Joseph W. Palese, Ph.D., MBA, P.E.
Senior Scientist
Department of Civil and Environmental Engineering
The University of Delaware
Newark, DE 19716

EDUCATION

Ph.D. in Civil Engineering, The University of Delaware, Newark, DE, 2019
Thesis: A Data Driven Approach to Rail Wear Modeling
Advisor: Dr. Allan M. Zarembski
Master Business Administration, Rowan University, Glassboro, NJ, 1998
Master of Civil Engineering, The University of Delaware, Newark, DE, 1990
Thesis: Structures Continuously Supported by a Viscoelastic Foundation
Advisor: Dr. Arnold D. Kerr
Bachelor of Civil Engineering, The University of Delaware, Newark, DE, 1988

PROFESSIONAL HISTORY

9/2017 – Present **University of Delaware**

Senior Scientist/Program Manager: Railroad Engineering and Safety Program/Assistant Director UD DOT RailTeam UTC

Development and management of independent and externally funded research programs for the Railroad Engineering and Safety Program to include research into track degradation, Big Data analysis of railroad condition, track failure and maintenance planning, and other related railroad areas.

Manage US DOT Tier 1 University Transportation Center in collaboration with University Nevada Las Vegas and Virginia Tech. Co-advise students for high speed rail related research. Conduct independent research.

2007 – 8/2017 **Harsco Rail**
Senior Director Engineering Analysis & Technology
Maintenance management and planning for railways and transit systems. Development of numerous software applications for the railway industry, including real time data acquisition, track component behavior modeling,

planning and analysis models, database development and several other applications.

Development and implementation of inspection technologies on freight and passenger railways worldwide. Successful implementation of risk-based safety oriented software for ultrasonic testing requirements, rail replacement, track/train dynamics, etc.

Managed several Federal Railway Administration Broad Agency Announcement research projects, from proposal writing, contract negotiations, engineering and report writing.

Managed a staff of ten people in multiple disciplines of engineering and responsible for profit and loss of a $2M+ business unit.

1990 - 2007

ZETA-TECH Associates, Incorporated, Cherry Hill, New Jersey
1997-2007: Vice President Engineering Analysis & Technology
Development of software applications for the railway industry, including real time data acquisition, track component behavior modeling, planning and analysis models, database development and several other applications.

Development and implementation of software applications on freight and passenger railways worldwide. Successful implementation of risk-based safety oriented software for ultrasonic testing requirements, rail replacement, track/train dynamics, etc.

Responsible for software development and implementation group.

Instrumental in development and implementation of growth oriented strategies for consulting engineering through technology and innovation.

1994-1997: Manager Engineering Analysis & Technology
Managed a group of engineers to provide railway engineering consulting for track component degradation analysis, and forecasting.

Developed several track inspection tools and commercial analysis software for track component degradation and forecasting. Performed multiple track asset maintenance plans for railways worldwide.

1990-1994: Project Engineer
Performed analytic engineering activities for railway related projects including rail defect Weibull analysis, stress analysis of track components, asset management of track components (degradation/failure analysis, life cycle costing analysis, etc.).

Developed several cost benefit models for various track components based on life cycle costing that allowed railway suppliers and railways to identify optimal track components under various operating conditions.

1988 - 1990 **University of Delaware**
Graduate Research Assistant
Advised by Dr. Arnold D. Kerr
Co-wrote a computer program for the Federal Highway Department on the blow-up of concrete pavements.
Masters thesis: Structures Continuously Support by a Viscoelastic Foundations

June 1986 - Sept. 1988 (Summer/Winter) **Adams Rehmann and Heggan Associates, Hammonton, New Jersey**
Civil Engineer
Performed analysis and design for land subdivision including hydraulic analysis for stormwater management and road design. Estimation of quantities for land development projects.

PROFESSIONAL AFFILIATIONS

Registered Professional Engineer: New Jersey
Member, American Railway Engineering Maintenance-of-Way Association
Member, AAR Transportation Technology Center Inc. Research Advisory Board – 2013 - 2017

HONORS AND AWARDS

Recipient of the Davis Fellowship from University of Delaware
Member of Tau Beta Pi and Chi Epsilon honor societies
Recipient of AAR Fellowship in Railroad Engineering

CONFERENCE ORGANIZED

Co-organizer: "Big Data in Railroad Maintenance Planning", University of Delaware, 2021-2014

PUBLICATIONS

Refereed Journals

1. Palese, J.W., "Assessing Dynamic Force Distributions at Railway Track Stiffness Transitions Using Transformed Track Deflection Measurement Data", *Railway Engineering Science*, Submitted February 2021

2. Musazay, Jubiar, Zarembski, A. M. and Palese, J. W., "Determining Track-Induced Lateral Thermal Expansion Forces on A Curved Railway Track" *Proc IMechE Part F: Journal of Rail and Rapid Transit*, February 2021. DOI 10.1177/0954409721995318
3. Soufiane, K. , Zarembski, A. M., and Palese, J. W., Effect of Adjacent Support Condition on Premature Wood Crosstie Failure" submitted to *Journal of Transportation Infrastructure Geotechnology*, January 2021
4. Cronin, J. J., Zarembski A. M., Palese J. W., "Prediction of Rail Defect Development using Parametric Bootstrapping Modified Weibull Equations", submitted to *Proc IMechE Part F: Journal of Rail and Rapid Transit*, September 2020.
5. Alsahli, A, Zarembski, A. M., Palese, J. and Euston W., Investigation of the Correlation between Track Geometry Defect Occurrence and Wood Tie Condition, *Journal of Transportation Infrastructure Geotechnology*, Volume 6, Issue 3, September 2019, ISSN: 2196-7202 (Print) 2196-7210 (Online)
6. Palese, J. W., Zarembski, A. M., & Attoh-Okine, N. O. (2019.). Methods for aligning near-continuous railway track inspection data. *Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and Rapid Transit*, *0*(0), 0954409719860718. https://doi.org/10.1177/0954409719860718
7. Yurlov, D., Zarembski, A. M., Attoh-Okine, N., Palese, J. W., & Thompson, H. (2019). Probabilistic Approach for Development of Track Geometry Defects as a Function of Ground Penetrating Radar Measurements. *Transportation Infrastructure Geotechnology*, *6*(1), 1–20. https://doi.org/10.1007/s40515-018-0066-x
8. Alsahli, A, Zarembski, A. M., Palese, J. and Euston W. (2019), Investigation of the Correlation between Track Geometry Defect Occurrence and Wood Tie Condition, *Journal of Transportation Infrastructure Geotechnology*, Volume 6, Issue 3, September 2019, ISSN: 2196-7202 (Print) 2196-7210 (Online)
9. Zarembski, A. M., Palese, J. W., Hartsough, C. H., Ling, H. I., Thompson, H. (2017) "Application of Geocell Track Substructure Support System to Correct Surface Degradation Problems Under High Speed Passenger Railroad Operations", *Journal of Transportation Infrastructure Geotechnology*, Volume 4 (4) 106-125, December 2017, DOI 10.1007/s40515-017-0042-x
10. Zarembski, A. M., Palese, J. W., & Euston, T. L. (2017). Correlating Ballast Volume Deficit with the Development of Track Geometry Exceptions Utilizing Data Science Algorithm. *Transportation Infrastructure Geotechnology*, *4*(2), 37–51. https://doi.org/10.1007/s40515-017-0039-5
11. Palese, J. W. and Zarembski, A. M., "Rail Grinding for Rail Transit Systems" 'Engineering' a Journal of the Chinese Academy of Engineering (CAE). December 2015.
12. Palese, Joseph W., Wright Thomas W., "Risk-Based Ultrasonic Rail Test Scheduling on Burlington Northern Santa Fe", published The Permanent Way Institution – Journal and Report of Proceedings, 2001 Vol 119, Part 2
13. Palese, Joseph W., Wright, Thomas W., "Application of a Risk Based Ultrasonic Test Frequency Scheduling System on Burlington Northern Santa Fe", TONE: Volume 5: Nondestructive Testing & Evaluation (NDT&E) for the Railroad Industry, 2000.

14. Zarembski, A. M., Palese, J. W., and Marten, J. H. "The Effect of Improved Rail Manufacturing Process on Rail Fatigue Life". American Railway Engineering Association, Bulletin 733, Volume 92, December 1991.

Conference – Paper Published in Proceedings and Presentation

1. Zarembski, A. M., Palese, J. W., Soufiane, K., Grissom, G., "Effect of Tie Condition Distribution on Life Expectancy of Wood Crosstie", American Railway Engineering Association Annual Conference, Dallas, TX, September 2020
2. Merheb, A., Palese, J, Zarembski, A. M. and Bernucci, L., "Evaluation of continuous vertical track deflection and stiffness on track degradation**", International Heavy Haul Associaton STS Conference**, June 2019, Narvik, Norway.

1. Zarembski, A. M., Yurlov, D., Palese, J., Attoh-Okine, N., "Determination of Probability of a Track Geometry Defect based on GPR Measured Subsurface Conditions Using Data Analytics" WCRR 2019, Tokyo, Japan, November, 2019.
2. Palese, J. W., Zarembski, A. M., and Ebersole, K. ,"Stochastic Analysis of Transit Wheel Wear and Optimized Forecasting of Wheel Maintenance Requirements", **Proceedings of the 2019 Joint Rail Conference, JRC2019,** April 9-12, 2019, Snowbird, UTAH, US

1. Palese, J. W., Zarembski, A. M. and Attoh-Okine,N, " Development and Application of a Next Generation Rail Wear Model", American Railway Engineering Association Annual Conference, Chicago, IL, September 2018
2. Zarembski, A. M., Yurlov, D., Palese J. W., Attoh-Okine N, and Thompson, H, "Relationship between Track Geometry Degradation and Subsurface Condition as Measured by GPR", American Railway Engineering Association Annual Conference, Chicago, IL, September 2018
3. Palese. J. W., Hartsough C. H., Zarembski A. M., Thompson, H., Ling, H. L. Pagano. W. , " Life Cycle Benefits of Subgrade Reinforcement Using Geocell on a High Speed Railway- A Case Study", American Railway Engineering Association Annual Conference**,** Indianapolis, IN, September 2017
4. Palese, J.W., Newman, G.R., Farritor, S., Hartsough, C.M., (2017). "Quantifying Track Substructure Performance Using Continuous and Autonomous Vertical Track Deflection Data" Proceedings of the 2017 IHHA Conference. Cape Town, South Africa.
5. Hartsough, C.M., Palese, J.W., DiVentura, S., Zhang, J. (2017). "An advanced methodology for developing grinding patterns to efficiently address corrugation removal and establish profile" Proceedings of the 2017 IHHA Conference. Cape Town, South Africa.
6. Palese, J.W., DiVentura, S., Hill, K., Maurice, P., (2017). "Optimizing tamper efficiency through the integration of inertial based track geometry measurement." Proceedings of the ASME/IEEE 2017 Joint Rail Conference. Philadelphia, PA, USA.
7. Palese, J.W., Zarembski, A.M., Hartsough, C.M., Thompson, H., Palese, M.E., (2017). "A study on subgrade pressure differential over regions of known substructure transitions as it related to track geometry." Proceedings of the ASME/IEEE 2017 Joint Rail Conference. Philadelphia, PA, USA.

8. Hartsough, C., Zhang, J., Palese, J.W., DiVentura, S. (2017). “A method for the measurement and efficient removal of rail corrugations for the subsequent reestablishment of profile” Proceedings of the ASME/IEEE 2017 Joint Rail Conference. Philadelphia, PA, USA.
9. Palese, J.W., C.M. Hartsough, G. Schmitzer, et al., “Rail Lifecycle Improvement through the Application of Dynamic Grind Pattern Generation on a Heavy Hail Railroad in Brazil.” Proceedings of the AREMA 2016 Annual Conference & Exposition. Orlando, FL, August 2016
10. Hartsough, Christopher M., J. Palese, G. Schmitzer, J. Espindola, and T. Viana, “Optimized Rail Grinding Through Dynamic Positioning and Powering of Grinding Motors.” Proceedings of the 2016 Joint Railway Conference. Columbia, SC, April 2016
11. Palese, J.W., Zarembski, A.M., Hartsough, C.M., Ozturk, S., “Use of Switch Profile Data for Enhanced Analysis of Wheel Rail Behavior at the Switch Point”, Proceedings of the 2015 IHHA Conference, Perth, Australia, June 2015.
12. Euston, T.L., Zarembski, A.M., Hartsough, C.M., Palese, J.W., “Analysis Of Wheel-Rail Contact Stresses Through A Turnout”, 2012 ASME Joint Rail Conference, Philadelphia, PA, April 2012
13. Zarembski, A.M., Palese, J.W., Euston, T.L., Scheiring, W.R., “Development and Implementation of Automated Switch Inspection Vehicle”, 2011 AREMA Annual Conference, Minneapolis, MN, September 2011
14. Bonaventura, C.S., Zarembski, A.M., Palese, J.W., “Determination of Optimum Intervention Time for Track Surfacing Based on Economic Minimization of Maintenance Costs”, IHHA 2011, Calgary, Canada
15. Zarembski, A.M., Euston, T.E., Palese, J.W., “Development, Implementation, and Validation of an Automated Turnout Inspection Vehicle”, IHHA 2011, Calgary, Canada, June 2011
16. Palese, J.W., Zarembski, A.M., “A Total Rail Maintenance Strategy for HAL Railways”, IPWE, India, 2010.
17. Zarembski, A.M., Palese, J.W., “Evaluation of the Effectiveness of Rail Grinding on Reducing Rail Defects on North American Class 1 Railroad”, AREMA 2010 Annual Conference and Exposition, Orlando, FL, August 2010
18. Bonaventura, C.S., Zarembski, A.M., Palese, J.W., “Switch and Crossing Inspections and Maintenance Management Using Handheld Computers”, 4th IET International Conference on Railway Condition Monitoring (RCM 2008), Derby, UK, June 2008
19. Palese, J.W., Zarembski, A.M., “The Economics Of Heavy Axle Loads:Costs, Benefits, And Engineering Issues”, ExpoRail 2007, India, October 2007
20. Palese, J.W., Maurice, P. "The Drone – An Unmanned Chase Tamper", AREMA 2007 Annual Conference & Exposition, Chicago, IL, September 2007
21. Zarembski, A.M., Palese, J.W., "Use of Risk Management in Improving Track Safety", AREMA 2007 Annual Conference & Exposition, Chicago, IL, September 2007
22. Zarembski, A.M., Gauntt, J.C., Grissom, G.T., Palese, J.W., "Field Demonstration of the Use of Track Strength Data to Optimize Tie Replacement Requirements", AREMA 2007 Annual Conference & Exposition, Chicago, IL, September 2007

23. Zarembski, A.M., Palese, J.W., "Improving Track Safety with New Generation Risk Management Tools", RT&S Risk Management Conference, March 2007
24. Zarembski, A.M., Palese, J.W., "Managing Risk on the Railway Infrastructure", World Congress of Railroad Research, Montréal, Canada, June 2006
25. Zarembski, A.M., Euston, T.L., Palese, J.W., "Use of Track Component Life Prediction Models in Infrastructure Management", AusRail Conference and Exhibition, Sydney, November 2005
26. Bonaventura, C.S., Holfeld, D.R., Zarembski, A.M., Palese, J.P., "Test Results of a Modified Turnout Designed to Increase Diverging Route Speeds Without Increasing Lead Length", 2005 AREMA Annual Conference, Chicago, IL, September 25-28, 2005
27. Zarembski, A.M., Palese, J.P., "Characterization of Broken Rail Risk for Freight and Passenger Railway Operations", 2005 AREMA Annual Conference, Chicago, IL, September 25-28, 2005
28. Bonaventura, C.S., Zarembski, A. M., Palese, J.W., "TrackSafe: A Track Geometry Car Based Real-Time Dynamics Simulator", ASME 2005 Joint Rail Conference, Pueblo, CO, March 16-18, 2005.
29. Palese, J.W., Euston, T. L., Zarembski, A.M., "Use of Profile Indices for Quality Control Grinding", AREMA 2004 Annual Conference & Exposition, Nashville, TN, September 19-22, 2004.
30. Bonaventura, C.S., Palese, J.W., Zarembski, A.M., "Performance of a Track Geometry Car-Real-Time Dynamics Simulator using Multiple Vehicle, 2003 ASME International Mechanical Engineering Congress and Exposition (IMECE'03), Washington, DC, November 16-21, 2003.
31. Bonaventura, C.S., Zarembski, A.M., Palese, J.W., Holfeld, D.R., "Increasing Speeds through the Diverging Route of a Turnout without Increasing Lead Length", 83rd TRB Annual Meeting, Washington, DC, January 11-15, 2004.
32. Bonaventura, C.S., Palese, J.W., Zarembski, A. M., "Field Evaluation and Deployment of a Track Geometry Car Based Real-Time Dynamics Simulator", AREMA 2003 Annual Conference & Exposition, Chicago, IL, October 5-8, 2003.
33. Zarembski, A.M., Palese, J.W., "Risk Based Ultrasonic Rail Test Scheduling: Practical Applications in Europe and North America", Conference Contact Mechanics and Wear of Rail/Wheel Systems (CM2003), Gothenburg, Sweden, June 2003.
34. Bonaventura, C.S., Palese, J.W., Zarembski, A.M., "Real-Time Prediction of Railway Vehicle Response to the Interaction with Track Geometry", International Heavy Haul Conference, May 2003.
35. Zarembski, A.M., Parker, L.A., Palese, J.W., Bonaventura, C., "Computerized Tie Condition Inspection and Use of Tie Condition Data in Cross-Tie Maintenance Planning", International Heavy Haul Conference, May 2003.
36. Zarembski, A.M., Parker, L.A., Palese, J.W., "Use of Comprehensive Tie Condition Data in Cross-Tie Maintenance Planning and Management on the BNSF", accepted for publication, American Railway Engineering Maintenance Association Annual Technical Conference, September 2002.
37. Zarembski, A.M., Palese, J.W., & Katz, Leonid, "Reduction of Dynamic Wheel/Rail Impact Forces at Grade Crossings Using Stiffness Transitions", American Society of Mechanical Engineers, 2001 ImechE Congress, New York, NY, November 2001.
38. Zarembski, A.M., Palese, J.W., & Bell, J.G., "Limiting High Speed Dynamic Forces on the Track Structure; The Amtrak Acela Case", American Railway Engineering Maintenance Association Annual Technical Conference, September 2001.

39. Palese, Joseph W., Wright Thomas W., “Risk-Based Ultrasonic Rail Test Scheduling on Burlington Northern Santa Fe”, American Railway Engineering Maintenance Association Annual Technical Conference, 2000.
40. Bonaventura, Clifford S., Palese, Joseph W., Zarembski, A.M., “Intelligent System for Real-Time Prediction of Railway Vehicle Response to the Interaction with Track Geometry”, 2000 ASME/IEEE Joint Railroad Conference, April 2000.
41. Palese, Joseph W., Holfeld, Donald R., “Tie Planning Tools for the Track Inspector”, American Railway Engineering Maintenance Association Track & Structures Annual Conference, 1999.
42. Zarembski, A. M., Palese, Joseph, J. W., Katz, Leonid, “Implementation of a Dynamic Rail-Highway Grade Crossing Transition”, Transportation Research Board Annual Meeting, Washington, D.C., January 1999.
43. Zarembski, A. M., Thornton, D., Palese, J. W., Forte, N., “Development and Implementation of RailGraph; “A Field Deployable Rail Maintenance Management Tool”, American Railway Engineering Maintenance Association Annual Technical Conference, Accepted for Publication, 1998.
44. Zarembski, A. M., Holfeld, D. R., and Palese, J. W., “Derailment of Transit Vehicles in Turnouts”, Transportation Research Board Annual Meeting, Washington, D.C., January, 1997.
45. Zarembski, A. M., Palese, J. W., "Rail Maintenance Planning Using Computerized Rail Forecasting Models", Conference on Track Maintenance Practices on Suburban and Mass Transit Railways, Hong Kong, June 1993

<u>Conference – Presentation Only</u>

1. Palese, J.W., “Application of Data Analytics to Rail Wear Forecasting”, University of Delaware Conference on Big Data in Railroad Maintenance Planning, Newark, DE, December, 2019.
2. Palese, J.W., “Rail Wear Forecasting and Classification”, University of Delaware Conference on Big Data in Railroad Maintenance Planning, Newark, DE, December, 2018.
3. Palese, J.W., “Research Update on a Next Generation Rail Wear Model”, UNLV Symposium: Railroad Infrastructure Diagnosis and Prognosis, Las Vegas, NV, October, 2018.
4. Palese, J.W., “Using Big Data to Develop a Rail Wear Forecasting Model: An Update”, University of Delaware Conference on Big Data in Railroad Maintenance Planning, Newark, DE, December, 2017.
5. Palese, J.W., “Use of Big Data in Rail Wear Forecasting”, University of Delaware Conference on Big Data in Railroad Maintenance Planning, Newark, DE, December, 2016.
6. Palese, J.W., “Grinding in the Era of Big Data”, University of Delaware Conference on Big Data in Railroad Maintenance Planning, Newark, DE, December, 2015.
7. Palese, J.W., “Large Scale Data Analysis Techniques in Grinding Planning and Management”, University of Delaware Conference on Big Data in Railroad Maintenance Planning, Newark, DE, December, 2014.

8. Palese, J.W., Zarembski, A.M., "Practical Applications of Risk Based Ultrasonic Rail Test Scheduling in Europe and North America, Asset Management for Railway Infrastructure Asia 2005, Singapore, February 23-24, 2005.
9. Zarembski, A. M., Holfeld, D. R., and Palese, J. W., "On the Derailment of Rail Vehicles Through Turnouts; A Review of Derailment Causes and Mechanisms". American Railway Engineering Association Turnout Symposium, Chicago, IL, August 1996.

Other Publications

1. Zarembski, A. M., Palese, J. W., Soufiane, K. and Grissom, G., "How Do Failed Adjacent Ties Effect the Life of Wood Crossties", Railway Track & Structures, April 2021.
2. Palese, J.W., PhD Dissertation - "A Data Driven Approach to Rail Wear Modelling", University of Delaware, August 2019.
3. Hartsough, C.M., J. Palese, G. Schmitzer, J. Espindola, T. Viana, R. Santos, "Dynamic grind pattern generation and long term profile sustainability when applied to a heavy haul rail line." Poster Presentation, 2017 IHHA Conference. Cape Town, South Africa.
4. Zarembski, A.M., Palese, J. W., "Does Rail Grinding Reduce Rail Defects", RT&S, February 2011
5. Zarembski, A.M., Palese, J.W., "Improving Track Safety with New Generation Risk Management Tools", Railway Track & Structures, September 2007
6. Zarembski, A.M., Palese, J.W., Euston, T.L., "Using Real Time Quality Control to Manage Rail Grinding", interface The Journal of Wheel/Rail Interaction (www.interfacejournal.com/features/07-06) , July 2006
7. Zarembski, A.M., Bonaventura, C.S., Palese, J.W., "Real Time Analysis of Track Geometry to Control Derailment Risk", Rail Quarterly/LeRail, June 2006
8. Zarembski, A.M., Palese, J.W., Bonaventura, C.S., "Use of Hand Held Computers (PDAs) for Track Inspection and Maintenance" ("Utilisation d'ordinateurs de poche (PDA) pour le contrôle et la maintenance des voies"), LeRail, February/March 2006
9. Zarembski, A.M., Palese, J.W., "Management of Broken Rail Risk" ("Gestion du risqué de rupture du rail"), LeRail, January 2006
10. Zarembski, A.M., Palese, J.W., Euston, T.L., "Monitoring Grinding Effectiveness Using Grinding Quality Indices", Railway Track & Structures, June 2005
11. Zarembski, A.M., Palese, J.W., "Assessing and Managing Risk on the Railway Track", International Railway Journal, May 2005.
12. Bonaventura, C.S., Zarembski, A.M., Palese, J.W., Holfeld, D.R., "Increasing Speeds through the Diverging Route of a Turnout Without Increasing Lead Length, Railway Track & Structures, July 2004
13. Grissom, G.T., Palese, J.W., "Field Demonstration of the Use of Track Strength Data to Optimize Tie Replacement Requirements for High Speed Operations", published Crossties Magazine, Nov/Dec 2002."
14. Zarembski, A.M., Palese, J.W., Bell, J.G., "Controlling Track Forces during Introduction of New Height Speed Trains", International Railway Journal, October 2001.

15. Palese, Joseph W., & Zarembski, Allan M., "BNSF Tests Risk-Based Ultrasonic Detection", published Railway Track & Structures Magazine, February 2001.
16. Palese, Joseph W., "Temperature Effects on Welded Rail", Live Stream, September/October 1998.
17. Palese, Joseph W., "RTA Introduces Tie Life Program", Crossties Magazine, May/June 1998.
18. Palese, J.W., "SelecTie II Helps Railroads Make Solid Economic Designs", Crossties Magazine, May/June 1997.
19. Palese, J.W., Masters Thesis - "The Analysis of Structures Supported by Visco-Elastic Foundations", University of Delaware, September 1990.

Research and Technical Reports

1. Palese, JW, Lasisi, A, "Development of a Practical Risk Framework for Railway Bridge Stiffness Transitions", University of Delaware UTC Report, August, 2020.
2. Zarembski, A.M., Yurlov, D., Palese, J.W., Attoh-Okine, N., "Relationship Between Track Geometry Defects and Measured Track Subsurface Condition", US DOT FRA Research Report, February 2020.
3. Palese, J.W., Zarembski, A.M., Attoh-Okine, N., "The Laplace Distribution in Railway Track Degradation – A Case Study for Rail Wear ", University of Delaware UTC Report, September 2019.
4. Palese, J.W., Zarembski, A.M., Attoh-Okine, N., "Stochastic Determination of Rail Wear Rates ", University of Delaware UTC Report, October 2019.

PATENTS

US2018/0057029 A1 – INERTIAL TRACK MEASUREMENT SYSTEM AND METHODS

US2015/0111472 A1 - GRINDING MOTOR AND METHOD OF OPERATING THE SAME FOR RAIL APPLICATIONS

US2013/0064273 A1 – AUTOMATED TURNOUT INSPECTION

SPONSORED RESEARCH

University of Delaware

"Development of a Practical Risk Framework for Railway Bridge Stiffness Transition Maintenance and Upgrade", Center for integrated Asset Management for Multi-Modal Transportation Infrastructure Systems: Region 3 University Transportation Center, (4/2019-4/2020), $48,323, PI – J.W. Palese, Co-PI – A.M. Zarembski

"Big Data Analysis of the Relationship Between M-Rail measurements and the Development of Track Geometry Defects on MRS Logistica", MRS Logistica Railway, Brazil, (6/2019 – 6/2020), $50,000, PI – J.W. Palese, Co-PI – A.M. Zarembski

"Development of Rail Wear Analysis Framework", AMTRAK, (9/2019-9/2021), $121,312, PI – J.W. Palese, Co-PI – A.M. Zarembski

Recent Relevant Research as Principal Investigator

From 1990 to 2017, obtained and managed over $10M of ongoing railway related research activities from government agencies, private entities, and organic growth activities.

"Development of a Pre-Grind Inspection Vehicle", $1.6M, RUMO in Brazil, for Harsco Rail, 2017

"Categorizing Track Mud Spot Risk by Measurement of Vertical Track Deflection", $234,129, Federal Railroad Administration for HARSCO Rail, 2016

"Field Demonstration of Geocell Track Substructure Support System Under High Speed Passenger Railroad Operations", $182,591, Federal Railroad Administration for HARSCO Rail, 2015

"Development of a Low Cost Non-Contact Track Geometry System", $500,000, HARSCO Rail, 2015

"Development of Rail Grinding Automation Software", $350,000, Harsco Rail, 2014

"Development of an Automated Switch Inspection Vehicle". $400,000, Harsco Rail, 2013.

COURSES TAUGHT

Term	**Course Number-Title**	**Role**
Fall 2014	CIEG 417/617 – Railroad Engineering	TA/Part Time Lecturer
Spring 2015	CIEG 418/618 – Introduction To Railroad Safety and Derailment Engineering	TA/Part Time Lecturer
Fall 2015	CIEG 417/617 – Railroad Engineering	TA/Part Time Lecturer
Spring 2016	CIEG 418/618 – Introduction To Railroad Safety and Derailment Engineering	TA/Part Time Lecturer
Spring 2016	CIEG 318 – Introduction to Railroads	TA/Part Time Lecturer
Fall 2016	CIEG 417/617 – Railroad Engineering	TA/Part Time Lecturer
Spring 2017	CIEG 418/618 – Introduction To Railroad Safety and Derailment Engineering	TA/Part Time Lecturer
Spring 2017	CIEG 318 – Introduction to Railroads	TA/Part Time Lecturer
July 2017	Short Course – "Railroad Engineering" at The	Lecturer

	Technion, Israel	
Fall 2017	CIEG 417/617 – Railroad Engineering	TA/Part Time Lecturer
Dec. 2018	Short Course – "Big Data in Railroad Maintenance Planning"	Lecturer
Dec. 2019	Short Course – "Big Data in Railroad Maintenance Planning"	Lecturer

STUDENTS ADVISED

Undergraduate

Tyler Bernstein, 2019

Masters

Kyle Ebersole, MCE 2019 (Co-Advised with Dr. Zarembski)

Kenza Soufiane, MCE anticipated 2021 (Co-Advised with Dr. Zarembski)

Michael Nguyen, MCE anticipated 2021 (Co-Advised with Dr. Zarembski)

Jubair Ahmad Musazay, PhD anticipated 2021 (Co-Advised with Dr. Zarembski)