



## *Publications Listed in Chronological Order*

[2019](#) [2018](#) [2017](#) [2016](#) [2015](#) [2014](#) [2013](#) [2012](#) [2011](#) [2010](#) [2009](#) [2008](#) [2007](#) [2006](#) [2005](#) [2004](#) [2003](#) [2002](#) [2001](#)  
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### **2019**

Canga Ruiz, A.E., Y. Qian, J.R. Edwards and M.S. Dersch. 2019. Analysis of the temperature effect on concrete crosstie flexural behavior. *Construction and Building Materials*. 196: 362-374. doi:10.1016/j.conbuildmat.2018.11.065.

Dick, C.T., D. Mussanov, G.S. Roscoe and T-Y. Chang. 2019. Relative capacity and performance of fixed and moving block control systems on North American freight railway lines and shared passenger corridors. *Transportation Research Record: Journal of the Transportation Research Board*. 2673: 1-12. doi:10.1177/0361198119841852.

Edwards, J.R., M.S. Dersch and A. de O. Lima. 2019. Concrete Crossties: A New Paradigm for Design. *Railway Track and Structures*. February 25, 2019.

Qian, Y., M.S. Dersch, Z. Gao and J.R. Edwards. 2019. Railroad infrastructure 4.0: Development and application of an automatic ballast support condition assessment system. *Transportation Geotechnics*. 19: 19-34. doi:10.1016/j.trgeo.2019.01.002.

### **2018**

Cesar Bastos, J.C., A. Alvarez Reyes, M.S. Dersch, J.R. Edwards and C.P.L. Barkan. 2018. Laboratory Characterization of Structural Capacity of North American Heavy Haul Concrete Crossties. In: *Proceedings of Transportation Research Board 97th Annual Conference*. Washington, DC. doi:10.1177/0361198118782250.

Cesar Bastos, J.C., A. Alvarez Reyes, M.S. Dersch, J.R. Edwards and C.P.L. Barkan. 2018. Laboratory characterization of structural capacity of North American heavy haul concrete crossties. *Transportation Research Record: Journal of the Transportation Research Board*. 2672 (10): 116-124. doi:10.1177/0361198118782250.

Cesar Bastos, J.C., J.R. Edwards, M.S. Dersch and B.O. Andrawes. 2018. Laboratory analysis of track gauge restraining capacity of center-cracked railway concrete sleepers with various support conditions. *Engineering Failure Analysis*. 94: 354-363. doi:10.1016/j.engfailanal.2018.08.018.

Dick, C.T., I.A. Atanassov, F.B. Kippen III and D. Mussanov. 2018. Relative train length and the infrastructure required to mitigate delays from operating combinations of normal and over-length freight trains on single-track railway lines in North America. *Journal of Rail and Rapid Transit*. 1-12. doi:10.1177/0954409718809204.

Dick, C.T., P. Lautala and B.W. Schlake. 2018. STEM Outreach to K-12 Students: The Root of Railway Engineering Education. In: *Proceedings of the American Railway Engineering and Maintenance-of-Way Association Annual Conference*. Chicago, IL, September 2018.

Edwards, J.R., A.A. Cook, M.S. Dersch and Y. Qian. 2018. Quantification of rail transit wheel loads and development of improved dynamic and impact loading factors for design. *Journal of Rail and Rapid Transit, Part F*. 232 (10): 2406-2417. doi:10.1177/0954409718770924.

Edwards, J.R., A.E. Canga Ruiz, A.A. Cook, M.S. Dersch and Y. Qian. 2018. Quantifying bending moments in rail-transit concrete sleepers. *Journal of Transportation Engineering, Part A: Systems*. 144 (3): 04018003. doi:10.1061/JTEPBS.0000125.

Li, W., G.S. Roscoe, Z. Zhang, M.R. Saat and C.P.L. Barkan. 2018. Comparison of Loaded and Empty Unit Train Derailment Characteristics. In: *Proceedings of Transportation Research Board 97th Annual Conference*. Washington, DC. doi:10.1177/0361198118810780.

Lima, A. de O., M.S. Dersch, E. Tutumluer, J.R. Edwards and Y. Qian. 2018. Support Condition and Traffic Loading Patterns Influencing Laboratory Determination of Under Ballast Mat Bedding Modulus and Insertion Loss. In: *Proceedings of Transportation Research Board 97th Annual Conference*. Washington, DC. doi:10.1177/0361198118793501.

Lima, A. de O., M.S. Dersch, E. Tutumluer, J.R. Edwards and Y. Qian. 2018. Support condition and traffic loading patterns influencing laboratory determination of under-ballast mat bedding modulus and insertion loss. *Transportation Research Record: Journal of the Transportation Research Board*. 2672 (10): 74-84. doi:10.1177/0361198118793501.

Lima, A. de O., M.S. Dersch, Y. Qian, E. Tutumluer and J.R. Edwards. 2018. Laboratory fatigue performance of under-ballast mats under varying loads and support conditions. *Journal of Rail and Rapid Transit, Part F*. doi:10.1177/0954409718795920.

Lin, X., J.R. Edwards, M.S. Dersch, T.A. Roadcap and C.J. Ruppert, Jr.. 2018. Load quantification of the wheel-rail interface of rail vehicles for the infrastructure of light rail, heavy rail, and commuter rail transit. *Journal of Rail and Rapid Transit*. 232 (2): 596-605. doi:10.1177/0954409716684266.

Quiros Orozco, R.J., J.R. Edwards, Y. Qian and M.S. Dersch. 2018. Quantification of Loading Environment and Flexural Demand of Prestressed Concrete Crossties under Shared Corridor

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Sehitoglu, T., D. Mussanov and C.T. Dick. 2018. Operational Schedule Flexibility, Train Velocity and the Performance Reliability of Single-Track Railways. In: *Proceedings of Transportation Research Board 97th Annual Conference*. Washington, DC.

Yin, H., Y. Qian, J.R. Edwards and K. Zhu. 2018. Investigation of Relationship between Train Speed and Bolted Rail Joint Fatigue Life Using Finite Element Analysis. In: *Proceedings of Transportation Research Board 97th Annual Conference*. Washington, DC. doi:10.1177/0361198118784382.

Zhang, L., S.G. Chadwick and C.P.L. Barkan. 2018. Highway-Rail Grade Crossing Incident Consequence Analysis. In: *Proceedings of Transportation Research Board 97th Annual Conference*. Washington, DC.

## **2017**

Alemazkour, N., C.J. Ruppert, Jr. and H. Meidani. 2017. Survival analysis at multiple scales for the modeling of track geometry deterioration. *Journal of Rail and Rapid Transit*. 232 (3): 842-850. doi:10.1177/0954409717695650.

Canga Ruiz, A.E., M.V. Csenge, J.R. Edwards, Y. Qian and M.S. Dersch. 2017. Quantification of Rail Displacements Under Light Rail Transit Field Loading Conditions. In: *Proceedings of the 2017 Joint Rail Conference*. Philadelphia, PA. doi:10.1115/JRC2017-2277.

Cesar Bastos, J.C., A. Alvarez Reyes, M.S. Dersch and J.R. Edwards. 2017. Development of a New Load-deflection Method for Characterization of North American Heavy Haul Concrete Sleepers. In: *Proceedings of the 11th International Heavy Haul Association Conference*. Cape Town, South Africa.

Chadwick, S.G., C.P.L. Barkan and M.R. Saat. 2017. Quantitative Prediction of the Risk of Heavy Haul Freight Train Derailments due to Collisions at Level Crossings. In: *Proceedings of the 11th International Heavy Haul Association Conference*. Cape Town, South Africa.

Cook, A.A., J.R. Edwards, M.V. Csenge and Y. Qian. 2017. Quantification of the Concrete Crosstie Load Environment for Light Rail Transit Infrastructure. In: *Proceedings of Transportation Research Board 96th Annual Conference*. Washington, DC, January 2017.

Edwards, J.R., M.S. Dersch and R.G. Kernes. 2017. *Improved Concrete Crosstie and Fastening Systems for US High Speed Passenger Rail and Joint Corridors: Volume 1 – Project Summary Report*. Federal Railroad Administration, Washington, DC.

Edwards, J.R., M.S. Dersch and R.G. Kernes. 2017. *Improved Concrete Crosstie and Fastening Systems for US High Speed Passenger Rail and Joint Corridors: Volume 2*. Federal Railroad Administration, Washington, DC.

Gao, Z., M.S. Dersch, Y. Qian and J.R. Edwards. 2017. *Effect of Track Conditions on the Flexural Performance of Concrete Sleepers on Heavy-haul Freight Railroads*. In: *Proceedings of the 11th International Heavy Haul Association Conference*. Cape Town, South Africa.

Gao, Z., M.S. Dersch, Y. Qian, M.V. Csenge and J.R. Edwards. 2017. *Use of Ballast Support Condition Back-Calculator for Quantification of Ballast Pressure Distribution Under Concrete Sleepers*. In: *10th International Conference on the Bearing Capacity of Roads, Railways and Airfields*. Athens, Greece.

Holder, D.E., M.V. Csenge, Y. Qian, M.S. Dersch and J.R. Edwards. 2017. *Laboratory investigation of the SkI-style fastening system's lateral load performance under heavy haul freight railroad loads*. *Engineering Structures*. 139 (2017): 71-80. doi:10.1016/j.engstruct.2017.02.039.

Holder, D.E., Y. Qian, M.S. Dersch and J.R. Edwards. 2017. *Lateral Load Performance of Concrete Sleeper Fastening Systems Under Non-ideal Conditions*. In: *Proceedings of the 11th International Heavy Haul Association Conference*. Cape Town, South Africa.

Kippen III, F.B. and C.T. Dick. 2017. *Incremental Capacity in Transitioning from Double to Triple Track on Shared Freight and Commuter Rail Corridors in North America*. In: *Proceedings of the International Association of Railway Operations Research (IAROR) 7th International Conference on Railway Operations Modelling and Analysis*. Lille, France.

Lautala, P. and C.T. Dick. 2017. *Railway Engineering Education Symposium: Evolving to rebuild a growing rail academic community*. *Transportation Research Record: Journal of the Transportation Research Board*. 2608: 96-104. doi:10.3141/2608-11.

Lima, A. de O., M.S. Dersch, Y. Qian, E. Tutumluer and J.R. Edwards. 2017. *Laboratory Evaluation of Under-ballast Mat Effectiveness to Mitigate Differential Movement Problem in Railway Transition Zones*. In: *10th International Conference on the Bearing Capacity of Roads, Railways and Airfields*. Athens, Greece. doi:10.1201/9781315100333-279.

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Lin, C-Y., C.P.L. Barkan and M.R. Saat. 2017. Semi-quantitative Risk Assessment of Adjacent Track Accidents on Shared-use Rail Corridors. In: *Proceedings of the 11th International Heavy Haul Association Conference*. Cape Town, South Africa.

Liu, X., M.R. Saat and C.P.L. Barkan. 2017. Freight-train derailment rates for railroad safety and risk analysis. *Accident Analysis and Prevention*. 98 (2017): 1-7. doi:10.1016/j.aap.2016.09.012.

Lovett, A.H., C.T. Dick and C.P.L. Barkan. 2017. Predicting the Cost and Operational Impacts of Slow Orders on Rail Lines in North America. In: *Proceedings of the International Association of Railway Operations Research (IAROR) 7th International Conference on Railway Operations Modelling and Analysis*. Lille, France.

Lovett, A.H., C.T. Dick and C.P.L. Barkan. 2017. Predicting the Occurrence and Cost of Temporary Speed Restrictions on North American Freight Lines. In: *Proceedings of the 11th International Heavy Haul Association Conference*. Cape Town, South Africa.

Mussanov, D., N. Nishio and C.T. Dick. 2017. Building Capacity Through Structured Heavy Haul Operations on Single-track Shared Corridors in North America. In: *Proceedings of the 11th International Heavy Haul Association Conference*. Cape Town, South Africa.

Mussanov, D., N. Nishio and C.T. Dick. 2017. Delay Performance of Different Train Types Under Combinations of Structured and Flexible Operations on Single-Track Railway Lines in North America. In: *Proceedings of the International Association of Railway Operations Research (IAROR) 7th International Conference on Railway Operations Modelling and Analysis*. Lille, France.

Pengelly, S. and C.T. Dick. 2017. Economics and planning of short haul and short line railway intermodal rail service: Lessons from past and current operations. *Transportation Research Record: Journal of the Transportation Research Board*. 2608 (2017): 105-114.

Sehgal, L., A. Garg, V. Sehgal and W. Buttlar. 2017. Hot Mix Asphalt in Ballasted Railway Track: International Experience and Inferences. In: *Institution of Permanent Way Engineers International Technical Seminar*. Mumbai, India.

Shih, M-C., C.T. Dick and C.P.L. Barkan. 2017. A Decision Support Screening Approach for Railway Infrastructure Capacity Planning on Single-track Lines. In: *Proceedings of the International Association of Railway Operations Research (IAROR) 7th International Conference on Railway Operations Modelling and Analysis*. Lille, France.

Shih, M-C., C.T. Dick and C.P.L. Barkan. 2017. A Parametric Model of the Train Delay Distribution to Improve Planning of Heavy Haul Cycle Times. In: *Proceedings of the 11th International Heavy Haul Association Conference*. Cape Town, South Africa.

Shih, M-C., C.T. Dick, D. Mussanov and C.P.L. Barkan. 2017. A Parametric Model of the Train Delay Distribution Based On Traffic Conflicts. In: *Proceedings of the International Association*

*of Railway Operations Research (IAROR) 7th International Conference on Railway Operations Modelling and Analysis*. Lille, France.

Van Dyk, B.J., J.R. Edwards, M.S. Dersch, C.J. Ruppert, Jr. and C.P.L. Barkan. 2017. Evaluation of dynamic and impact wheel load factors and their application in design processes. *Journal of Rail and Rapid Transit*. 231 (1): 33-43. doi:10.1177/0954409715619454.

Wandelt, S., Z. Wang and X. Sun. 2017. Worldwide railway skeleton network: Extraction methodology and preliminary analysis. *IEEE Transactions on Intelligent Transportation Systems*. 18 (8): 2206-2216. doi:doi 10.1109/TITS.2016.2632998.

Wang, B.Z., C.P.L. Barkan and M.R. Saat. 2017. Principal Factors Contributing to Heavy Haul Freight Train Safety Improvements in North America: A Quantitative Analysis. In: *Proceedings of the 11th International Heavy Haul Association Conference*. Cape Town, South Africa.

Zhu, K., Y. Qian, J.R. Edwards and B.O. Andrawes. 2017. Finite element analysis of rail end bolt-hole and fillet stress on bolted rail joints. *Transportation Research Record: Journal of the Transportation Research Board*. 2607: 33-42.

## **2016**

Cesar Bastos, J.C., M.S. Dersch, J.R. Edwards and B.O. Andrawes. 2016. Determination of the Influences of Deteriorated Track Conditions on Gauge Widening in Concrete Sleeper Track. In: *Proceedings of the 11th World Congress on Railway Research*. Milan, Italy. June 2016.

Csenge, M.V., Y. Qian, M.S. Dersch and J.R. Edwards. 2016. Resilient Concrete Crosstie and Fastening System Designs for Light Rail, Heavy Rail, and Commuter Rail Transit Infrastructure. In: *Proceedings of the 11th World Congress on Railway Research*. Milan, Italy.

Dick, C.T. and D. Mussanov. 2016. Operational schedule flexibility and infrastructure investment: capacity trade-off on single-track railways. *Transportation Research Record: Journal of the Transportation Research Board*. 2546: 1-8. doi:10.3141/2546-01.

Dick, C.T., L. Sehgal, C.J. Ruppert, Jr. and S. Gujuran. 2016. Superelevation Optimization for Mixed Freight and Higher-Speed Passenger Trains. In: *Proceedings of the American Railway Engineering and Maintenance-of-Way Association Annual Conference*. Orlando, FL.

Gao, Z., H. Wolf, M.S. Dersch, Y. Qian and J.R. Edwards. 2016. Field Measurements and Proposed Analysis of Concrete Crosstie Bending Moments. In: *Proceedings of the American Railway Engineering and Maintenance-of-Way Association Annual Conference*. Orlando, FL.

Ghosh, A., J.R. Edwards and M.S. Dersch. 2016. Effect of Design Rail Cant on Concrete Crosstie Rail Seat Pressure Distribution. In: *Proceedings of the 2016 Joint Rail Conference*. Columbia, SC. doi:10.1115/JRC2016-5793.

Greve, M.J., M.S. Dersch, J.R. Edwards, C.P.L. Barkan, J. Mediavilla and B. Wilson. 2016. Effect of particle intrusion on rail seat load distributions on heavy haul freight railroads. *International Journal of Rail Transportation.* 4 (2): 98-112. doi:10.1080/23248378.2016.1157048.

Holder, D.E., Y. Qian, M.V. Csenge, J.R. Edwards, M.S. Dersch and B.J. Van Dyk. 2016. Comparison of Lateral Load Performance of Concrete Crosstie Heavy Haul Fastening Systems. In: *Proceedings of the American Railway Engineering and Maintenance-of-Way Association Annual Conference.* Orlando, FL.

Lin, C-Y., M.R. Saat and C.P.L. Barkan. 2016. Fault tree analysis of adjacent track accidents on shared-use rail corridors. *Transportation Research Record: Journal of the Transportation Research Board.* 2546: 129-136. doi:10.3141/2546-16.

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Sogin, S.L., Y-C. Lai, C.T. Dick and C.P.L. Barkan. 2016. Analyzing the transition from single- to double-track railway lines with nonlinear regression analysis. *Journal of Rail and Rapid Transit.* 230 (8): 1877-1889. doi:10.1177/0954409715616998.

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Wolf, H., Y. Qian, J.R. Edwards, M.S. Dersch and D.A. Lange. 2016. Temperature-induced curl behavior of prestressed concrete and its effect on railroad crossties. *Construction and Building Materials.* 115 (2016): 319-326. doi:10.1016/j.conbuildmat.2016.04.039.

Yue, Y., S. Wang, L. Zhou, L. Tong and M.R. Saat. 2016. Optimizing train stopping patterns and schedules for high-speed passenger rail corridors. *Transportation Research Part C*. 63 (2016): 126-146. doi:10.1016/j.trc.2015.12.007.

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Zhu, K., J.R. Edwards, Y. Qian and B.O. Andrawes. 2016. Finite element analysis of the effects of bolt condition on bolted rail joint stresses. *Transportation Research Record: Journal of the Transportation Research Board*. 2545: 36-45. doi:10.3141/2545-05.

## **2015**

Atanassov, I.A. and C.T. Dick. 2015. Capacity of single-track railway lines with short sidings to support operation of long freight trains. *Transportation Research Record: Journal of the Transportation Research Board*. 2475: 95-101.

Atanassov, I.A. and C.T. Dick. 2015. Delay and Required Infrastructure Investment to Operate Long Freight Trains on Single-track Railways with Short Sidings. In: *Proceedings of the International Heavy Haul Association Conference*,. Perth, Australia.

Atanassov, I.A. and C.T. Dick. 2015. Incremental Capacity in Transitioning from Double to Triple Track on Shared Rail Corridors. In: *Proceedings of the International Association of Railway Operations Research (IAROR) 6th International Conference on Railway Operations Modelling and Analysis*. Tokyo, Japan.

Atanassov, I.A. and C.T. Dick. 2015. Influence of Siding Connection Length, Position, and Order on the Incremental Capacity of Transitioning from Single to Double Track. In: *Proceedings of Transportation Research Board 94th Annual Conference*. Washington, DC.

Barkan, C.P.L., X. Liu and M.R. Saat. 2015. Enhanced Tank Car Design Improves the Safety of Transporting Crude Oil and Alcohol by Rail. *TR News*. 298: June-August, pp. 41-43.

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Csenge, M.V., H. Wolf, M.S. Dersch, J.R. Edwards, R.G. Kernes and M.J. Gutierrez Romero. 2015. Exploration of Alternatives for Prestressed Concrete Monoblock Crosstie Design Based on Flexural Capacity. In: *Proceedings of the 2015 Joint Rail Conference*. San Jose, CA. doi:10.1115/JRC2015-5683.



Csenge, M.V., X. Lin, H. Wolf, M.S. Dersch and J.R. Edwards. 2015. Mechanistic Design of Concrete Monoblock Crossties for Rail Transit Loading Conditions. In: American Public Transportation Association 2015 Rail Conference. Salt Lake City, UT.

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Fullerton, G.F. and C.T. Dick. 2015. Operational Considerations of Transitioning to Emerging Ultra-low Emission Locomotive Technologies for Heavy-haul Freight Rail Applications. In: Proceedings of the International Heavy Haul Association Conference. Perth, Australia.

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Greve, M.J., M.S. Dersch, J.R. Edwards and C.P.L. Barkan. 2015. Evaluation of Laboratory and Field Experimentation Characterizing Concrete Crosstie Rail Seat Load Distributions. In: Proceedings of the 2015 Joint Rail Conference. San Jose, CA. doi:10.1115/JRC2015-5685.

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Scheppe, A.J., J.R. Edwards, M.S. Dersch and C.P.L. Barkan. 2015. Quantifying Lateral Wheel Loading Variation Using Truck Performance Detectors. In: *Proceedings of Transportation Research Board 94th Annual Conference*. Washington, DC.

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