z. Liu, and J.v.d. Westhuizen, Proceedings of the 2019 TRB Annual Meeting, 2019.

“Automated Track Inspection for Winter Conditions,” M. Foot, **M.G. Dick**, J. Furlong, J.v.d. Westhuizen, and R. Coakley, Proceedings of the 2019 International Heavy Haul Association Conference, 2019.

“Machine Vision and Strip Chart Assessment of Rolling Contact Fatigue,” **M.G. Dick**, S. Yilma, and Z. Liu, Proceedings of the 2018 Wheel Rail Interface Seminar, 2018.

“Vehicle-Track Measurement Technologies,” **M.G. Dick**, Proceedings of the 2019 Wheel Rail Interface Seminar, 2018.

“Quantifying Rail Surface Condition using Machine Vision,” **M.G. Dick**, S. Yilma, and Z. Liu, Proceedings of the 2018 TRB Annual Meeting, 2018.

“Quantifying Rail Surface Condition using Machine Vision,” **M.G. Dick**, S. Yilma, and Z. Liu, Proceedings of the 2018 AREMA Conference, 2018.

“Condition Monitoring: Technology for Assessing Vehicle and Track Performance,” **M.G. Dick**, Proceedings of the 2017 Wheel Rail Interface Seminar, 2017.

“Machine Vision Approach to Characterizing and Quantifying RCF,” **M.G. Dick** and S. Yilma, Proceedings of the 2017 ICRI Mini-Conference, 2017.

“Condition Monitoring: Technology for Assessing Vehicle and Track Performance,” **M.G. Dick**, Proceedings of the 2016 Wheel Rail Interface Seminar, 2016.

“Comparison of Predicted and Actual Rail Temperature,” **M.G. Dick** and R. Bruzek, Proceedings of the 2016 Wheel Rail Interface Seminar, 2016.

“Application of Track Data Management in an Australian Heavy Haul Railroad,” **M.G. Dick** and M. Fletcher, Proceedings of the 2015 University of Delaware Big Data Mini Conference, 2015.

“Implementation and Use of Class I Railroad Autonomous Track Geometry Measurement System,” R. Gagne, **M.G. Dick**, and R.K. Maldonado, Proceedings of the 2015 AREMA Annual Conference, 2015.

“V/TI Monitor Cluster Analysis and Implementation,” D. Clark, **M.G. Dick**, and R.K. Maldonado, Proceedings of the 2015 AREMA Annual Conference, 2015.

“Implementation of Rail Track Condition Monitoring System,” M. Fletcher and **M.G. Dick**, Proceedings of the 2015 International Heavy Haul Association Conference, 2015.

“Expanded Use and Evaluation of Autonomous Vehicle/Track Interaction Equipment,” R.K. Maldonado and **M.G. Dick**, Proceedings of the 2015 International Heavy Haul Association Conference, 2015.

“Role of Machine Vision in Monitoring Vehicle and Track Condition,” **M.G. Dick**, Proceedings of the 2015 Wheel Rail Interface Seminar, 2015.

“Railway Data and Decision Management,” **M.G. Dick**, Proceedings of the 2014 University of Delaware Big Data Mini Conference, 2014.

“Wayside, Track, and Onboard Measurement Systems,” **M.G. Dick**, Proceedings of the 2014 Wheel Rail Interface Seminar, 2014.

“Paperless Track Inspection Record Keeping and Compliance,” T. Price, R. Blair, M. Roney, **M.G. Dick**, S. Sharma, A. Ozkaya, and D. Graves, Proceedings of the 2012 ASME Rail Transportation Division Fall Technical Conference and Data Management Symposium, 2012.

“Rail Stability,” **M.G. Dick**, Proceedings of the 2012 Wheel Rail Interface Seminar, 2012.

“Data and Decision Management,” **M.G. Dick**, Proceedings of the 2012 Wheel Rail Interface Seminar, 2012.

“ARTC V/TI Monitor Trial Results and Analysis,” **M.G. Dick**, C. Crump, R. Taylor, and R. Mullen, Proceedings of the 2012 Conference on Railway Engineering (CORE), 2012.

“VAMPIRE SD70MAC Locomotive Model and Validation,” **M.G. Dick** and B. Sperry, Proceedings of the 2011 North American Vampire User Day, 2011.

“Development and Use of V/TI Monitors for Autonomous Track Inspection,” L. Biess and **M.G. Dick**, Proceedings of the 2011 AREMA Annual Conference, 2011.

“Track Geometry: How it Influences Vehicle Dynamics,” **M.G. Dick**, Proceedings of the 2011 Wheel Rail Interface Seminar, 2011.

“Updates on Autonomous Track Inspection Technology,” **M.G. Dick**, J. Stevens, and E. Sherrock, Presentation at the 2010 AREMA Committee Two – Track Measurement Fall Meeting, 2011.

“V/TI Monitor Advances using VAMPIRE,” **M.G. Dick**, Proceedings of the 2010 North American Vampire User Day, 2010.

“Philosophy of Derailment Primary Cause Finding,” **M.G. Dick**, Proceedings of the 2010 Wheel Rail Interface Seminar, 2010.

“Effective Friction Control for Optimization of High Speed Rail Operations,” D. Eadie, K.D. Oldknow, Y. Oka, P. Klauser, **M.G. Dick**, and R. Hui, Proceedings of the 2010 ASME Joint Rail Conference, 2010.

“Case Studies Determining the Effects of Track Stiffness on Vehicle Dynamics,” S. Lu, H. Duan, C. Greisen, S. Farritor, R. Arnold, C. Hogan, **M.G. Dick**, M. Fateh, and G. Carr, Proceedings of the 2010 ASME Joint Rail Conference, 2010.

“Development of Unattended Track Geometry Measurement System,” G. Scott, E. Chillingworth, and **M.G. Dick**, Proceedings of the 2010 ASME Joint Rail Conference, 2010.

“Performance Based Car Characteristics,” **M.G. Dick**, Oral Presentation at the 2009 ASME Rail Transportation Division Fall Technical Conference, 2009.

“Case Histories of Center Bowl Modeling Complexities,” W. Rosenberger and **M.G. Dick**, Proceedings of the 2009 North American Vampire User Day, 2009.

“Cumulative Track Geometry Degradation Modeling using VAMPIRE Automation,” **M.G. Dick**, Proceedings of the 2009 North American Vampire User Day, 2009.

“Using Track Geometry Car Data for Rail Vehicle Dynamics Modeling,” **M.G. Dick**, Presentation at the 2009 AREMA Committee Two – Track Measurement Fall Meeting, 2009.

“Evaluation of Forces on Derailed Wheels Using Soil Cutting Theory,” D.R. Krueger and **M.G. Dick**, Proceedings of the 2009 ASME-IEEE-ASCE Joint Rail Conference, 2009.

“Predicted Wheel Wear and RCF Performance Using Vampire Automation Routines,” P.J. Rogers and **M.G. Dick**, Proceedings of the 2009 ASME-IEEE-ASCE Joint Rail Conference, 2009.

“Track Stiffness Measurement with Implementation to Rail/Vehicle Dynamic Simulation,” C.J. Hogan, **M.G. Dick**, S. Lu, S. Farritor, and R. Arnold, Proceedings of the 2008 AREMA Annual Conference, 2008.

“Characterization of Vertical Split Rim Wheel Failures,” **M.G. Dick**, H.C. Iwand, D.S. McConnell, J.L. Magner, and T.W. Snyder, Proceedings of the 2008 BNSF Wheel Shelling/Failure Study Group, 2008.

“Computational Analysis of Coupler Force and Train Speed Influences on Freight Car Curving Resistance,” **M.G. Dick**, G.P. Wolf, and J.S. Chislett, Proceedings of the 2008 Wheel Rail Interface Seminar, 2008.

“Predicting Railway Tapered Roller Bearing Life Using Measured Residual Stress and Retained Austenite Data,” B.M. Wilson, **M.G. Dick**, and S.H. Magner, Proceedings of the 2008 ASME-IEEE-ASCE Joint Rail Conference, 2008.

“Derailment Risk Prediction and Maintenance Planning Based on Actual Track and Vehicle Performance Measurements,” **M.G. Dick** and G.P. Wolf, Oral Presentation at the 2008 ASME-IEEE-ASCE Joint Rail Conference, 2008.

“Development of a Predictive Life Tool for Tapered Roller Bearings Using Measured Residual Stress and Retained Austenite Data,” B.M. Wilson and **M.G. Dick**, The International Centre for Diffraction Data, 2008, and Proceedings of the 2007 Denver X-ray Conference, 2007.

“Roller Loads and Hertzian Contact Stress Modeling in Railcar Bearings using Finite Element Analysis,” **M.G. Dick** and B.M. Wilson, Proceedings of the 2007 Fall Technical Conference ASME RTD/TTCI Roller and Journal Bearing Symposium, 2007.

“Experimental Measurement and Finite Element Modeling of Screw Spike Fatigue Loads,” **M.G. Dick**, D.S. McConnell, and H.C. Iwand, Proceedings of 2007 ASME/IEEE Joint Rail Conference, 2007.

“The Effect of Sustained Wheel Impacts on Tapered Roller Bearing Cages,” **M.G. Dick** and B.M. Wilson, Proceedings of 2006 ASME Joint Rail Conference (JRC 2006), 2006.

“Railcar Wheel Flat Impact Analysis,” **M.G. Dick** and J.D. Reid, Proceedings of 2004 ASME International Mechanical Engineering Congress and Exposition (IMECE 2004), 2004.